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Welcome to Bergen

On behalf of the City of Bergen and the organizing committee, it is a great honor to welcome you to the 38th NFOG Congress. The venue is Grieghallen in the center of Bergen – a highly professional conference center that has hosted many great national and international events. It is within easy walking distance from the congress hotels, and the UNESCO world heritage listed old town center with its Hanseatic architecture and wharf. We hope you will find it easy to enjoy both the congress and the city.

Preparation for the congress has been ongoing not only since the last congress in Copenhagen, but even since we got the mission at the Reykjavik congress in 2008 – four years ago! From the very beginning we have been aware of two important considerations in the making of the program: the NFOG congress as a general congress within our field, and also the privilege of the local committee to give the congress a specific profile which should make it particularly memorable to the participants. Not surprisingly this is chosen from areas where Bergen has made a special contribution; obstetrics and international health and the common ground between the two. We believe the skills of vaginal delivery are an important pillar of safe obstetrics in the Nordic countries, and probably even more so in the developing countries. This profile is emphasized in our logo - the art of vaginal delivery - made by anatomist and artist Harald Kryvi, with the fetus in breech position and the embracing forceps. Our profile is also demonstrated by the presence of the FIGO president, in the workshops and in the main program. Furthermore, a special effort has been made to put reproduction into the perspective of evolution and generational changes. Still, the main topics of our field have been covered; reproductive technology, endometriosis, psychological aspects of pregnancy and postpartum, growth restriction, the feto-maternal immune system and troubles relating to the perineum and pelvic floor, important aspects of gynecological cancers, advanced endoscopy – to mention some.

We are grateful for the high number and great quality of the free communications to be presented orally or as poster. We may seem conservative, not only by promoting vaginal delivery, but also by keeping the traditional paper poster. The old concept keeps its advantage: Every poster will be available for your attention during the whole congress, and can easily be studied and discussed at any time. Many of them will also be highlighted if selected to the informal oral poster sessions.

Take time to experience some of Bergen too; take a stroll by the harbor and the fish market, out to Bergen Aquarium at the Nordnes peninsula, or into the characteristic wooden house area in Fjellsiden starting from the lower station at the funicular Fløybanen, and maybe continue up to the Fløyen mountain. Our congress providers will help you with more suggestions for exploring Bergen.

Many people have worked to get this congress running besides the organizing committee. In particular, great thanks to the NFOG Scientific Committee and the NFOG Board for continuous support during the preparations. The support from the industry is also greatly appreciated.

The Nordic congresses are the preeminent meeting place for all colleagues. Embrace this opportunity to meet old and new friends from within the Nordic countries and the world outside. Join the get-together on Saturday at 18.00 and the NFOG Gala Dinner on Monday at 19.00, both in Grieghallen.

Enjoy the congress and the city of Bergen. Welcome!

Knut Hordnes
CONGRESS PRESIDENT
Map of Grieghallen

LEVEL 3
- Svane
- Troldtog
- Nina
- Edvard
- Bukken
- Halling

LEVEL 2
- Foyer 2GH
- Peer Gynt Sal
- Concert Hall
- Foyer 2PG
- Bøygen

LEVEL 1
- Foyer 1GH
- Scene
- Foyer 1PG
- MAIN ENTRANCE

LEVEL 0
- Småtroll
- Klokkeklang
- Foyer 0.5
- Gjendine
Dear all

On behalf of the NFOG board it is a great pleasure to welcome you all to this important meeting, the 38th NFOG congress in Bergen, June 16–19th 2012. It is my and the boards hope that you all will find the scientific part as well as the social part interesting and stimulating and that you also take some time enjoying the beauty of the world heritage – the city of Bergen.

It is quite a task to arrange a meeting of this size and the NFOG board is very grateful for the excellent work done by the scientific committee of NFOG and especially the local organizing and scientific committee, headed by the congress president Knut Hordnes.

It is my pleasure as president of NFOG to once again bid you warmly welcome.

Göran Berg, professor
PRESIDENT NFOG
Scientific program
Saturday June 16th - Pre-congress workshops

WORKSHOP 1

Fetal growth assessment and obstetric Doppler ultrasound

At: 09–16, Department of Obstetrics and Gynecology, Haukeland University Hospital
Programme coordinator: Cathrine Ebbing (NO)

Educational objectives
The course is a basic course in growth assessment by ultrasound and Doppler technique and interpretation. It is a practical course with hands-on training in small groups (max 5 persons per group) after short theoretical introductions. The educational goal is that the participants should be able to perform biometry, and assess growth by calculating conditional individual ranges, and to perform Doppler examinations of the feto-placental and fetal circulation by the umbilical and uterine arteries, the middle cerebral artery and the ductus venosus. Ultrasound safety and physics is also taught. The participants are grouped according to their level of experience in order to teach customized to their needs and interests.

Target audience
Trainees in obstetrics and gynecology as well as established gynecologists and obstetricians.

Faculty
- Synnøve Lian Johnsen (NO)
- Jørg Kessler (NO)
- Knut Håkon Bakke (NO)
- Svein Magne Skulstad (NO)
- Torvid Kiserud (NO)
- Ragnar Sande (NO)
- Henriette Hellebust (NO)
- Cathrine Ebbing (NO)

WORKSHOP 2

Skills of vaginal delivery

At: 09–17, Nina | Programme coordinator: Susanne Albrechtsen (NO)

Educational objectives
Hands-on training with focus on practical skills in operative vaginal delivery. How to perform forceps delivery, delivery of breech and twins.

Target audience
Trainees in obstetrics and gynecology as well as established gynecologists and obstetricians.

Faculty
- Andrew Kotaska (CA)
- Kim Hinshaw (UK)
- Susanne Albrechtsen (NO)
- Jørg Kessler (NO)
- Nils-Halvdan Morken (NO)
WORKSHOP 3

Perineal repair
At: 09–13, Klokkeklang | Programme coordinator: Ferenc Macsali (NO), Elham Baghestan (NO)

Educational objectives
Obstetric anal sphincter disruption is a major cause of anal incontinence. There is compelling evidence that clinicians are inadequately trained to recognise and repair the anal injuries. For many years Abdul Sultan and Ranee Thakar have been leading authorities on sphincter injuries, both prevention and repair. This time you can attend a short version of their world famous course. The course will be very practical with suturing under their supervision on pig sphincters.

Target audience
Trainees in obstetrics and gynecology, established gynecologists and obstetricians as well as midwives and colorectal surgeons.

Faculty
- Abdul Sultan (UK)
- Ranee Thakar (UK)

WORKSHOP 4

Intrapartum Fetal Surveillance
At: 09–13, Bukken | Programme coordinator: Jørg Kessler (NO)

Educational objectives
To give the participants an update on recent research in the field of intrapartum monitoring with focus on ST analysis. Specific high-risk conditions and challenges in intrapartum monitoring will be illustrated through interactive case discussions.

Faculty
- Isis Amer-Wåhlin (SE)
- Torunn Eikeland (NO)
- Jørg Kessler (NO)
- Branka Yli (NO)

Target audience
Trainees in obstetrics and gynecology, established gynecologists and obstetricians as well as midwives.
**WORKSHOP 5**

All these hormones…
workshop in gynecologic endocrinology

At: 14–17, Klokkeklang  |  Programme coordinator: Mette Haase Moen (NO)

**Educational objectives**
To give the participants more practical experience in requisition and interpretation of hormonal analyses in different clinical situations.

**Faculty**
- Mette Haase Moen (NO)
- Anette Tønnes Pedersen (DK)

**Target audience**
Trainees in obstetrics and gynecology as well as established gynecologists and obstetricians.

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**WORKSHOP 6**

Scientific writing and publishing

At: 14–16, Troldtog  |  Programme coordinator: Reynir Geirsson (IS)

**Educational objectives**
To learn to evaluate and write a scientific paper.

**Faculty**
- Reynir Geirsson (IS)
- Eszter Vancy (NO)
- Seppo Heinonen (FI)

**Target audience**
Trainees in obstetrics and gynecology as well as established gynecologists and obstetricians, nurses and midwives.

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**WORKSHOP 7**

Establishment of the Nordic network for the audit process based on the Robson Ten Group Classification System (RTGCS)

At: 14–18, Småtroll  |  Programme coordinator: Hanne Wielandt (DK)

**Objectives**
To establish current status of classification and establish a network for developing comparable and available statistics.

**Target audience**
Trainees in obstetrics and gynecology as well as established gynecologists and obstetricians and midwives.

**Faculty**
- Hanne Wielandt (DK)
WORKSHOP 8

Microscopy as a diagnostic tool in the management of genital infections
At: 9–11, Småtroll | Programme coordinator: Usha Hartgill (NO)

Objectives
This course provides an introduction to microscopy as a diagnostic tool. How to obtain genital samples, simple office diagnostics, preparation of wet mounts and staining of samples for microscopy. The course also encompasses interpretation of microscopy findings, and how to use them as a supplement to clinical findings in establishing a diagnosis.

Target audience
Trainees in obstetrics and gynecology as well as established gynecologists and obstetricians.

Faculty
- Harald Moi (NO)
- Usha Hartgill (NO)

Conditions covered are bacterial vaginosis, lower genital tract infections, trichomoniasis, candida infection and desquamative inflammatory vaginitis.

WORKSHOP 9

Advanced gynaecological laparoscopy – focus on laparoscopic hysterectomy
At: 9–13, Trolldtog | Programme coordinators: Anne Veddeng (NO), Ingeborg Bøe Engelsen (NO), Heidi Thornhill (NO)

Objectives
- Tips and tricks on how to perform laparoscopic hysterectomy in a safe and efficient manner.
- Pelvic dissection / anatomical hallmarks
- Uterine manipulation
- Closure of the vaginal vault
- Size of the uterus
- Distorted pelvic anatomy caused by endometriosis
- Different energy sources / surgical modalities
- Laparoscopic suturing
- Box training
- Virtual reality (simulator) training

Target audience
Trainees in obstetrics and gynecology as well as established gynecologists and obstetricians.

Faculty
- Christian Sørensen (NO)
- Anne Veddeng (NO)
- Ingeborg Bøe Engelsen (NO)
- Michael K. Hohl (NO)
- Jelena Tropé (NO)
Sunday June 17

08.30–09.45  AUDITORIUM  |  PLENARY 1  |  CONCERT HALL

PL01  Chair: Knut Hordnes

Opening ceremony
- Music and pictures (Saxiano), Young Scientist Award, Best Acta Article Award – Knut Hordnes, Gøran Berg, Alexander Smarason, Reynir Geirsson
- Opening lecture: Ethics In Human Reproduction and Women’s Health – Professor Gamal Serour, FIGO president (EG)

09.45–10.30  COFFEE BREAK

10.30–12.00  AUDITORIUM  |  PARALLEL SESSION 1  |  CONCERT HALL

PS01  Chairs: Alexander Smarason (IS), Thomas Bergholt (DK)

Cesarean section – the problem or the problem solver in modern obstetrics?
- 1100–1115: Does the method of intrapartum monitoring matter in vaginal breech delivery? – Susanne Albrechtsen (NO)
- 1115–1130: Maternal morbidity depending on mode of delivery – Nanneli Pallasmaa (FI)
- 1130–1145: When does active pushing get dangerous for the fetus? – Branka Yli (NO)
- 1145–1200: Discussion

10.30–12.00  AUDITORIUM  |  PARALLEL SESSION 2  |  SCENE

PS02  Chairs: Jens Langhoff-Roos (DK), Magnus Westgren (SE)

Perinatal mortality – low, lower, lowest. Where is the limit?
- 1030–1045: Perinatal mortality – a quality parameter in modern obstetrics – Dag Moster (NO)
- 1045–1100: How low can we go? Perinatal mortality in the Nordic countries – Ragnheidur I Bjarnadóttir (IS)
- 1100–1130: Antenatal and obstetric care – a story of success – Anne Eskild (NO)
- 1130–1145: What is the price of proactive management in postterm pregnancies? – Nils Halvdan Morken (NO)
- 1145–1200: Discussion
10.30–12.00  AUDITORIUM | PARALLEL SESSION 3 | PEER GYNT

PS03  Chairs: Jone Trovik (NO), Eva Uustal (SE)

**Free oral communications 1. Gynecology: surgery and oncology**
- **1030–1040**: Increasing Minimally Invasive Hysterectomy - Effects on Cost and Complications – Gudrun Jonsdottir (IS)
- **1040–1050**: The Efficiency of Virtual Reality Simulation Training in Laparoscopy: A Systematic Review of Randomized Trials – Christian Rifbjerg (DK)
- **1050–1100**: Long-term well-being after surgical or conservative treatment for severe vulvar vestibulitis syndrome – Jorma Paavonen (FI)
- **1100–1110**: Pelvic organ prolapse surgery in Denmark from 1977–2009 – Ea Løwenstein (DK)
- **1110–1120**: Survival after postoperative radiotherapy for early stage endometrial carcinoma: The Oslo Study revisited with up to 43 years of follow-up – Mathias Onsrud (NO)
- **1120–1130**: Establishment of a bioluminescence orthotopic mouse model of ovarian carcinoma: Analysis of tumor growth and response to therapy – Øystein Helland (NO)
- **1130–1140**: Postmenopausal hormone therapy and the risk of ovarian cancer: A case control study from Finland – Virpi Koskela-Niska (FI)
- **1140–1150**: Neoadjuvant chemotherapy as first-line treatment of Danish patients with advanced ovarian cancer: Major regional differences – Carsten Fagø-Olsen (DK)
- **1150–1200**: Quality of sleep the night after surgery, does it matter? A prospective cohort study of women undergoing fast track abdominal hysterectomy – Preben Kjølhede (DK)

12.00–13.00  SPONSORED SYMPOSIUM 1 | KLOKKEKLANG | Lunch box served

**New treatment option for endometriosis**
Platinum sponsor: Bayer HealthCare
- Dienogest in Endometriosis – pharmacology and mechanisms – Professor Alfred O. Mueck MD, PharmD. PhD, Centre of Endocrinology and Menopause, Head University Women’s Hospital of Tuebingen (DE)
- Dienogest in Endometriosis – clinical aspects – Dr. Thomas Faustmann, Global Medical Affairs Gynecological Therapy, Bayer Pharma (DE)
- Dienogest/Visanne in Real Life, presentation of patient cases – Dr Margita Gustafsson, Hallands Hospital, Kungsbacka (SE)

12.00–13.00  SPONSORED SYMPOSIUM 2 | TROLDTOG | Lunch box served

**Vaginal Health: Partnership in Midlife**
Bronze sponsor: Novo Nordisk
- **1200–1205**: Welcome
- **1205–1230**: Vaginal health: When intimacy matters! – Annamaria Giraldi (DK)
- **1230–1255**: Vagifem® 10µg: When less is more! – Lian Ulrich (DK)
- **1325–1300**: Panel discussion and concluding remarks
12.00–13.30  LUNCH BREAK

13.30–15.00  AUDITORIUM  |  PARALLEL SESSION 4  |  CONCERT HALL
PS04  Chairs: Carl Gustaf Nilsson (FI), Abdul Sultan (GB)

The perineum in modern obstetrics – still a challenge?
- 1330–1400: The perineum in modern obstetrics – still a challenge? – Abdul Sultan (UK)
- 1400–1410: Epidemiological aspects of obstetric anal sphincter injuries in Norway – Elham Baghestan (NO)
- 1410–1420: OASR, the Nordic experience – Katarina Laine (NO)
- 1430–1450: Repair of OASR – Eva Uustal (SE)
- 1450–1500: Discussion

13.30–15.00  AUDITORIUM  |  PARALLEL SESSION 5  |  PEER GYNT
PS05  Chairs: Seija Grenman (FI), Ole Mogensen (DK)

Personalized treatment strategies in endometrial carcinoma – who should be referred to specialized units?
- 1330–1350: Endometrial cancer epidemiology – Elisabete Weiderpass (FI/NO)
- 1350–1410: Standard surgical treatment for endometrial cancer – Frederic Amant (BE)
- 1410–1430: Changing the ward program in Sweden – why do we need a change and what is new? – Janusz Marcickiewicz (SE)
- 1430–1450: New treatment strategies in endometrial cancer – Helga Salvesen (NO)
- 1450–1500: Discussion

13.30–15.00  AUDITORIUM  |  PARALLEL SESSION 6  |  SCENE
PS06  Chairs: Jørg Kessler (NO), Seppo Heinonen (FI)

Fetal growth restriction and preeclampsia – potential of Doppler ultrasound in screening, diagnosis and prediction of long-term outcome
- 1330–1355: 1st trimester Doppler ultrasound as a predictor of adverse pregnancy outcome – Nerea Maiz (ES)
- 1355–1420: Fetal growth restriction - does umbilical artery Doppler tell us the whole truth? – Torvid Kiserud (NO)
- 1420–1445: Impact of fetal circulatory compromise on health in childhood and adolescence – Jana Brodszki (SE)
- 1445–1500: Discussion

15.00–15.30  COFFEE BREAK
**15.30–17.00 AUDITORIUM | PARALLEL SESSION 7 | PEER GYNT**

**PS07 Chairs: Johanna Mäenpää (FI), Ragnheidur I. Bjarnadottir (IS)**

**Pregnancy – more than nine months of a woman’s life**
- 1530–1615: Cancer and pregnancy – Fredrik Amant (BE)
- 1615–1650: The impact of pregnancy and delivery complications on maternal and fetal health – Jens Langhoff-Roos (DK), Jacob Lykke (DK)
- 1650–1700: Discussion

**15.30–17.00 AUDITORIUM | PARALLEL SESSION 8 | CONCERT HALL**

**PS08 Chairs: Mette Haase Moen (NO), Reynir Geirsson (IS)**

**Life time perspective in the treatment of endometriosis**
- 1530–1600: New leads in the management of endometriosis – Thomas D’Hooghe (NL)
- 1600–1615: Immunological aspects of endometriosis – Matts Olovsson (SE)
- 1615–1630: Endometriosis and infertility – Päivi Härkki (FI)
- 1630–1645: When to operate endometriotic cysts? – Axel Forman (DK)
- 1645–1700: Discussion

**15.30–17.00 AUDITORIUM | PARALLEL SESSION 9 | SCENE**

**PS09 Chairs: Oskari Heikinheimo (FI), Peter Hornnes (DK)**

**Free oral communications 2. Obstetrics: pregnancy**
- 1530–1540: Thrombophilia and adverse pregnancy outcomes: Results from the Danish National Birth Cohort – Jacob Lykke (DK)
- 1540–1550: The effect of different alcohol drinking patterns in early to mid-pregnancy on child’s intelligence, attention and executive function – Ulrik Kesmodel (DK)
- 1550–1600: Combined ultrasound and biochemistry for risk evaluation of chromosomal abnormalities during the first trimester in Sweden: what has happened after implementation? – Peter Lindgren (SE)
- 1610–1620: Obstetric outcome after intervention for severe fear of childbirth in nulliparous – randomized trial – Hanna Rouhe (FI)
- 1630–1640: Antidepressant exposure during pregnancy and child behavior – Lars Pedersen (DK)
- 1650–1700: Recurrence of placental dysfunction disorders across generations – Anna-Karin Wikström (SE)

**17.00–18.00 ORAL POSTER SESSION 1**

**17.00–18.00 ORAL POSTER SESSION 2**
Monday June 18

08.30–09.45  AUDITORIUM | PLENARY 2 | CONCERT HALL

PL02 Chairs: Knut Hordnes (NO), Per E. Børdahl (NO)

The impact of practical skills in vaginal delivery in modern obstetrics

- 0830–0900: How to regain lost skills. The Canadian model for revitalization of vaginal breech delivery – Andrew Kotaska (CA)
- 0900–0930: Practical skills in obstetrics – simulation in teaching and evaluation – Kim Hinshaw (UK)
- 0930–0945: Discussion

09.45–10.30  COFFEE BREAK

10.30–12.00  AUDITORIUM | PARALLEL SESSION 10 | CONCERT HALL

PS10 Chairs: Kristina Gemzell (SE), Thea Lousen (DK)

The continuing challenges in maternal health in the developing world

- 1030–1055: Abortion and maternal health globally – Nathalie Kapp (WHO/US)
- 1055–1115: Obstetric fistula – causes and consequences – Mulu Muleta (ET)
- 1115–1135: Maternal near miss incidents – Mattias Roost (SE)
- 1135–1155: Implementing ALSO in an African setting – Bjarke Lund Sørensen (DK)
- 1155–1200: Discussion

10.30–12.00  AUDITORIUM | PARALLEL SESSION 11 | PEER GYNT

PS11 Chairs: Pia Telemann (SE), Mette Bing (DK)

Dysfunctions of the pelvic floor

- 1030–1100: Overview: surgery for urinary incontinence during 40 years – Carl Gustav Nilsson (FI)
- 1130–1200: Meshes in pelvic floor reconstructive surgery – are there any indications? – Marie Ellstrøm Engh (NO)

10.30–12.00  AUDITORIUM | PARALLEL SESSION 12 | SCENE

PS12 Chairs: Matts Olovsson (SE), Peter Secher (DK)

Free oral communications 3. Gynecology: general

- 1030–1040: Medical abortion with home administration of misoprostol – Mette Løkeland (NO)
- 1040–1050: Early post abortion insertion of intrauterine contraception – Ingrid Sääv (SE)
- 1050–1100: Medical vs. surgical induced abortion in primigravid women – is the next term pregnancy at risk? – Jaana Männistö (FI)
- 1100–1110: Does coffee consumption reduce the chance of pregnancy and live birth in ivf? – Ulrik Kesmodel (DK)
1110–1120: Antimüllerian hormone predicts pregnancy and live-birth rates after assisted reproduction and reflect oocyte quality besides oocyte quantity – Thomas Brodin (SE)


1140–1150: Physical activity and endometriosis risk – Outi Ulimari (FI)

1150–1200: Burden of illness in women with endometriosis – Lena Lökvist (SE)

12.00–13.00 SPONSORED SYMPOSIUM | TROLDTOG | Lunch box served

Chair: Per Olofsson

A new approach to fetal surveillance
Sponsor: Neoventa Medical

- Fetal Surveillance of low and high risk patients – Susanne Albrechtsen (NO)
- Organizing fetal surveillance in practice – from antenatal care to intrapartum monitoring – Jørg Kessler (NO)
- Discussion

12.00–13.00 SPONSORED SYMPOSIUM | GIENDINE | Lunch box served

SPRMs and Ulipristal Acetate for the Treatment of Uterine Fibroids
Sponsor: Gedeon Richter Nordics AB

- Current Management of Uterine Fibroids (S Skouby, Denmark)
- From development to clinical use: Overview of SPRMs and insights on MoA (E Loumaye, Switzerland)
- Ulipristal acetat phase III Data. Clinical Relevance of pre-Surgical Medical Treatments (K Gemzell, Sweden)

12.00–15.00 NFOG GENERAL ASSEMBLY | KLOKKEKLANG

12.00–13.30 LUNCH BREAK

13.30–15.00 AUDITORIUM | PARALLEL SESSION 13 | CONCERT HALL

PS13 Chairs: Thora Steingrimsdottir (IS), Ferenc Macsali (NO)
Psychological wellbeing during pregnancy and postpartum
- 1330–1350: Psychiatric conditions in pregnancy and postpartum – Jan Øystein Berle (NO)
- 1350–1410: Fear of childbirth – does it affect mode of delivery. The BIDENS study – results from six countries – Elsa Lena Ryding (SE)
- 1410–1430: Mental distress and life events during pregnancy – Berit Schei (NO)
- 1430–1450: How to treat fear of childbirth – Terhi Saisto (FI)
- 1450–1500: Discussion

13.30–15.00 AUDITORIUM | PARALLEL SESSION 14 | PEER GYNT
PS14 Chairs: Anja Pinborg (DK), Thomas Brodin (SE)

Reproductive technology: from basics to baby
- 1330–1355: The oocyte, the embryo and the child: epigenetic aspects of assisted reproduction – Arne Sunde (NO)
- 1355–1410: eSET and multiple births – trends in Nordic countries – Aila Tiitinen (FI)
- 1430–1445: When is the ovary no good? Prediction of ovarian reserve – Tom Tanbo (NO)
- 1445–1500: Fetal and maternal outcome after assisted reproduction in the Nordic countries. NFOG Collaborative project – Anja Pinborg (DK)

13.30–15.00 AUDITORIUM | PARALLEL SESSION 15 | SCENE
PS15 Chairs: Anette Tønnes Pedersen (DK), Maija Jakobsson (FI)

Free oral communications 4. Obstetrics: labour
- 1330–1340: The prevalence of fecal incontinence in singleton primiparae 20 years after vaginal or caesarean delivery – Maria Gyhagen (SE)
- 1340–1350: Does mode of second delivery after obstetric anal sphincter rupture influence the risk of anal incontinence? – Hanna Jangö (DK)
- 1350–1400: The rate of the 3rd and 4th degree vaginal lacerations in the Finnish obstetric units as a patient safety indicator – Aura Keino (FI)
- 1400–1410: Epsiotomy characteristics and risk for anal sphincter injuries: a case-control study – Mona Stedenfeldt (NO)
- 1410–1420: Is the operative delivery rate in low-risk women dependent on birth care level? A randomised controlled trial – Stine Bernitz (NO)
- 1430–1440: Nordic Obstetric Surveillance Study (NOSS). Preliminary results and perspectives – Lotte Colmorn (Nordic)
- 1440–1450: Severe maternal morbidity “near miss” in Sweden- are there differences between women from high-income and low-income countries? – Åsa Wahlberg (SE)
- 1450–1500: Maternal mortality in the Nordic countries The establishment of a Nordic maternal mortality collaboration – Birgit Bødker (Nordic)

15.00–15.30 COFFEE BREAK
15.30–17.00  AUDITORIUM | PARALLEL SESSION 16 | CONCERT HALL
PS16 Chairs: Janusz Marcickiewicz (SE), Helga Salvesen (NO)

Living beyond cancer therapy – time for a change?
- 1600–1630: Follow up after cancer treatment, how does it influence quality of life? – Ingvild Vistad (NO)
- 1630–1700: Value of CA125 in ovarian cancer follow-up – what is the evidence? – Gordon Rustin (UK)

15.30–17.00  AUDITORIUM | PARALLEL SESSION 17 | PEER GYNT
PS08 Chairs: Ole-Erik Iversen (NO), Kresten Rubeck Petersen (DK)

Abortion practice in transition from surgery to medication
- 1530–1600: The Nordic approach – Kristina Gemzell-Danielsson (SE)
- 1600–1615: Abortion and risk of mental disorders – Øjvind Lidegaard (DK)
- 1615–1630: Medical abortion at 9–12 weeks – Mette Løkeland (NO)
- 1630–1645: Abortion in minors – Oskari Heikinheimo (FI)
- 1645–1700: Discussion

15.30–17.00  AUDITORIUM | PARALLEL SESSION 18 | SCENE
PS18 Chairs: Marie Bixo (SE)

NFOG session: Continuing professional development
- How do we move on from CME and what can we learn from each other?
- CPD is more than CME – Kerstin Nilsson (SE)
- Medical Simulation – what’s on the horizon? – Christian Rifbjerg (DK)
- Does training abroad support professional development? – Ragnheiður Inga Bjarnadóttir (IS)
- How does EBCOG promote continuing education? – Rolf Kirschner (NO)
- CME/CPD – experience from Finland and future perspectives in Europe – Hannu Halila (FI)

17.00–18.00  ORAL POSTER SESSION 3
17.00–18.00  ORAL POSTER SESSION 4
19.00 NFOG GALA DINNER GRIEGHALLEN
Tuesday June 19

09.00–10.15  AUDITORIUM | PLENARY 3 | CONCERT HALL

PL03  Charis: Torvid Kiserud (NO)

**Maternal health in global perspective**
- 0900–0930: Reproductive changes over generations – Thorkild Tylleskjær (NO)
- 0930–0945: Reproduction: evolutionary and lifecourse perspectives – Mark Hanson (UK)

10.15–11.00  COFFEE BREAK

11.00–12.30  AUDITORIUM | PARALLEL SESSION 19 | PEER GYNT

PS19  Chairs: Charlotte Wilken Jenssen (DK), Jorma Paavonen (FI)

**Infections in gynecology – the difficult issues**
- 1100–1120: The changing epidemiology of STD – diagnostic and therapeutic challenges – Anne Olaug Olsen (NO)
- 1120–1125: Discussion
- 1125–1145: Recurrent vulvovaginal candidiasis, vulvodynia and emotion – what is the connection? – Sophia Ehtrström (SE)
- 1145–1150: Discussion
- 1150–1220: The management of pelvic abscess – Seth Granberg (NO)
- 1220–1230: Discussion

11.00–12.30  AUDITORIUM | PARALLEL SESSION 20 | SCENE

PS20  Chairs: Ove Axelsson (SE), Hulda Hjartardottir (IS)

**Alloimmunisation in pregnancy**
- 1100–1120: Foetal and neonatal alloimmune thrombocytopenia (FNAIT) – immunological basis and prevention – Heidi Tiller (NO)
- 1120–1130: FNAIT in pregnancy and intracranial haemorrhage – Magnus Westgren (SE)
- 1140–1200: Rh-immunisation; a prenatal strategy of prophylaxis – Finn Stener Jørgensen (DK)
- 1200–1220: Anti-D prophylaxis in early pregnancy and abortion–what is the evidence? – Susanna Sainio (FI)
- 1220–1230: Discussion

11.00–12.30  AUDITORIUM | PARALLEL SESSION 21 | CONCERT HALL

PS21  Chairs: Alexander Smarason (IS), Gøran Berg (SE)

**Nordic thesis session NFOG**

1230–1300  CLOSING CEREMONY

Awards | Presentation of the next congress | Closing remarks
POSTER SESSION

**NOTE:** Abstracts are numbered alphabetically by presenting authors' last name, but physically the posters are grouped by topic. So if you look for the poster of abstract 1, you will find the designation PoOb 46 at abstract 1 in this book - that is the poster position PoOb 46. If you stand by the poster, and would like to find the abstract number in this book, use the table below.

Posters will be on display during the whole congress. There are 172 poster presentations, 62 PoGy and 110 PoOb. Abstracts are listed from page 95.

**IMPORTANT:** A selection of posters will be chosen for 4 oral poster sessions. In each session 12 posters will be presented for 2 minutes plus 1 minute for discussion (maximum of three slides). Selected posters will be notified by a note on the poster. Poster presenters, please look for a note on your poster. The two parallel oral poster sessions will take place by the posters on the first floor.

**Oral poster sessions:**

- Obstetrics, pregnancy: Sunday at 1700–1800 in the area A
- Obstetrics, labour: Monday at 1700–1800 in the area A
- Gynecology, surgery, oncology: Sunday at 1700–1800 in the area B
- Gynecology, general: Monday at 1700–1800 in the area B
REGISTRATION

Registration fee on site
- Regular participant: 5650 NOK
- Trainee*/Student*/Nurse*/Midwife*: 4300 NOK
- Accompanying person: 1200 NOK
- Pre-Congress workshop**: 500 NOK

* Registration form must be accompanied by a letter from the head of the department, confirming their status. The letter should be printed on department letterhead and sent to CIC.
**Pre-Congress workshops are only available for Congress participants.

Registration fee includes
- Participation in scientific sessions
- Congress bag
- Program and abstract book
- Invitation to the Get-Together Reception
- Coffee breaks, lunch
- NFOG Gala dinner at reduced price

Entitlements for accompanying person
- Invitation to the Get-Together Reception
- Gala dinner at reduced price
- Sightseeing tour of Bergen

Certificate of attendance
Will be issued to all delegates.

Registration cancellation and refund
Credit cannot be given for unattended events, late arrivals or early departure. All refunds will only be processed after the Congress.

Liability
The Congress Secretariat and Organizers cannot accept liability for personal accidents, nor loss of or damage to private property of participants, either during or directly arising from the Congress. Participants should make their own arrangements with respect to health and travel insurance.

Congress language
The official language of the Congress is English. There will be no translation services available.

Name badges
The badge will serve as the entrance ticket to the Congress area and to various social events. If the badge is lost, please contact the registration desk. A fee will be charged for each new badge (50 NOK)
VISITING BERGEN

Bergen is Norway’s second largest city, with the facilities of a large city, and the charm and atmosphere of a small city, with its wooden houses and narrow cobbled streets. Bryggen is the old trading wharf that still looks the same as it did when the town was in its infancy. Bryggen is the face of Bergen. But more than that – Bryggen is a part of our collective cultural heritage and has its place on UNESCO’s World Heritage List. Therefore Bergen is classified as a World Heritage City. Bergen is surrounded by one of the world’s greatest tourist attractions, the Norwegian fjords. The city is the Gateway to these natural masterpieces, which continue to amaze the Norwegian people, let alone our international visitors. The Norwegian fjords have now been included on UNESCO’s World Heritage List.

Transportation

The Bergen city centre is compact and the Congress venue will be within walking distance from all the congress hotels.

Flesland airport – City centre

Airport busses run every 15 minutes and will take you directly to the City centre and stop close to or in front of most hotels. The fare is 100 NOK one way or 160 NOK return. The travel time is approximately 25 minutes. The typical taxi fare between the airport and city centre would be approximately 350 NOK.

Voltage and plugs

In Norway the electricity voltage is 220 V and plugs are European standard with two round pins.

Weather and dress

Bergen is situated at the west coast of Norway with a temperate climate with the average ranging from 8–14ºC. Though June tends to be sunny Bergen is known for its rain, so you should bring an umbrella or a light rain coat.

Social Programme

SATURDAY 16 JUNE
18.00–20.00

Get-together in Grieghallen

We are proud to have you all in Bergen and would be happy to see you in Grieghallen at the welcome reception. Take the opportunity to have some refreshments and talk to your colleagues on the first day of the congress. Price: included for registered participants and accompanying persons.

Speakers Dinner

3-course dinner for invited speakers at Fløyen. Please meet at the Fløyen funicular station. The Funicular will leave at 18.30 and 18.45.

CIC will hand out return tickets to everybody who brings their badge. So please remember to bring your badge.

SUNDAY 17 JUNE
EVENING TO AROUND MIDNIGHT

Walk across “Vidden”

A great opportunity for the more fit congress participants.

The walk is fairly demanding, 12–14 km walk along the mountain ridge from Ulriken to Fløyen (total ascent 250 meter, descent 800 meters. Meeting point outside the main entrance of Grieghallen at 19.00 where everybody will be transported to the
lower station of the Ulriken. It is free of charge except 80 NOK for the cable car.

After arriving at the top station (607 m) you will need 3.5–4h to walk across “Vidden” to Mt. Fløien and then down to the city centre and your hotel. Registration for the trip onsite – but remember to bring sturdy shoes and appropriate clothing. It might be cold, and most of the walk is on uneven paths in mountainous terrain. But beautiful, with a great view of both the surrounding mountains and the ocean in the west – with sunset around 23.09h...

Make sure to bring water and something to eat. Local colleagues will act as tour guides. This mountain walk will only be implemented if weather conditions are reasonable.

**Walking tour**

at 15.00 (2 hours). The Warf and the Hanseatic, including a visit to the Hanseatic Museum.

Please meet at the main entrance of Grieghallen.

**MONDAY 18 JUNE**

19.00–01.00

**NFOG Gala Dinner in Grieghallen**

Grieghallen is our home during this Congress and with all its space, light and wide windows offer a special illumination and a beautiful atmosphere for our Gala dinner. To nurture not only our bodies but also our souls Fliflet/Hamre will take us on a musical excursion (read more below). After dinner there will be a dance party, with the Bergen band Lübeck.

Price: For registered participants and accompanying person 825 NOK

The price includes a welcome drink and a 3-course dinner with 3 gl wine or soft drinks.

**FLIFLET/HAMRE**

– from Norway and beyond...

Fliflet/Hamre is an amazing, eclectic duo from Bergen, the old, Hanseatic port in the middle of Western Norway’s fjord country. One is a folk musician, the other an explorer of rhythms.

Together, Gabriel Fliflet (accordion, vocals) and Ole Hamre (drum set, percussion, hamrophone, melodica) have created a very special musical style. They call themselves The World’s Smallest Total Orchestra.

Like Edvard Grieg and other Bergen composers and musicians, they enjoy stealing a good traditional folk tune – and then turning it into something new. The roots of the melodies can be found in their native Norway as well as further afield.

Their music is full of vitality and contrasts. It is complex beyond some inspectors’ wildest dreams – but catchy and accessible. Fliflet/Hamre have created a musical landscape with a huge variety of smells and colours, but there is still an unmistakable wholeness about it. Maybe that’s why people with very different musical preferences find it familiar – and yet refreshingly different.

Formed in 1991, Fliflet/Hamre has achieved a successful career utilizing an unconventional musical approach. Applauded by music critics, they’ve been invited to all the major jazz and folk music festivals in Norway, and have played rock, blues and classical events as well. The two friends have even had their own national TV show.

Gabriel Fliflet and Ole Hamre enjoy playing together, and are always searching for ways to create art and fun at the same time! In order to succeed, they have to be deadly serious...
INFORMATION TO SPEAKERS
Presentations should be handed to the technician in the Preview room. The preview room will be next to the main entrance. The presentations should be delivered at least two hours before your session starts.

INFORMATION TO ORAL PRESENTATION OF POSTER
A selection of posters will be chosen for oral poster presentation and in this case you will be asked to do a short oral presentation (2 minutes plus 1 minute for discussion) using a maximum of three slides. We advise all those selected for poster presentation to prepare such a short oral presentation and bring a file in case your poster is selected.

You will be notified that you are selected for oral poster presentation by a note on your poster – please look out for it! When you are scheduled for your presentation will also be on this note, but the possible hours are Sunday 17–18 or Monday at 17–18.

COMMERCIAL EXHIBITION
Exhibition opening hours
Sunday June 17 08.30–16.00
Monday June 18 08.30–16.00
Tuesday June 19 08.30–12.00

Sponsors

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BRONZE:

EXHIBITION:

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Intuitive Surgical
Janssen Cilag
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UpViser AS
Vitaflö Scandinavia AB
Zonare ultralyd/FUJIFILM
Endotech
Sanofi Pasteur MSD
Surgical Science
Nordic ApS
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<td>The impact of practical skills in vaginal delivery in modern obstetrics</td>
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<td>PS6 Personalized treatment strategies in endometrial carcinoma?</td>
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<td>PS8 Life time perspective in the treatment of endometriosis</td>
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<td>Oral poster session 1 + 2</td>
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Parallel session 1 – Cesarean section
- the problem or the problem solver in modern obstetrics?

PS01.1

Perinatal mortality – a quality parameter in modern obstetrics
No abstract submitted

PS01.2

Does the method of intrapartum monitoring matter in vaginal breech delivery?
No abstract submitted

PS01.3

Maternal morbidity depending on the mode of delivery

Nanneli Pallasmaa (1)

(1) Turku University Central Hospital, Turku, Finland

All deliveries contain a risk for maternal complications. The magnitude of the risk and typical complications vary in different modes of delivery.

Minor complications in deliveries are not registered as reliably as the more severe ones, and register based studies on minor delivery complications are not very reliable. There are not many prospective studies comparing complications in different modes of delivery. Most types of complications are reported more often in caesarean section (CS) than in vaginal delivery (VD) in most, but not all studies. The typical complications related to VDs are severe perineal tears.

Several studies show that risk for maternal death and severe complications is higher related to a CS than in VD. Still, many authorities and even obstetricians believe that caesarean section, especially a planned CS, is so safe today, that it can be performed on liberal indications, even without a medical indication.

Severe perineal tears are a feared complication in VDs. Their incidence varies widely in different countries and different hospitals. More important than the incidence on severe tears is the number of women suffering from anal incontinence. The undetected tears are the worst ones, as they are not repaired properly. It is important to improve the prevention, detection and repair of obstetric tears.
When evaluating the risks of different delivery modes, we must also consider the long time risks. CS causes several severe risks for future pregnancies (problems of placentation, risk for uterine rupture). These risks increase for every additional CS performed to an individual woman. The long time risk related to VDs is the risk for pelvic organ prolapse and incontinence —problems that can arise even after a planned CS, but are significantly more frequent after VD.

In a Finnish register based study we studied severe maternal complications (thromboembolic events, haemorrhage requiring hysterectomy or reoperation, septic infection and peritonitis, reoperation for infection, other reoperations, intestinal obstruction and uterine rupture related to different modes of delivery). Year 2002, the incidence of severe complications was 7.6 per 1000 deliveries. The incidence was 27.2/1000 in emergency CS, 12.1/1000 in planned CS, 8.0/1000 in instrumental VD and 5.2/1000 in spontaneous VD.

When planning a delivery and comparing the risks, we need to realise that an attempted VD can end up in instrumental VD or an emergency CS. This increases the risk for complications compared to a spontaneous VD. When we compared planned CS with attempted VD in our study, planned CS contained twice as much severe risks than an attempt of VD. The relation between the risks of a planned CS and an attempted VD is determined by the proportion of attempted VDs that end up in an operational delivery and by how skilled we are in managing operational deliveries.

PS01.4

When does active pushing get dangerous for the fetus?

Branka M.Yli (1)
(1) Oslo University Hospital, Oslo, Norway

Background: Active pushing time (PT) begins with the onset of maternal pushing. It is characterized by frequent and prolonged uterine contractions as well as maternal bearing down efforts. With bearing down efforts the woman increases her intra-abdominal pressure, which usually reaches higher levels than the placental perfusion pressure. Therefore PT results in periods of diminished blood perfusion through the placenta giving a high risk of fetal acidosis. The international guidelines concerning the recommended length of PT differ.

Material and Methods: The study population consisted of 36,456 term labors. Material was taken from a three trials: a Swedish RCT on intrapartum monitoring, an EU fetal electrocardiogram trial and from Mölndal Hospital. After validation for acid–base samples and PT 22,812 cases were accepted for analysis. The effect of PT on neonatal outcome were examined.

Results: The median PT was 36 min for P0 and 13 min for P≥1 (p<0.001). After adjustments for parity, epidural, labor induction, birthweight, and gender, pushing for 15–29 min (n=6,589) relative to pushing for <15 min (n=7,264) increased the OR of a cord artery pH of <7.00 to 3.20 (95% CI=1.7–6.0), and that of a BDecf of >12 mmol/l to 3.5 (95% CI=1.3–9.0). The group with cord artery pH<7.00, had a longer PT than the group with pH ≥ 7.00, median (5th–95th percentile) 38(9–107) min vs. 23(5–87) min, p<0.001. The probability of a spontaneous vaginal delivery decreased significantly with every subsequent increase of 30 min in PT (p<0.05).

Conclusion: The risks of severe acidemia, metabolic acidosis and deteriorated neonatal outcome gradually increased with the duration of PT (longer than 15 min), while the probability of a spontaneous vaginal delivery decreased with the duration of pushing. Active physiological evaluation of the labor progress together with fetal monitoring during PT is needed, irrespective of guideline thresholds.
Parallel session 2 – Perinatal mortality – low, lower, lowest. Where is the limit?

**PS02.1**

Perinatal mortality – a quality parameter in modern obstetrics

No abstract submitted

**PS02.2**

How low can we go? Perinatal mortality in the Nordic countries

Ragnheidur Bjarnadóttir (1)
(1) National University Hospital, Reykjavik, Iceland

Perinatal mortality rates (PNMR) in the Nordic countries have decreased markedly during the last decades and are now among the lowest in the world. I will present Nordic perinatal data from NOMBIR and compare with data from Canada. In an ongoing collaboration between the Nordic countries and Canada, stillbirths and early neonatal deaths are not only classified by cause, but also by the background variables of birthweight and gestational age. PNMR analysed by these variables provides information on avoidable mortality and quality of perinatal care. Differences in policies and practices of screening for congenital anomalies also affect fetal mortality rates.

The focus will be on differences in rates of prematurity/low birthweight and PMN between the Nordic countries and Canada and to determine if there is a reverse correlation between rates of PNM for non-malformed infants at term/near term (>2500g) and CS rates in the countries.

**PS02.3**

Antenatal and obstetric care – a story of success

Anne Eskild (1,2)
(1) Department of Gynecology and Obstetrics Akershus University Hospital, Lørenskog, Norway
(2) University of Oslo, Lørenskog, Norway

**Aims:** We studied:

2. The impact of maternal age on gestational age specific fetal mortality
3. The impact of offspring sex on mortality
4. The association of maternal education with age specific fetal and infant death
5. Changes in the association of maternal education with cesarean delivery

**Material and Methods:** We used Norwegian population registries, and individual data were linked by personal identification numbers.

- The Medical Birth Registry of Norway
- The Norwegian Central Person Registry
- The Norwegian Registry of Education
Results

1. Fetal mortality after pregnancy week 22 has declined with 70% in Norway 1967–2008. In weeks 16–22, there has been an increase in rate. Now fetal mortality after week 37 is at the same level as in weeks 16–22.

2. Overall the risk of fetal death increased by maternal age, and the relative increase in risk associated with maternal age was highest in postterm pregnancies. The association of maternal age with fetal death at and after term has declined in recent years.

3. Male offspring have increased risk of death, and during the last 40 years more male than female offspring deaths have been prevented.

4. Offspring of women with low education have increased risk of death. However at term, there is no increased risk of offspring death associated with maternal education.

5. There is no social differences, as measured in level of maternal education, in being delivered by cesarean section.

Conclusion: There has been considerable reduction in fetal deaths during 40 years. The greatest decline has been in term pregnancies, and at term there no social differences in fetal mortality. This achievement is probably due the introduction of modern technology for fetal diagnostics and to the effort of competent obstetricians.

PS02.4

What is the price of proactive management in post term pregnancies?

Nils-Halvdan Morken, MD, PhD (1,2)
(1) Department of Obstetrics and Gynecology, Haukeland University Hospital
(2) Department of Public Health and Primary Health Care, University of Bergen, Bergen, Norway

Gestational age is the most important determinant of perinatal outcome. Post-term pregnancy has been defined by the World Health Organization and the International Federation in Obstetrics and Gynecology as a pregnancy that proceeds to and beyond 42 weeks or 294 days of gestation and the cause of post-term pregnancy is unknown. Its proportion varies between countries, regions and hospitals and is influenced by such factors as; the method of gestational age determination, induction policy, obesity and ethnicity. Post-term pregnancy and delivery has been associated with numerous adverse perinatal outcomes.

A proactive management to avoid post-term pregnancies and its related complications has been advocated. What is the documentation for this change? Will this aggressive induction policy eradicate post-term pregnancies and eliminate its associated risk? Is this simply a great achievement or will we be paying a price? Are there possible effects on caesarean section proportions, fetal complications, maternal complications, fetal surveillance and health economy?
**PS03.1**

**Increasing Minimally Invasive Hysterectomy – Effects on Cost and Complications**

**Gudrun Jonsdottir** (1,3), **Selena Jorgensen** (2), **Sarah Cohen** (1), **Kelly Wright** (1), **Neel Shah** (1), **Niraj Chavan** (1), **Jon Einarsson** (1)

(1) Brigham and Women’s Hospital, Boston, USA  
(2) Harvard Medical School, Boston, USA  
(3) University of Iceland, Reykjavik, Iceland

**Background:** In the three-year period under study, the main mode of access for hysterectomy changed from abdominal to laparoscopic. The objective is to evaluate the effects of this shift on perioperative outcomes and the cost of hysterectomies performed at Brigham and Women’s Hospital in 2006 as compared to 2009.

**Methods:** A retrospective analysis was performed on 2,133 women (aged 17 to 92) who underwent hysterectomy by any method in 2006 and 2009 at an urban academic tertiary care center performed by a diverse group of gynecologists. Operative cost data was gathered from the Brigham and Women’s Hospital billing system and the remainder of data was extracted from the patients’ medical records.

**Results:** A total of 2,130 patients were included. The total number of hysterectomies performed at our institution remained stable (1,054 procedures in 2006 versus 1,079 in 2009) but the relative proportions of abdominal and laparoscopic cases changed markedly during this three-year period (64.7% to 35.8% for abdominal, p<0.0001 and 17.7% to 46% for laparoscopic cases, p=0.0001). The rate of intraoperative complications (organ injury and/or estimated blood loss ≥ 1000 ml) and minor postoperative complications decreased significantly between 2006 and 2009 (7.2% to 4%, p=0.0012 and 18% to 5.7%, p<0.0001, respectively). Operative costs increased significantly from 2006 to 2009 for all procedures apart from robotic hysterectomy.

**Conclusion:** A change in the mode of access from majority abdominal hysterectomy to majority minimally invasive hysterectomy was accompanied by a significant decrease in procedure-related complications.  

LEVEL OF EVIDENCE: II-c.

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**PS03.2**

**The Efficiency of Virtual Reality Simulation Training in Laparoscopy: A Systematic Review of Randomized Trials**

**Christian Rifbjerg** (1), **Bent Ottesen** (2), **Jeanett Oestergaard** (2), **Jette Soerensen** (2)

(1) Hillerød Hospital, Hillerød, Denmark  
(2) Rigshospitalet, Copenhagen, Denmark

**Background:** Virtual reality (VR) simulators for surgical training might possess the properties needed for basic training in laparoscopy. Evidence of VR training efficiency has been investigated in research of various quality over the past decade.

**Objective:** To review the randomized controlled trials regarding the efficiency of VR training compared to traditional or no training, with outcome measured on surgical performance in humans or animals.

**Data sources:** In June 2011 Medline, Embase, the Cochrane Central Register of Controlled Trials web of science, Google Scholar were searched using the following MeSH terms: Laparoscopy/standards Computing Methodologies, Programmed Instruction as topic, Surgical Procedures, Operative, and the following free text terms: Virtual real* OR simulat* AND Laparoscop* OR train* Limits: Controlled trials.

**Study Eligibility Criteria:** All randomized controlled trials investigating the effect of virtual reality training in laparoscopy, with outcome measured on the surgical performance. A total of 98 studies were screened, 26 selected and 12 studies included, with a total of 241 participants.
Results: Operation time was reduced from 17 to 50% by virtual reality simulator training, depending on simulator type and training principle. Proficiency based training appear superior to training based on fixed time or fixed number of repetitions. Simulators offering training of complete operation procedures come out more efficient than simulators offering only basic skills training.

Conclusions: Skills in laparoscopic surgery can be increased by proficiency based procedural virtual reality simulator training. There is substantial evidence (grade IA – IIB) to support the use of virtual reality simulators in laparoscopic training.

PS03.3

Long-term well-being after surgical or conservative treatment for severe vulvar vestibulitis syndrome

Jorma Paavonen (1), Leila Unkila-Kallio (1), Päivi Tommola (1)
Helsinki University Central Hospital, Helsinki, Finland

Background: Vulvar vestibulitis syndrome (VVS), also called localized provoked vulvodynia, causes dyspareunia and ruins the sexual life of many young women. Etiopathogenesis is unknown and treatment is challenging. Many patients benefit from conservative treatments, i.e. pelvic floor muscle biofeedback therapy, cognitive behavioral therapy, topical anesthetics, topical or systemic neuropathic pain medications. Surgery, i.e. vestibulectomy is usually offered to patients refractory to conservative management. Our objective was to compare long-term well-being of women who needed surgery to that of women who did not need surgery. We also wanted to identify factors predicting treatment response.

Material and Methods: An observational case-control study of sixty-six women diagnosed with severe vulvar vestibulitis and treated initially by conservative management during 1994–2005. Thirty-nine patients did not respond and underwent posterior vestibulectomy (surgery group) and 27 were managed without surgery (conservative treatment group). Baseline patient characteristics, degree of dyspareunia, and details of management were collected from hospital charts. At the follow-up visit current dyspareunia, sexual well-being, somatic and mental health, and social support were analyzed and vestibular tenderness was measured. The main outcome measures were visual analogue scale (VAS) for dyspareunia, sexual well-being, vestibular tenderness, and overall patient satisfaction.

Results: Dyspareunia decreased significantly in both groups. VAS decreased 66.7% in the surgery group and 78.1% in the conservative treatment group, (p=0.407). Posterior swab-touch test was negative more often after vestibulectomy. Long-term sexual well-being did not differ between the two groups. Overall, 89% of the patients in both groups were satisfied with the treatment. Patients with atopic skin problems were less likely to need surgery (OR 0.2; CI95% 0.1–0.7).

Conclusion: Patients with severe VVS who do not respond to conservative management achieve satisfactory long-term well-being and decrease of dyspareunia by posterior vestibulectomy. The response is comparable to that achieved by conservative management.
Ps03.4

Pelvic organ prolapse surgery in Denmark from 1977–2009

Ea Løwenstein (1), Bent Ottesen (2), Øjvind Lidegaard (2), Helga Gimbel (3)

(1) Nykøbing Falster Hospital, Nykøbing Falster, Denmark
(2) Gynaecological Clinic, Rigshospitalet, University of Copenhagen, Copenhagen, Denmark
(3) Department of Obstetrics and Gynecology, Nykøbing Falster Hospital, University of Copenhagen, Nykøbing Falster, Denmark

Background: Pelvic organ prolapse is a common problem among elderly women. An American study shows that the lifetime risk for POP surgery is 11%. However, despite the magnitude of the problem, the epidemiology of pelvic organ prolapse surgery is not very well described.

Aim: To describe the incidence of pelvic organ prolapse (POP) surgery in Denmark from 1977 to 2009 and to determine the incidence of recurrence for prolapse surgery.

Method: All the women who had a surgery for pelvic organ prolapse in Denmark through 1977–2009 are included in the study. Data are obtained from the Danish National Patient Register.

Results: The incidence rate declined from 1977 to 1999 and increased from 2000 to 2009. The age-stratified incidence rate changed age composition over time. In 1978 the incidence rate peaked in the age groups 35–39 years and 65–69 years with respectively 215,5 and 404,7 operations per 100.000 women. This is markedly different from 1998 and 2008 which shows a rising incidence with increasing age up to the age group 75–79 years. In 1980–1984 the number of primary operations performed for POP is 25.777. The total numbers of reoperations after 15 years, 20 years and 25 years follow-up are at 1.410 (5,5%), 1.632 (6,3%) and 1.816 (7,1%) operations respectively.

After 25 years follow-up the number of first reoperation for anterior, middle and posterior compartment prolapse are 734 (5,9%), 67 (3,1%) and 1015 (9,1%), respectively

Conclusion: Significantly more elderly are operated now than earlier while the incidence rate is increasing. The reoperation for surgical managed POP is lower in this study compared to other studies. This will definitely influence the attitude towards insertion of mesh as primary operation for POP.

Whether the change in incidence rate is due to change of attitude among surgeon regarding whom and when to operate or whether it reflects that the number of prolapse in women has increased is not possible to conclude from this investigation.

Ps03.5

Survival after postoperative radiotherapy for early stage endometrial carcinoma: The Oslo Study revisited with up to 43 years of follow-up

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Objectives: There is an ongoing debate regarding the benefit of radiation in patients with early stage endometrial carcinoma. These women survive for a long time and data on long-term risks conferred by radiation is scarce. Our study is to date the first randomized study with sufficient follow-up time to study long time survival and side effects of pelvic radiotherapy in early stage endometrial cancer.

Material: Between 1968 and 1974, 568 patients with endometrial cancer FIGO stage I primarily treated with abdominal hysterectomy and bilateral salpingo-oophorectomy were included in the study.
Methods: Patients were postoperatively randomized to receive either vaginal radium brachytherapy followed by
external pelvic radiotherapy 40 Gy (N=288) or not (N=280). The unique 11-digit identity number of Norwegian
citizens enabled individual linkage of study participants to the Registry of Statistics Norway in order to obtain
survival data. By the end of follow-up at 1st November, 2011, 45 (7.9%) patients were still alive. Analysis was
done by intention to treat. We used Cox proportional hazards model in order to estimate hazard ratios (HR) with
95% confidence intervals (95% CI). We also conducted analyses stratified by age groups.

Results: After median 21 (range 0–43.4) years of follow-up there was no significant difference in overall sur-
vival or relapse free survival between treatment arms with HR of 1.12 (95% CI: 0.95–1.33) and HR 0.88 (95%
CI: 0.55–1.40), respectively. Patients treated with external radiation had significantly lower risk of developing
locoregional relapse (p<0.001). However, women younger than 60 years at diagnosis had a significant poorer sur-
vival after external radiation (HR 1.36; 95% CI: 1.06–1.76). In this group of patients the risk of secondary cancer
was significantly increased (HR 1.9; 95% CI: 1.23–3.03).

Conclusions: We observed no survival benefit of external pelvic radiation in early stage endometrial carcinoma
despite of better locoregional control. In younger women, additional pelvic radiation decreased survival, proba-
dly due to increased risk for subsequent second neoplasms. Especially women younger than 60 years may be
counselled for the risk of second cancers associated with external radiation. These women may eventually benefit
from longer post treatment surveillance.

Establishment of a bioluminescence orthotopic mouse model of ovarian
carcinoma: Analysis of tumor growth and response to therapy

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Aim: To establish a human orthotopic ovarian carcinoma model in NOD-scid IL2rynull mice permitting non-invasive
surveillance of tumor growth, effect of surgery and adjuvant chemotherapy by bioluminescence (BLI) imaging.

Background: Ovarian cancer represents about 4% of all cancers in females. Despite development of surgical
techniques and chemotherapeutic regimens the overall survival rate is still less than 40%. New treatment modal-
ities should be employed to improve the survival. The predictive outcomes of pharmacological drugs tested in vari-
ous preclinical cancer models have been poor, and many drugs showing promising anti-tumor responses in animal
models have failed in clinical trials. A need for more reproducible and clinically relevant experimental models is
therefore a major obstacle for further progress. The use of human orthotopic cancer xenografts in mice, rather
than the more traditional subcutaneous xenografts, demonstrates promising results as they more closely mimic
the normal clinical course of a cancer disease.

Methods: Luciferase transfected human ovarian cancer cells, SKOV-3, were injected topically into the ovaries
of NOD-scid IL2rynull mice. Establishment and growth of tumor as well as development of metastasis were fol-
lowed with clinical parameters (condition and weight) and by the use of optical imaging with BLI. The animals were
divided into 4 different treatment arms (n = 6 per group): 1. Vehicle control; 2. Surgery alone (hysterectomy and
bilateral salpingectomy); 3. Carboplatin 1.2 mg/kg + paclitaxel 15 mg/kg Q2Wx3 and 4. Surgery followed by carbo-
platin + paclitaxel. Growth was evaluated by BLI. The Kaplan-Meier method and the log-rank Mantel-Cox statistics
were used to analyze survival data. The toxic effects of the chemotherapeutics were assessed in forehand and
maximum tolerated doses were calculated. Animals were sacrificed when moribund as defined by institutional guidelines and tumors excised for ex vivo analysis. Tumor tissue was formalin-fixed and typified by histology analysis.

**Results:** All mice (n=24) developed multicystic solid malignant tumors. Tumor cells also disseminated into the peritoneal cavity and ascitic fluid was formed. The tumors were classified as poorly (high grade) differentiated (serous) carcinoma of the ovary. The BLI signals correlated with the tumor load. Carboplatin 12 mg/kg combined with paclitaxel 15 mg/kg were well tolerated with no significant loss of weights. Kaplan-Meyer analysis showed improved median survival of mice treated with surgery and chemotherapeutic (13.5 weeks, p <0.01), surgery alone (12.0 weeks, p < 0.01), chemotherapeutic alone (11.0 weeks, p < 0.05) compared with no treatment (5.5 weeks).

**Conclusion:** We have developed an orthotopic model of human ovarian cancer in mice that allows us to monitor tumor growth and evaluate the effect of treatment by in vivo BLI. The model will be used to evaluate the effect of new treatment modalities in ovarian cancer.

**PS03.7**

**Postmenopausal hormone therapy and the risk of ovarian cancer: A case control study from Finland**

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(2) Finnish Cancer Registry, Institute for Statistical and Epidemiological Cancer Research, Helsinki, Finland

The purpose was to estimate associations between different postmenopausal hormone therapy (HT) regimens and the risk of ovarian cancer taking into account stage and histology beside factors like parity, age at births and hysterectomy.

All Finnish women aged 50–92 diagnosed with ovarian cancer (n=3,958) during 1995–2007 were collected and. each case was matched with three healthy controls (n= 11,325) with respect to age and a place of residence. Finnish Cancer Registry and Finnish National Population Register provided the data for cases and controls, respectively. Data on HT use were received from the national medical reimbursement register and data on oophorectomies and hysterectomies from hospital care register. The results were presented as estimated relative risks with their 95% confidence intervals as approximated by odds produced by the fitted model.

Long term use of sequential estradiol-progestin therapy (EPT) was associated with an increase in ovarian cancer risk (OR 1.35, 95% CI 1.12–1.63). Estradiol-only therapy (ET) use ≥ 5 years was linked with borderline non-significant increase in ovarian cancer risk (1.15; 0.99–1.32). Sequential EPT and ET use ≥5 years were accompanied with increases in the risks of serous and endometrioid subtypes whereas risk of mucinous cancer was decreased. Continuous EPT, tibolone or estradiol+levonorgestrel releasing intrauterine system did not significantly affect ovarian cancer risk. The results didn’t change substantially after stratification by stage.

As conclusion, long-term use of sequential EPT is associated with an increased risk of ovarian cancer. Various HT regimens have different effects on ovarian cancer risk and the effects may vary in different histologies.
Neoadjuvant chemotherapy as first-line treatment of Danish patients with advanced ovarian cancer: Major regional differences

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Background: The treatment of patients with advanced ovarian cancer is still a topic of debate. The traditional treatment consists of primary debulking surgery (PDS) and adjuvant platinum- and taxane-based chemotherapy. Alternatively, patients can be treated with neoadjuvant chemotherapy (NACT) followed by interval debulking surgery and post-operative chemotherapy. Some authors argue that the latter approach has potential benefits since it causes less extensive surgery, fewer post-operative complications, shorter admission to the hospital, and an identical survival rate when compared to patients treated with PDS. Others argue that patients treated with NACT have impaired survival when compared to patients treated with PDS, and therefore, NACT cannot be regarded as an equal substitute for PDS. The aim of this study was to investigate the use of NACT in the treatment of patients with stage IIIIC and IV ovarian cancer in Denmark and to compare the use of NACT among the five national gynecological-oncological tertiary centers.

Methods: The study is based on validated data from the Danish Gynecological Cancer Database. All patients with an active treatment for primary cancer in the ovaries, Fallopian tubes, or peritoneum between 2005 and 2010 in one of the five referral centers (Copenhagen University Hospitals Rigshospitalet and Herlev, Odense University Hospital and Aarhus University Hospitals Skejby and Aalborg) were included. Patients with borderline tumors were excluded. Patients with an active treatment for primary cancer in the ovaries, Fallopian tubes, or peritoneum between 2005 and 2010 in one of the five referral centers (Copenhagen University Hospitals Rigshospitalet and Herlev, Odense University Hospital and Aarhus University Hospitals Skejby and Aalborg) were included. Patients with borderline tumors were excluded.

Results: A total of 1,367 patients were included, of which 1,069 (78%) were treated with PDS and 298 were treated with NACT (22%). Patients treated with NACT had a worse Eastern Cooperative Oncology Group performance status (p<0.001) and ASA score (p<0.001). There was no difference between treatments in regard to BMI, stage IV disease or patients with no comorbidity. There was a trend toward a younger population in the group of PDS-treated patients, but this difference was not significant (p=0.063). From 2005 to 2007, NACT was used in 11% (63/572) of patients treated for advanced ovarian cancer, which between 2008 and 2010 had risen to 30% (235/795) of patients (p<0.00001). In the last year of registration, the use of NACT was 35% (101/290). Between the five centers, the proportion of patients with advanced ovarian cancer who were treated with NACT ranged from 6% to 41% in the entire study period (p<0.00001). From 2005 to 2007, the proportion of NACT-treated patients ranged from 1% to 31% (p<0.00001); and from 2008 to 2010, the use of NACT ranged from 10% to 48% (p<0.00001). In the last year of registration, the proportion of NACT-treated patients ranged from 9% to 48% (p<0.00001).

Conclusion: The use of NACT has tripled from 2005 to 2010. Between the five referral centers the variability in use of NACT is substantial, which calls for a more uniform agreement on treatment principles and evaluation.
**PS03.9**

**Quality of sleep the night after surgery, does it matter?**

*A prospective cohort study of women undergoing fast track abdominal hysterectomy.*

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**Background:** The purpose of fast track programs in surgery is to enhance postoperative recovery. One of the most prevalent postoperative symptoms following hysterectomy is disturbed sleep. Postoperative sleep disturbances may affect mood resulting in decreased vigor and an increase in the subjective feeling of sleepiness and fatigue. Thus postoperative sleep disturbance may be an important factor for postoperative recovery and consequently an important issue to be considered in programs to enhance postoperative recovery. The aims of this study were to examine the impact of mode of anesthesia on perceived quality of sleep and to analyze the perceived quality of sleep in affecting recovery from surgery.

**Methods:** One-hundred eighty women scheduled for fast track abdominal hysterectomy for benign conditions were randomized to spinal anesthesia or general anesthesia; 162 women completed the trial; 82 allocated to spinal anesthesia and 80 to general anesthesia. Perceived quality of sleep after surgery was registered daily in a questionnaire. Quality of sleep was categorized as ‘Excellent’, ‘Neither well nor badly’ or ‘Badly’.

**Results:** Women in the general anesthesia group experienced significantly more often bad quality of sleep the night after surgery than the women who had spinal anesthesia. This was almost exclusively attributed to a significantly higher consumption of opioids postoperatively. Risk factors for bad quality of sleep during the first night postoperatively were: opioids; rescue anti-emetics; relative weight gain; summary score of postoperative symptoms; and stress coping capacity. Length of hospital stay was strongly associated with quality of sleep the first night postoperatively.

**Conclusion:** The quality of sleep the first night after abdominal hysterectomy is an important factor for recovery. In fast track it seems important to use anesthesia and multimodal analgesia reducing the need for opioids postoperatively and to use strategies that diminish other factors that may interfere negatively with sleep. Efforts to enhance quality of sleep postoperatively by means of preventive measures and treatment of sleep disturbances should be included in fast track programs.

**PS04 | 13.30–15.00**

**Parallel session 4 – The perineum in modern obstetrics – still a challenge?**

**PS04.1**

**The perineum in modern obstetrics – still a challenge?**

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There is still on-going controversy regarding the exact anatomy of the perineum and its functional role. I believe the perineum is similar to the hub of a bicycle wheel and any disruption of the spokes may affect function linked to the bowel, bladder and sexual function. Disruption of it attachment to the vaginal and rectovaginal fascia could also lead to the development of posterior compartment prolapse.

The length of the perineum varies in different ethnic groups and women with a shorter perineum are more vulnerable to anal sphincter trauma during vaginal delivery. This highlights the need for proper reconstruction of the perineum following obstetric trauma.
Prolonged second stage of labour, episiotomy, instrumental delivery especially forceps, persistent occipito-posterior position, large baby and shoulder dystocia are some of the known risk factors associated with disruption of the perineum.

What can be done to protect the perineum? Perineal massage during labour, use of warm packs and perineal support are some of the postulated techniques.

This lecture aims to provide further insight into current understanding of the importance of the perineum and attached structures.

**PS04.2**

**Epidemiological aspects of obstetric anal sphincter injuries in Norway**

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**Aims:** First, to validate the registration of Obstetric anal sphincter injuries (OASIS) in two Norwegian databases, the Medical Birth Registry of Norway (MBRN) and Patient Administration System (PAS). Secondly, we wanted to investigate risk factors and secular trends of OASIS in Norway in 1967–2004 and whether changes in risk factors over time could explain the trends. Thirdly, we wanted to study the obstetric history of a woman with OASIS in terms of recurrence risk, likelihood of having a subsequent delivery and mode of delivery. Finally, we wanted to assess possible familial aggregation of OASIS among relatives.

**Methods:** In paper I, data on OASIS cases occurring at Haukeland University Hospital during 1990–92 and 2000–02 were derived from PAS and MBRN. The registration of OASIS was validated by comparing these two registries with patient hospital records as the gold standard. Papers II-IV: population-based cohort studies based on data from MBRN 1967–2008.

**Results:** Sensitivity and specificity of the MBRN database to detect OASIS were 85.3% and 99.5% in 1990–92, 91.8% and 99.7% in 2000–02, respectively. The sensitivity and specificity of the PAS database were correspondingly 52.1% and 99.0% in 1990–92 and 84.6% and 98.5% in 2000–02.

Reported occurrence of OASIS in MBRN increased from 0.5% in 1967 to 4.1% in 2004. After adjustment for changes in demographic and other risk factors, the increase of OASIS persisted, although significantly reduced. OASIS were associated with maternal age 30 years or more, vaginal birth order 1, previous caesarean delivery, instrumental delivery, diabetes type 1, gestational diabetes, induction of labour by prostaglandin, large maternity units, birth weight 3,500 g or more, head circumference 35 cm or more and African or Asian women’s country of birth. Only in birth order 1 with instrumental delivery, episiotomy seemed to protect perineum against OASIS.

Women with a history of OASIS in the first and the two first deliveries had four and tenfold increased risk of OASIS in the subsequent delivery, respectively. Recurrence of OASIS was high in large maternity units, in forceps delivery and with birth weight 3,500 g or more in the current delivery. The subsequent delivery rate was not different in women with and without previous OASIS, whereas women with previous OASIS were more often scheduled to caesarean delivery.

The risk of OASIS was increased two fold if a woman’s mother or sister had sustained OASIS and to a less extent if her partner’s mother or sister had sustained OASIS.
Conclusions: Validity of the registration of OASIS in MBRN is sufficiently high to justify epidemiological studies on OASIS based on data from this registry. The risk of OASIS increased noticeably in 1967–2004 in Norway. Changes in observed risk factors could only partially explain this increase. Women with a history of OASIS had a high recurrence risk in second and third delivery. Therefore, emphasis should be placed on counselling women after an initial OASIS. A history of OASIS had little or no impact on subsequent delivery rate. However, women with previous OASIS more frequently had planned caesarean delivery. Maternal and to a less extent paternal factors contribute to the risk of OASIS. The higher maternal than paternal recurrence of OASIS indicate maternal rather than paternal genetic susceptibility for OASIS.

PS04.3

OASIR, the Nordic experience

No abstract submitted

PS04.4

Functional ultrasound of the anal canal: the effect of pregnancy and childbirth

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Objectives: Normal anatomical and physiologic development of the anal canal during and after pregnancy is scarcely documented. Here we study the anal canal, its position and volumes during and after first time pregnancy.

Methods: Vaginal 3D ultrasound was used in a longitudinal study measuring anatomical structures in the anal canal during rest and squeeze in 23 nulliparous. The total volume of the anal canal, the anorectal curvature (ARC), the anovaginal angle (AVA) and the anal length were determined at 18, 28, and 36 weeks of pregnancy and three months postpartum.

Results: The total volume of the anal canal at rest increased from average 10.17 to 12.37 and 12.21 cm³ during pregnancy, p=0.001 and 0.010 comparing first with second and third measurements. For the anal length the corresponding results were 3.91, 4.07 and 4.21 cm, p=0.13 and 0.017. Postpartum they were 10.86 cm³ and 3.90 cm, p=0.10 and 0.70 compared to first measurement. No significant changes were observed for ARC and AVA during or after pregnancy. Compared to rest position, the anal length significantly increased when squeezing, p=0.007, 0.007, 0.022, 0.004 at the four time points, while no differences were observed for total volume. In mid-pregnancy the AVA significantly increased during squeeze, p=0.006 and 0.002 at weeks 18 and 28.

Conclusion: The length and total volume of the anal canal increased during first completed pregnancy. Voluntary squeezing elongated the anal canal and increased the angle compared with the direction of the vagina. The postpartum involution brought the conditions back to the level found at 18 weeks of pregnancy.
Functional ultrasound of the anal canal: the effect of pregnancy and childbirth

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OASR detection: Superficial inspection of the perineum is insufficient. Bidigital assessment of the perineal thickness is associated to the integrity of the anal sphincter complex (Shobeiri et al 2002). Bidigital assessment of the perineum and rectovaginal septum is a safe and reproducible aid in diagnosis. In a pilot-study of 245 consecutive vaginal births at the University hospital in Linköping, midwives were instructed to palpate every patient bidigitally after completed labor.

The midwives assessed the perineum <1 cm, between 1–2 cm and > 2 cm and documented their findings. They were to notify the doctor on call when the perineum felt thinner than 2 cm. Doctors had been instructed to assess the finding and perform ultrasound of the sphincters with the vaginal probe. One hundred and twenty-two, or 49% of the parturients had a documented bidigital examination. The perineum was found to be < 1 cm in 18 %, >1<2 cm in and thicker than 2 cm in 54%. 12 OASR were found, 2 total and 10 partial, giving an incidence of 5%. Two cases with injuries of the internal anal sphincter, with an intact external sphincter were identified with vaginal ultrasound directed towards the sphincters.

Isolated internal anal sphincter ruptures present a clinical entity outside the classification system first described by Uustal Fornell et al in 1996, later adopted by ICS and the RCOG. The internal anal sphincter can rarely be approximated in a secondary repair, as it retreats dorsally and becomes fibrotic over time.

Elusive as the IAS can be to the naked eye, it is very evident to the ultrasound. Endoanal ultrasound can be used postpartum (Uustal Fornell 1996) but is not on hand in delivery wards. Vaginal ultrasound equipment is available in most delivery wards and used routinely to measure the cervix in preterm delivery (Crane, 2008). In our study, all doctors were able to identify the dark ring of the IAS (see figure) after just looking at a brief instruction picture.

Suturing: OASR-suturing should be done in an operating theatre under the same conditions regarding anesthesia, competence, assistance and focus as any other reconstructive plastic surgery carrying a risk of severe disability in case of failure.

Since coloproctologists use overlap sutures for secondary sphincter repair, it has been proposed to give better results in primary repair as well. This has not been proven. The suture material has not been shown to matter to outcome. Delayed suture by coloproctologist does not improve results and the delay does not result in more infections (Nordenstam 2008). In most studies, suturing is performed by experienced specialists. How the techniques and suture materials perform in "everyones " hands may be different. Antibiotics should be used in all third and fourth degree tears.

The perineal body is the hub for the transverse perineal muscle tendons, the bulbocavernous muscle, the EAS insertion, the rectovaginal fascia and the puborectal muscle. It is always severed in OASR. Suturing the EAS should include reconstructing the perineal body as the thickness of the perineum serves as a proxy indicator of anal canal length (Zetterström 2002). The area-under-the-curve anal pressure in resting and squeeze is important for continence (Uustal Fornell 2003). The reconstruction of the the perineal hub function influences all aspects of pelvic floor function (Uustal Fornell 2005) and requires the same competence and care as the OASR repair.
Ps05.1

Endometrial cancer epidemiology

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In Norway 696 cases of corpus uteri cancer (ICD-10 code C54) were diagnosed in 2009, which represents about half of all 1558 gynecological cancers (ICD-10 codes 51–58) diagnosed in Norway in the same year. Corpus uteri cancer is the 5th most common cancer in Norway among women representing 5% of all incident cancer cases; the most common being breast cancer (22%), colon cancer (10%), lung and trachea cancer (9%), non-melanoma skin cancer (6%).

Corpus uteri cancer affects almost exclusively post menopausal women. Its incidence has been increasing steadily during the past 50 years in Norway. The cumulative risk of developing corpus uteri cancer by age 75 is 2.1% (estimates based on Norwegian incidence rates from 2005–2009). The age adjusted (standardization for the World population) incidence rate in 2009 was 9.5 per 100,000 women. However, the incidence rates per 100,000 women change dramatically with age: among women age: 60.4 for ages 55–59; 77.2 for ages 60–64; 96.9 for ages 65–69; 111.9 for ages 70–74; 104.3 for ages 75–79; 89.3 for ages 80–84; and 71.0 for ages 85 and above.

Age standardized mortality rates (standardization for the World population) are 1.7 per 100,000 women, and 95 women died of the disease in Norway in 2009. The five-year relative survival varies according to stage, and it has been improving since the 1970 for all stages. Corpus uteri cancer patients diagnosed with distant metastasis the 5 year survival was 14.6% in 1970–1974, but increased to 41.7 in 2005–2009. For patients with regional metastasis the 5 year survival was 34.5% in the 1970–1974 and increased to 74.8% in 2005–2009. For patients with localized disease, the 5 year survival increased from 82.2% in 1970–1974 to 92.8% in 2005–2009. Survival decreases with increasing age.

The number of people living with corpus uteri cancer in Norway (i.e. prevalent disease) by 31.12.2009 was 8660 (663 diagnosed less than 1 year before 31.12.2009; 2173 between 1–4 years; 1998 between 5–9 years, and 3826 after 10 or more years). As compared to 6501 women living with corpus uteri cancer in Norway in 31.12.1999, there was an increase of over 2000 women by 31.12.2009.

Thus, while corpus uteri cancer incidence is still increasing in Norway, mortality is decreasing and survival increasing, resulting in more patients living with a diagnosis of the disease.

Reference:
The cornerstone of treatment of endometrial cancer is total hysterectomy and bilateral salpingoophorectomy, together with staging procedures such as peritoneal cytology, pelvic and para-aortal lymphadenectomy and omentectomy in selected cases. The continuing debate as to whether to perform lymphadenectomy (LND) versus radiotherapy (RT) is still going on. The primary objectives for treatment should be to optimize outcomes through minimizing both overtreatment and undertreatment by identifying patients not requiring LND or RT and patients benefiting from one or both modalities.

During many years there was no consensus between different regions of Sweden as regards the implementation of the above. Differences were present not only in defining risk groups but even in the subsequent treatment as well. At the end of year 2008 a group consisting of the representants from every region was constituted in order to reach consensus about the recommendations of diagnosis, risk group definition, treatment and follow-up.

The group has decided to work upon

- Indications and extent of LND in early disease
- Principles of surgery, RT and chemotherapy
- Preoperative risk group definition
- Postoperative risk group definition

After thorough literature study we could conclude that there is no proven survival benefit with adjuvant RT, no proven survival benefit with LND, the combination of LND and RT results in the highest number of complications, LND is the strongest prognostic factor and should be used to select patients for adjuvant therapy and that laparoscopy has benefits over laparotomy for the treatment of early endometrial cancer.

We have agreed about following principles:

**Surgery**

1. Primary surgery is always recommended if the patient is medically operable
2. Laparoscopic hysterectomy as a first choice
3. Adequate hysterectomy, bilateral SOE, cytology
4. LND only in preoperative high risk group
5. Omentectomy in non-endometrioid tumours
6. Lymph-node “sampling” is an undefined procedure and is not recommended.
7. Adequate LND means more than 10 pelvic lymph-nodes and at least five para aortic nodes
8. Assessment of lymph-nodes peroperatively in all cases should be done and all grossly positive nodes should be removed
RT: Radical external pelvic RT with intrauterine brachytherapy should be applied only in medically inoperable patients.

Postoperative adjuvant RT shall not be given to low risk patients.

Postoperative adjuvant chemotherapy plus adjuvant RT in stage I or II should be given to high risk patients who did not undergo LND and to patients in stage III or IV.

Chemotherapy: Postoperative adjuvant chemotherapy should be given to adequately staged lymph-node negative patients in postoperative high risk group.

Postoperative adjuvant chemotherapy plus adjuvant RT should be given to no adequately staged patients in high risk group and to patients in advanced stage.

Our recommended risk group definition is as follows:
- Preoperative risk group (clinical stage I)
- High risk: non endometrioid type or FIGO-grade 3 or Non-diploid

Low risk: nothing of the above
- Post-operative risk groups - surgical stage I
- Postoperative low risk: Nothing of the following
- Postoperative intermediate risk: One of the following:
  Myometrieinvasion > 50% or FIGO-grad 3 or Non-diploid
- Postoperative high risk: non endometrioid type or endometrioid type with more then one of following risk factors: Myometrieinvasion > 50% and/or FIGO-grade 3 and/or non-diploid

PS05.4

New treatment strategies in endometrial cancer

Helga Salvesen (1)
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With lifetime risk among women of 2–3%, endometrial cancer is the most common pelvic gynaecologic malignancy in industrialized countries. Approximately 75% of cases are diagnosed at an early stage with tumour confined to the uterine corpus. Although most patients are cured by surgery alone, about 15–20% with no signs of locally advanced or metastatic disease at primary treatment recurs, with limited responsiveness to systemic therapy. In light of these recurrences, patients with localized endometrial cancer have 2 major needs: (1) adjuvant therapies that will reduce the recurrence rate, and (2) the ability to target these therapies to the patients most likely to recur. In addition, women with metastatic disease require more effective systemic therapy.

The most common basis for determining risk of recurrent disease has been classification of endometrial cancers into two subtypes. Type I, associated with good prognosis, accounts for the majority of cases and is associated with low stage and grade and endometrioid histology. In contrast, type II, is characterized by high stage, high grade and non-endometrioid histology and poor prognosis. However, the prognostic value of this distinction is limited, as up to 20% of type I endometrial cancers recur, while half of type II cancers do not. It is a paradox that despite the fact that several clinically validated prognostic markers are available in endometrial cancer, they are not yet systematically applied for treatment stratification. Also, recent studies have identified new potential targets for novel therapeutics in endometrial carcinomas, such as FGFR2 mutations, mTOR-PTEN changes and alterations in the PI3Kinase- and MYC signalling pathways. The current literature on epidemiology, aetiology, pathology, molecular alterations, staging, treatment and prognostic factors in endometrial cancer will be reviewed. Novel molecular markers will be presented in relation to a clinical case to illustrate how personalized therapy may be implemented for this large patient group in the future.
A new approach of prenatal care would calculate patient-specific risk for different pregnancy complications, such as fetal abnormalities, miscarriage, fetal death, preeclampsia or fetal growth restriction. The visits for each patient would be scheduled according to the patient-specific and disease-specific risks. Doppler ultrasound of different maternal and fetal vessels, together with maternal history, serum biochemical and biophysical markers contribute in the prediction of different adverse pregnancy outcomes.

**Prediction of chromosomal abnormalities**
Effective screening for chromosomal abnormalities is provided by a combination of maternal age, fetal nuchal translucency (NT) thickness and maternal serum PAPP-A and free β-hCG, with a detection rate of 90% for a false positive rate of 5%. The addition of other Doppler ultrasound markers such as ductus venosus flow, tricuspid regurgitation or hepatic artery flow can improve the detection rate up to 95% reducing the false positive rate (FPR) up to 2.5%.

**Prediction of structural abnormalities: cardiac defects**
The risk of congenital heart defects increases with NT measurement at 11–13 weeks and is higher in the presence of abnormal ductus venosus flow or tricuspid regurgitation. The combination of NT, ductus venosus and tricuspid flow could identify 50% of CHD with a FPR of 4%.

**Prediction of fetal loss**
Abnormal ductus venosus flow at 11–13 weeks doubles the risk of fetal loss across the pregnancy. This might be due to an increased cardiac afterload secondary to an increased placental resistance.

**Prediction of placental impairment: Preeclampsia, IUGR**
Preeclampsia (PE), which affects about 2% of the pregnancies, is a major cause of perinatal mortality and morbidity. More often early onset PE is associated with a higher incidence of placental impairment, fetal growth restriction (FGR), and maternal and fetal mortality and morbidity than late onset PE.

Uterine artery PI in normal pregnancies is affected by a series of maternal and fetal factors. After adjusting for these factors, uterine artery pulsatility index (PI) is converted into multiple of the median (MoM) of the normal pregnancies. Algorithms that combine maternal characteristics, biophysical (including uterine artery PI) and biochemical factors could potentially identify about 90, 80 and 60% of pregnancies that subsequently develop early, intermediate and late PE, with a FPR of 5%.

Fetuses with a birth-weight below the 5th centile are at increased risk of fetal death and handicap. Prenatal identification of these pregnancies reduces significantly these risks.

Screening for FGR in the absence of preeclampsia by a combination of maternal factors, and biochemical and biophysical markers, including uterine artery PI, could potentially identify 75% of pregnancies delivering FGR fetuses before 37 weeks and 45% of those delivering at term.
Fetal growth restriction – does umbilical artery Doppler tell us the whole truth?

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As the title indicates, Doppler does not tell the whole truth, but part of it. By using the umbilical artery (UA) waveform analysis, a hemodynamic compromise of the placenta can be identified, the one that is associated with increased impedance in the vasculature. Luckily for diagnostics, the vascular component of placental compromise is prominent and lends itself to a differentiation by Doppler recording in many cases.

However, a placental problem of A-V shunting, a haemangioma, will usually not be detected by studying the umbilical artery waveform. There may be a fetal growth restriction (FGR), but its cause may be found by a more detailed examination of the vasculature of the placenta itself. Placental hemangiomas are under diagnosed.

However, there might be found no abnormality of the placental vasculature to explain the FGR. And the cause may still be found in the vessels. A normally functioning placenta may not necessarily translate into appropriate growth unless the fetal liver is appropriately included in the circulation. The reason being that the liver receives umbilical blood as a signal for proliferation and production of IGF 1 and 2, which induce differential somatic growth. To let umbilical blood excessively bypass the liver would be to reduce liver growth and turn down growth-factor production and FGR would follow. A portosystemic shunt would do that. I.e. an abnormal shunt between the umbilical vein and inferior vena cava or heart is associated with FGR. The shunt can be intra- or extra-hepatic and difficult to spot unless particularly looked for. Rare conditions? May be, but certainly under-diagnosed and under-reported conditions.

However, having excluded these shunts, there might still be other vascular malformations causing FGR. One such entity is the stenotic umbilical vein. The common location for such strictures is at the umbilicus as the vein enters the abdomen. There is physiological narrowing of the vein, but at times an abnormal stricture, particularly if the stricture extends for several mm, may reduce umbilical flow to the fetus, including the fetal liver, and cause FGR. The severity of the stricture may be of such a degree that early demise can be expected. Again an under-reported condition.

Documentation of these conditions is expected to surface in the next few years. Probably some of the lesions are more commonly associated with chromosomal abnormalities or malformations. Otherwise it is common knowledge that malformations and chromosomal aberrations are more commonly linked to FGR also in cases where no vascular abnormality is traceable.

And in the end there is this small normal fetus trying to escape all the iatrogenic dangers.

Impact of fetal circulatory compromise on health in childhood and adolescence

No abstract submitted
PS07.1

Cancer and pregnancy
No abstract submitted

PS07.2

The impact of pregnancy complications on subsequent fetal and maternal health
Jacob Alexander Lykke, Jens Langhoff-Roos.

Complications in pregnancy is not limited to the ongoing pregnancy - there are subsequent consequences for both offspring and mother.

The “Developmental Origin of Health and Disease” (DOHaD) theory claims that in utero exposure of the fetus will affect later susceptibility to disease. Preterm delivery, fetal growth restriction and preeclampsia have been extensively studied in respect to later health and disease in the adult offspring with a focus on a dysfunctional vascular system and the metabolic syndrome.

Subsequent maternal cardiovascular disease following pregnancy complications has increased and has been intensely studied the past decade. This has opened up for the “thrifty genotype” hypothesis as opposed to the “thrifty phenotype”. The balancing of these hypotheses has led to the contemporary discussion of an “Obstetric Cardiovascular Syndrome” (OCS) and a better understanding of the etiology of adverse pregnancy complications.

These findings may change future health care including individual counseling of the mother and her offspring based on individual risk assessment.

PS08 | 15.30–17.00

Parallel session 8 – Life time perspective in the treatment of endometriosis

PS08.1

New leads in the management of endometriosis
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Endometriosis, defined as the ectopic presence of endometrial glands and stromal cells, is associated with infertility and pelvic pain in women, and diagnosed by laparoscopy. Whereas pathogenesis and spontaneous evolution of endometriosis are still poorly understood, recurrences after surgical therapy or after cessation of medical treatment are common. Spontaneous endometriosis occurs only in women and in nonhuman primates (NHPs). Inbred rhesus monkeys kept in colonies offer an attractive preclinical model to study the inheritance of spontaneous endometriosis. According to the available evidence, baboons with spontaneous or induced endometriosis appear to be the best NHP model to study pathogenesis, pathophysiology, spontaneous evolution and new medical treatment options. In baboons, the induction of endometriosis after intrapelvic injection of menstrual endometrium leads to biological changes in peritoneal cavity and in endometrium. This induction model in baboons allows
the study of cause-effect relationships which may lead to the discovery of new biomarkers for endometriosis that in turn may facilitate the development of new non-invasive diagnostic tests and drugs that may prevent or treat endometriosis.

The treatment options of endometriosis - at present - are limited to hormonal therapies and/or surgical ablation of the lesions, and are characterized by high recurrence rates, significant side-effects and limited duration of administration. The pathogenesis of endometriosis is still unclear and numerous immunological and inflammatory factors have been suggested to be involved in the development of the disease, including interleukin (IL)-1, IL-2, IL-6, IL-8, IL-12, tumour necrosis factor alpha (TNF-α), regulated on activation, normal T-Cell expressed and secreted (RANTES) and its receptor cognate chemokine receptor 1 (CCR1), peroxisome proliferator activated receptors (PPARs), matrix metalloproteinases (MMPs) and cyclooxygenase (COX). Another crucial mechanism in endometriosis is the vascularization of the endometriotic lesions, with a key role for vascular endothelial growth factor (VEGF). Recently, protease activated receptors (PARs), mitogen-activated protein kinases (MAPKs) and tyrosine kinases have also been associated with the pathophysiology of endometriosis.

The aim of this presentation is to discuss which molecules, recently found to have connections with the pathogenesis of endometriosis, can serve as potential targets to develop new methods for novel medical management of this disease. This review also critically addresses how new nonhormonal drugs can and have been tested in basic, preclinical and clinical research, the status of this research and the importance of efficacy/safety studies in animal models like the baboon model for endometriosis before clinical application.

PS08.2

Immunological aspects of endometriosis

Matts Olovsson (1)
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Endometriosis means the growth of endometrial like tissue outside the uterine cavity. These lesions can be found at most sites in the body but most commonly affected are the pelvic peritoneum and organs such as the ovaries, rectum and urine bladder. Endometriosis may give a wide array of symptoms but is mainly associated with pain including dysmenorrhea and deep dyspareunia as well as problems with fertility. There are several treatment options including hormonal and surgical treatment but none of them are curative.

It is not fully understood why some women develop endometriosis. Sampson's hypothesis that endometrial fragments entering the abdominal cavity due to retrograde menstruation in some cases have the capacity to attach to the peritoneal surface and later establish lesions is still valid. There is, however, a missing link since the majority of women do have retrograde menstruation but only about 1 in 10 women have endometriosis.

The missing link probably is the immune status that has been suggested to play an important role in both initiation and progression of the disease. In particular, immune cells like T and B lymphocytes and natural killer cells seem to play essential roles in determining either accept or reject survival, implantation, and proliferation of endometrial and endometriotic cells.

It has since long been observed that endometriosis is associated with an increased inflammatory activity with elevated serum and peritoneal fluid levels inflammatory markers such as CA-125 and C-reactive protein (CRP). The generalized inflammatory activity may lead to more generalized clinical effects where some women with endometriosis suffer from fever and a general feeling of malaise, especially in periods with more pain.

An increased co-occurrence of autoimmune diseases in women with endometriosis has been proposed which could be associated with the genetic deviations found in diseased women. There are however diverging data in the literature regarding whether there is an association between endometriosis and autoimmune disease or not.

It is believed that there is an association between the immune system and endometriosis associated subfertility and infertility.
Several studies indicate that women with endometriosis are more prone to develop epithelial- and clear cell ovarian cancer and certain other types of cancer such as endocrine tumours, non-Hodgkin’s lymphoma and brain tumours. Why women with endometriosis are at higher risk of developing other types of cancer than ovarian cancer is not known but it is believed that it is caused by changes in the immune system.

In conclusion, there are obvious associations between endometriosis and the immune system and future strategies to treat endometriosis might be based on immunological concepts and methods.

**PS08.3**

**Endometriosis and infertility**

Päivi Härkö (1)

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Endometriosis is found in 30–50% of women with infertility and 30–50% of patients with endometriosis have impaired fertility. Endometriosis has an impact on ovarian and tubal function as well as uterine receptivity.

Suppression of ovarian function with hormonal treatment to improve fertility in minimal-mild endometriosis is not effective. Laparoscopy has an important role in infertility work-up when endometriosis is suspected. Surgery aims to remove the endometriosis lesions and to restore the normal pelvic anatomy. In addition, laparoscopy reveals the severity of the disease allowing optimal infertility treatment planning. Ablation or resection of minimal-mild lesions during laparoscopy is recommended in order to improve fertility. When patients fail to conceive spontaneously after laparoscopic surgery treatment with intra-uterine insemination (IUI) with or without controlled ovarian stimulation (COH) is recommended. If these treatments have failed, in vitro fertilization (IVF) is an appropriate option also to minimal-mild endometriosis.

Endometrioma itself as well as removal of endometrioma may impair ovarian function. However, 50% of patients will get spontaneously pregnant after laparoscopic excision of endometrioma. Removal of endometriotic cyst is recommended at the first laparoscopy to confirm the diagnosis but repeat surgery for recurrent endometriomas should be avoided. IUI and IVF can be carried out with endometriomas.

There are no randomized controlled trials to tell us whether surgical excision of moderate-severe endometriosis enhances pregnancy rates. Deep endometriosis cause usually severe symptoms and complete resection will relieve pain and restore anatomy. On the other hand, surgery for symptomatic rectovaginal endometriosis did not enhance pregnancy rate compared with expectant management only. Surgery for deep endometriosis is difficult and carries the risk of complications. IVF is appropriate treatment with advanced disease associated with ovarian and tubal adhesions. Pretreatment with GnRH agonist prior to IVF may increase the success rate. Some reviews state that pregnancy rates with endometriosis are lower than with tubal infertility and some state that they are equal. Higher live-birth rates have been observed after one to four IVF/ICSI cycles including frozen embryo transfer with minimal-mild endometriosis (55.8%) compared with moderate-severe endometriosis (40.3%). Thus, it seems the history of endometriosis do not enhance the success of IVF. Female age, parity, and duration of infertility appear as the most accurate predictors for pregnancy outcome.

Treatment of endometriosis-associated infertility is always individual as endometriosis is a complex disease and the choice between the assisted reproductive treatment and surgery should be made according to the symptoms and findings of the patient.

**PS08.3**

**When to operate endometriotic cysts?**

No abstract submitted
Thrombophilia and adverse pregnancy outcomes: Results from the Danish National Birth Cohort

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(5) Yale School of Medicine, New Haven, USA

Background: Inherited thrombophilia have with inconsistency been linked to adverse pregnancy outcomes. Differences in study design, size and population could explain this heterogeneity.

Objective: We aimed at evaluating Factor V Leiden G1691A (FVL), prothrombin mutation G20210A (PTM), and methyltetrahydrofolate reductase C677T (MTHFR) in respect to severe preeclampsia, fetal growth restriction, very preterm delivery, placental abruption, and a composite of these outcomes also including stillbirth.

Patients/Methods: In a nested case-cohort study of pregnant women in Denmark, we genotyped 2,032 cases and 1,851 random controls. Each of the medical records of the cases was validated. We calculated both genomic and allelic models, and present crude models and models adjusted for parity, age, smoking, body mass index, and socioeconomic status.

Results: FVL increased the risk of the composite outcome by OR 1.4 (95% CI 1.1–1.8), severe preeclampsia by OR 1.6 (95% CI 1.1–2.4), fetal growth restriction by OR 1.4 (95% CI 1.1–1.8), and placental abruption by OR 1.7 (95% CI 1.2–2.4); adjustment diminished these estimates slightly. PTM was not significantly associated to any of the outcomes. MTHFR increased the risk of severe preeclampsia by OR 1.3 (95% CI 1.1–1.6), but the effect disappeared after adjustment.

Conclusion: FVL predisposes to adverse pregnancy outcomes. We found no support for a link between PTM and MTHFR and adverse pregnancy outcomes.
Objective To conduct a combined analysis of the estimated effects of maternal average weekly alcohol consumption and any binge drinking in early to mid-pregnancy on general intelligence, attention, and executive functions in five-year-old children.

Design Follow-up study: Setting and population 1,628 women and their children sampled from the Danish National Birth Cohort.

Methods: Participants were sampled based on maternal alcohol consumption during early pregnancy. At age five, the children were tested for general intelligence, attention, and executive function. The three outcomes were analyzed together in a multivariate model to obtain joint estimates and p-values for the association of alcohol across outcomes. The effects of low-moderate alcohol consumption and binge drinking in early pregnancy were adjusted for a wide range of potential confounders.

Main outcome measures: Wechsler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R), the Test of Everyday Attention for Children at Five (TEACH-5), the Behavior Rating Inventory of Executive Functions (BRIEF).

Results: Multivariate analyses showed no statistically significant effects of average weekly alcohol consumption or any binge drinking, individually or in combination. These results replicate findings from separate analyses of each outcome variable.

Conclusion: The present study contributes comprehensive methodological and statistical approaches that should be incorporated in future studies of low-moderate alcohol consumption and binge drinking during pregnancy. Further, since no safe level of drinking during pregnancy has been established, the most conservative advice for women is not to drink alcohol during pregnancy. However, the present study suggests that small amounts consumed occasionally may not present serious concern.
Combined ultrasound and biochemistry for risk evaluation of chromosomal abnormalities during the first trimester in Sweden: what has happened after implementation?

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Dept of Obstetrics and Gynecology, Uppsala, Sweden

Background: First trimester scan for risk evaluation of Down’s syndrome was introduced in Sweden in the beginning of 2000 for high-risk patients. A national randomised control study was performed and an investigation in 2006 by the Swedish Council on Health Technology Assessment concluded that combined ultrasound and biochemistry (CUB) was the best test to achieve the optimum balance between the percentage of detected cases and false positive results. According to the new law enacted in 2006, all pregnant women should be offered information regarding prenatal diagnostic possibilities. Nevertheless, the 21 counties in Sweden provide health care individually under different conditions, i.e. economic and population.

Objective: To investigate how the first trimester risk evaluation for Down’s syndrome is offered and performed in Sweden as there are no national guidelines, and the expected national recommendations for prenatal diagnostics from The National Board of Health and Welfare (SoS) is still not finalised.

Study design: A questionnaire, sent to all known units working with obstetric ultrasound, was answered by 10 private clinics, 32 county hospitals and 7 university hospitals (comprising 98% of all routine obstetric ultrasound) in October 2011.

Results: CUB was performed in 28,600 of the expected 110,000 pregnancies in Sweden during 2011. Sixteen of the 21 counties offered CUB testing, but with different designs. Six counties offered CUB regardless of the pregnant women’s age and without charging a fee. Out of all pregnant women, 15% were living in a county not offering CUB, only invasive prenatal diagnostic; 44% regardless of age; 15% to women ≥ 33 years; 24% to women ≥ 35 years; and 2% to women ≥ 38 years old. Age dependent design was based on economic reasons in 84%. In counties offering free CUB testing to all pregnant women, 65–95% underwent CUB, and for the age dependent design, it was 15–30%. A national risk estimation programme was used for 72% and the Fetal Medicine Foundation programme for the remaining 28% of all examinations. Cut off for a positive test offering invasive testing was 1/200 in 60% of all units, 1/250 in 10%, 1/300 in 28% and 1/400 in 2%. In 62% of all units, only amniocentesis (no chorion villi sample) was offered from 150 weeks. All units offering CUB, except two, reported less invasive tests (Stockholm about 20% reduction). Birth rate of children with Down’s syndrome remains unchanged in Sweden (Report 2011 Nov 10th, Fetal structural and chromosomal abnormalities, SoS).

Conclusion: Without a consistent national guideline, the prenatal diagnostic method of CUB is offered in a very unequal manner to pregnant women in Sweden, resulting in a decreased rate of invasive tests, but unchanged birth rate of children with Down’s syndrome.
**Changes in the Artery Wall Layer Dimensions in Women with Preeclampsia: An investigation using non-invasive high frequency ultrasound**

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**Background:** Preeclampsia (PE) is associated with increased risk for cardiovascular disease later in life. Whether, the artery wall layer dimensions differ between PE and normal pregnancy is unclear. The aim of this study was to estimate if women with PE have different common carotid artery wall layer dimensions than women with normal pregnancy, both during pregnancy and about one year postpartum.

**Methods:** By using high-frequency (22MHz) ultrasound (Collagenoson, Meudt, Germany) separate estimates of the common carotid artery intima and media layers were obtained and the I/M ratio was calculated in women with PE (n=55 during pregnancy and n=48 at postpartum) and with normal pregnancy (n=65 during pregnancy and n=59 at postpartum). Thick intima, thin media and a high intima/media ratio are signs of less healthy artery wall and vice versa.

**Results:** In women with PE, the intima was thicker (0.18 ± 0.03 vs. 0.11 ± 0.02; p < .001), the media was thinner (0.47 ± 0.12 vs. 0.55 ± 0.14; p = .001) and the I/M ratio was higher (0.41 ± 0.14 vs. 0.20 ± 0.05; p < .001) compared to women with normal pregnancy. Further, for changes from pregnancy to postpartum, both for PE and normal pregnancy, the intima and the I/M ratio had improved but still significantly higher in women with PE than in women with normal pregnancy.

**Conclusion:** In women with PE, we found a thicker intima, thinner media and a higher I/M ratio compared to women with normal pregnancy, indicating a more negatively affected artery wall layer dimensions. Persisting negative effects of PE on artery wall at postpartum, despite improvement of artery wall layers compared to values during pregnancy, indicates a permanent damage of the vascular system in this group of women.

**Obstetric outcome after intervention for severe fear of childbirth in nulliparous – randomized trial**

**Hanna Rouhe** (1), Katarinya Salmela-Aro (2), Riikka Toivanen (1), Maiju Tokola (1), Erja Halmesmäki (1), Terhi Saisto (1)

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(2) University of Helsinki, Helsinki, Finland

**Objective:** To compare obstetric outcome and delivery satisfaction among women with fear of childbirth randomized either to psychoeducation or conventional surveillance during pregnancy.

**Design:** Randomized controlled trial.

**Methods:** In the maternity unit of Helsinki University Central Hospital, 4575 pregnant, nulliparous women were screened for fear of childbirth with Wijma Delivery Expectancy Questionnaire. After screening, 371 (8.1%) women whose score exceeded limit ≥100 (severe fear) were randomized to inter-vention (n=131) (psychoeduca-tive group therapy, six sessions during pregnancy and one after child-birth) or control group (n=240) (care by community nurses and referral if necessary). Obstetric data from the deliveries was collected from patient records and delivery satisfaction was examined by a questionnaire.

**Outcomes:** Delivery mode and satisfaction.
Results: Women randomized to intervention group had more often spontaneous vaginal delivery (SVD) than those in the control group (63.4% vs. 47.5% p=0.005) and less caesareans (CS) (22.9% vs. 32.5%, p=0.05). Of the 240 controls, 106 needed a referral to a consultation (n=76) or sought for more intense childbirth preparation classes (n=30). Of them, 47.2% had SVD and 38.7% CS, compared to those who actually participated in the intervention (n=90) (SVD 65.6%, p=0.014, and CS 23.3%, p=0.031, respectively). Women in intervention group had more often very positive delivery experience (36.1% vs. 22.8% p=0.04, n=219).

Conclusion: To prevent obstetric complications, proper treatment for fear of childbirth is important. This study shows positive effects of psychoeducative group therapy in treating nulliparous women with severe fear of childbirth in terms of fewer obstetric complications and more satisfactory delivery experiences compared to control women with similar severe fear of childbirth.

PS09.6

Gestational diabetes in Iceland 2007–2008

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Background: Studies have shown that induction of labor and caesarean sections are more common in women with gestational diabetes mellitus (GDM). Infants born to women with GDM are heavier than other infants and more likely to suffer from prematurity, asphyxia, birth trauma, jaundice and hypoglycemia. In Iceland the incidence of GDM was 2.3% in 2003. The aim of this study was to measure the incidence of gestational diabetes in Iceland and the effect of GDM on labor, delivery and the neonate.

Methods: Included were all women diagnosed and/or treated for GDM at Landspítali – The National University Hospital of Iceland from 1st of January 2007 to 31st of December 2008. We gathered information on: Age, body mass index (BMI), nationality, results of the glucose tolerance test, complications during labor and delivery, birth method, birthweight, birth trauma and neonatal complications. Results were compared to the general population in the same hospital during the same time period using descriptive statistics, with p value <0.05 considered statistically significant.

Results: GDM was diagnosed in 4.6% of pregnancies. Infants of women with GDM were significantly heavier than in the general population (3670±648 g vs. 3583±654 g; p=0.0014). The rate of labor induction was higher for women with GDM (44.3% vs. 18.5%; p<0.0001). Delivery by caesarean section (CS) was more common (29.4% vs. 17.6%; p<0.0001), both elective (11.8% vs. 6.1%; p=0.0004) and emergency operations (17.6% vs. 11.5%; p=0.0027). Induction of labor had no effect on CS rate (21.9% vs. 16.7%; p=0.12), nor did race (29.3% for Caucasians vs. 30.3% for other ethnicities, p=1.0), age >35 vs. <35 years (33.3% vs. 27.8%; p=0.39) or BMI >30 vs. <30 (34% vs. 24%; p=0.07). The rate of premature births was not higher (7.6% vs. 6.6%; p=0.47) nor were stillbirths (0.7% vs. 0.4%; p=0.11) or asphyxia (0.69% vs. 0.75%; p=1.0). Of the neonates, 21.8% had one minute Apgar score <7 and 3.1% had five minute Apgar score <7. Neonates born to women with GDM were more likely to suffer from hypoglycemia (13.5% vs. 2.4%; p<0.0001), jaundice (12.8% vs. 8.5%; p=0.018) and clavicle fractures (2.4% vs. 1%; p=0.027) but not from shoulder dystocia (1.4% vs. 0.6%; p=0.11).

Conclusions: The incidence of gestational diabetes has doubled in Iceland over the course of five years. The infants are heavier and more likely to suffer from complications such as hypoglycemia, jaundice and clavicle fractures. GDM also increases the risk of induction of labor and caesarean sections.
Antidepressant exposure during pregnancy and child behavior

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(5) UCLA school of Public Health, Dept. Epidemiology, Los Angeles, USA

Objective: To investigate child behavioral problems after in utero exposure to antidepressants.

Methods: We used the Danish National Birth Cohort to obtain information on exposures and potential confounders. Behavioral problems were assessed at four or five years of age by the Strength and Difficulties Questionnaire (SDQ). We included children of 127 mothers who had used antidepressants during pregnancy and compared these to 98 children whose mothers had antenatal depression with no antidepressant exposure and 723 children whose mothers had no antenatal depression and had used no antidepressant during pregnancy (unexposed group). Adjusted odds ratios (aOR) and 95% confidence intervals (CI) were estimated by logistic regression models.

Results: In utero antidepressant exposure was not associated with abnormal SDQ scores at 4 or 5 years of age. Preliminary results show an association between untreated antenatal depression and abnormal specific SDQ scores, e.g. in terms of conduct the aOR was 2.3 (95% CI: 1.2–4.5) compared with the unexposed group. The associations diminished after adjusting for maternal psychiatric disease in early childhood, which may, however, represent over adjustment for mediating factors.

Conclusion: Prenatal antidepressant exposure was not associated with behavioral problems early in childhood. Children exposed to untreated antenatal depression displayed higher SDQ scores, which could be mediated through conditions in the postnatal environment.

Risk factors for venous thromboembolism during pregnancy and the puerperal period. A national cohort study including 900,000 pregnancies in Denmark 1995–2009

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Introduction: Venous thromboembolism (VTE) is one of the most frequent causes of maternal deaths in the western world. The aim of this study was to investigate the association between several risk factors and VTE during pregnancy and the puerperal period.

Material and Methods: In a historical prospective cohort study all pregnancies in Denmark from 1995 to 2009 were included. Data were retrieved from six national registries. Endpoints were diagnoses of venous thrombosis confirmed in medical records. Risk factors and confounders were recorded from various registries. Poisson regression model with time-varying exposure variables were used for analyses.

Results: In total 710 VTE were confirmed. A small association between smoking and VTE was found. A minor association between overweight or obesity compared to normal weight and VTE during pregnancy was found, whereas in the puerperal period obesity implied a relative risk of 3.49 (95% CI: 1.83–6.68). In women with hyperemesis,
the relative risk of VTE was 2.48 (95% CI: 1.36–4.53) during pregnancy and only a small association was found in
the puerperal period. Multiple pregnancy was associated with a relative risk of VTE of 2.82 (95% CI: 1.87–4.24)
during pregnancy compared to singletons, and only a small association was found in the puerperal period.

Preeclampsia was associated with a relative risk of VTE in the puerperal period of 4.49 (95% CI: 2.81–7.15). The
relative risk of VTE in women with diagnoses of infection in pregnancy was 4.21 (95% CI: 2.58–6.86) and 2.15
(95% CI: 1.34–3.43) in the puerperal period.
VTE was associated with hospitalization by length of stay with a relative risk of up to 11.81 (95% CI: 8.38–16.64).
Compared to vaginal deliveries, the relative risk of VTE was 2.07 (95% CI: 1.39–3.08) after elective cesarean
section and 3.03 (95% CI: 2.29–4.01) after acute cesarean section. In women with a severe post partum haemor-
rhage the relative risk of VTE was 1.84 (95% CI: 1.21–2.79).

**Conclusion:** In a large cohort study we identified different risk factors for VTE during pregnancy and puerperal
period. In both periods infection and hospitalization were associated with increased risk of VTE.

**PS09.9**

**Recurrence of placental dysfunction disorders across generations**

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(2) Womens and Childrens Health, Uppsala, Sweden

**Background:** Knowledge about etiologies of placental dysfunctional disorders is limited. We performed an inter-
generational study, focusing on risks of placental dysfunctional disorders in mothers and father born small-for-
gestational-age (SGA).

**Methods:** Using linked generational data from the Swedish Medical Birth Register from 1973–2006 we identi-
fied 321,383 mother-offspring units and 135,637 mother-father-offspring units.

**Results:** Compared with mothers not born SGA, mothers born SGA had the following adjusted odds ratios (95% confidence intervals): late preeclampsia 1.41 (1.26–1.57), early preeclampsia 1.87 (1.38–2.35), placental abrup-
tion 1.60 (1.23–2.09), spontaneous preterm birth 1.11 (1.00–1.23) and stillbirth 1.24 (0.84–1.82). Compared
with parents not born SGA, the risk of preeclampsia was more than threefold increased if both parents were born
SGA, whereas if only the mother was born SGA, corresponding risk was only increased by 50%.

**Conclusion:** There is an intergenerational recurrence of placental dysfunctional disorders on the maternal side,
and most likely also on the paternal side.

**PL02 | 08.30–09.45**

**Plenary 2 – The impact of practical skills in vaginal delivery in modern obstetrics**

**PL02.1**

**How to regain lost skills. The Canadian model for revitalization of vaginal breech delivery**

No abstract submitted
Background: Birth related deaths and disabilities such as genital fistula as reflections of poor health care system of the country existed since ancient times, however, gradually minimized from resourceful countries with economic and technological advancement.

In order to design comprehensive, effective and efficient programs for maternal and neonatal wellbeing in developing countries, thorough understanding of the causes and contributing factors is essential. This article reviews and summarizes available evidences on risk factors and consequences of obstetric fistula.

Methods: Evidences from literatures search and personal experience in the field are used to summarize information on causes, risk factors, and consequences of obstetric fistula.

Results: Obstetric fistula accountable for over 90% of genital fistulae is reported to occur as a result of neglected obstructed labor from cephalo-pelvic disproportion. About 2% of neglected obstructed labour cases were estimated to end-up in genital fistula.

Other reports indicate that surgical interventions done for obstetric complications (such as caesarean, hysterectomy for ruptured uterus and instrumental deliveries) are responsible for certain proportion of obstetric fistula in low resource setting.

Although scientific evidence with hard data are limited on social/demographic risks and beneficial factors for obstetric fistula, reports from case series and personal experiences emphasize that young age at first delivery, stature of women, parity, low status of women, the place of delivery, poverty, illiteracy, malnutrition, social and cultural issues limiting access to emergency obstetric care are contributing factors for the occurrence of obstetric fistula. Lack of access to EmOC services (the three delays) is recognized as critical in determining maternal and neonatal health status, in developing countries. Besides incontinence to urine and or faeces, genital sores and skin lesions, women with fistula often with broken family are social outcasts and singled out from their normal reproductive line. The great majority losing their child in the delivery, remained crippled with pelvic injury and blunted reproductive life are often in disrupted mental and social status which further severs their family life.
Conclusion: Common among the majority of women with obstetric fistula is their suffering from long standing (neglected) obstructed labour and the enormous medical and social suffering they encounter. While surgical treatment improves quality of life and the chance of their social re-integration, strengthening access to EmOC services and improving the status of women (through girls education and improved nutrition) are essential. Meanwhile, strengthening simple and effective techniques provided by low level health professionals at primary health care unit level (such as symphysiotomy and proper use of Parthograph), saves lives and minimizes injuries.

PS10.3

Maternal near miss incidents

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The investigation of near-miss morbidity, or severe acute maternal morbidity, has received increased attention as a way of studying adverse maternal outcomes. A maternal near-miss is defined as "A woman who nearly died but survived a complication that occurred during pregnancy, childbirth or within 42 days of termination of pregnancy".

Near-miss morbidity is a more common phenomenon than maternal deaths and can, therefore, provide a more rapid assessment of the burden of maternal ill-health and quality of obstetric care than maternal mortality reviews. This larger number may allow for an easier disaggregation of data across subgroups of women and help to identify needed maternal health interventions. Advantages of the concept also include that near-miss investigations may not present a threat to health care staff and first-hand information about quality of care and care-seeking behaviour can be obtained from surviving women.

Although near-miss morbidity is commonly used as an alternative or complement to the investigation of maternal mortality there are still difficulties in their definition, classification, and interpretation. A wide variety of criteria have been used to define near-miss cases essentially grouped into three main categories: (1) clinical criteria for common diagnostic categories, (2) management-based criteria related to specific interventions, and (3) organ system dysfunction-based criteria. In order to facilitate comparability between studies, a WHO working group has suggested a standard tool for identifying near-miss that is being increasingly applied.

This lecture will discuss advantages and disadvantages of the near-miss concept, as applied in low-income countries, by showing examples of how it has been used as starting point in epidemiologic-, qualitative-, and audit investigations, as well as how it has been used to monitor safe motherhood programs.

PS10.4

Implementing ALSO in an African setting

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Background: It is estimated that more than 500,000 women die each year in relation to pregnancy and childbirth, most of these in developing countries. For decades world leaders have made promises to address this severe problem, presently stated in the United Nations’ (UN) Millennium Development Goal number 5 (MDG5) aiming for a reduction in maternal mortality of 75% by the year 2015. A few developing countries have seen remarkable reductions but the overall global progress is far from satisfactory, especially in sub-Saharan Africa where the
Most maternal deaths happen to women with no previously identified risk factors around the time of birth. Access to timely and effective emergency obstetric care (EmOC) for all women giving birth is essential to reduce maternal mortality.

Material and methods: An initial field study was effectuated in North Eastern Tanzania in 2007 over a period of five months. The data collection was based on 31 deliveries at home, at village based health facilities and at the referral hospital. Semi-structured in-depth interviews about delivery care were performed with involved providers and users. Transcripts of interviews were analyzed by content analysis. Following an external CE was conducted to identify clinical causes and major substandard care related to maternal deaths over a 35-month period, the same period internal MDA had been conducted routinely. It became clear that the staffs’ skills in basic EmOC needed improvement. Therefore, the two days ALSO course was introduced to Tanzania after a thorough adaptation and the impact on maternal and newborn outcomes and staffs’ performance was assessed in an uncontrolled prospective intervention study.

Findings: After staffs attended a two days Advanced Life Support in Obstetrics (ALSO) training, the management of post partum haemorrhage (PPH) improved and the incidence of PPH was reduced from 32.9% to 18.2% (RR 0.44–0.69) while the management of prolonged labour did not improve. More newborns were given to their mothers early after birth and a reduction in newborn deaths before discharge was observed.

Conclusion: Health facility delays were a major cause of maternal deaths in the setting. The quality of EmOC needs to be improved at both first line and referral health facilities to reduce maternal mortality. Quality assurance of EmOC might be improved by supplementing internal MDA with an external CE thereby also providing documentation that can address politicians and the public. EmOC training can, when adapted thoroughly to the developing world context, improve the quality of staffs’ skills and reduce maternal morbidity. More research is needed into this, little investigated, area.

Parallel session 11 – Dysfunctions of the pelvic floor

Overview: surgery for urinary incontinence during 40 years
No abstract submitted

Surgical techniques: current status and ethics
– or Reasons for and treatment of surgical complications with alloplastic slings

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Over the decades more than 100 surgical techniques have been developed to correct pelvic floor disorders from both the abdominal and vaginal approach. Too often, the choice of procedure and route of approach have been based on the surgeon’s biases rather than on anatomic principles. Improved understanding of normal and abnormal pelvic anatomy and function and the many factors contributing to disorders like incontinence or prolapse now allow a more rational selection of procedure and route based on what is best for the individual patient.

The pelvic floor with the organs involved is one unit and surgery in one compartment can adversely affect function and anatomy in another. Sacrocolpopexy or sacrospinous fixation may precipitate cystocele and/or urethral sphincter incompetence; colposuspension may initiate or cause a rectoenterocele to enlarge.
Since the development of the “tension-free tape” concept alloplastic materials have run down all other procedures with far more than 4 million tapes and meshes having been inserted. The enthusiasm about the high success rates has been slowed down in recent years by complication rates apparently underestimated and complications not anticipated.

The aim of urogaecological surgery should be the improvement of symptoms bothering and reducing the quality of life of our patient, not fulfilling our aesthetic view, how a vagina or a pelvic floor should look like. The choice of surgery is influenced by clinical features, physical fitness and expectations and has to be individualized, bearing in mind the likelihood of side-effects.

We should not treat urodynamic parameters, pad-weigh-tests, measurements in the POPQ, but, rather symptoms and complaints of our patients. Age, Quality of tissue, signs of urogenital aging, chronic bronchitis (nicotine abuse), obesity, diabetes mellitus, spondylolisthesis, lumbar spinal stenosis etc. and the willingness and acceptance of possible restrictions in everyday life are the decisive parameters when selecting from a wide variety of surgical procedures either abdominal or vaginal, with or without use of alloplastic materials. The major limitation in the decision making of an adequate surgery may be the lack or loss of anatomical and surgical skills and, for many medical and paramedical reasons, the lack of experience.

**PS11.3**

**Meshes in pelvic floor reconstructive surgery – are there any indications?**

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**Background:** There has recently been rapid growth in the use of vaginally placed synthetic meshes, owing to the high failure rate attributed to standard vaginal repairs. Synthetic meshes are used in 95% of all abdominal hernia repairs, and the synthetic suburethral sling has revolutionized surgical treatment of stress urinary incontinence. Of course this has been followed by great interest in translating these successes to pelvic reconstructive surgery, resulting in rapid development of various mesh materials and application systems, with scant follow-up data before commercialization.

**Results:** Available reports are contradictory in terms of combinations of surgeries, mesh materials, application techniques and outcome measures. Hence, it is difficult to answer questions about differences in success rates and complications when comparing traditional vaginal repairs and repairs including synthetic meshes. It is still uncertain whether meshes contribute to better overall results and/or if there are subgroups of women who benefit more from mesh support. In any case, mesh surgery has a different complication profile than traditional surgical procedures both owing to the mesh itself and different application routes. The US Food and Drug Administration has issued an enhanced warning because of several reports of severe complications after the use of mesh.

**Conclusions:** In the current phase of product development we need to question indications for surgery and try to evaluate both traditional and mesh augmented surgical procedures more strictly.
Ps12.1

Medical abortion with home administration of misoprostol up to 63 days gestation

Mette Løkeland (1,2), Ole-Erik Iversen (1,2), Line Bjørge (2,1)
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(2) Haukeland University Hospital, Bergen, Norway

Aim: To increase women’s choice, evaluate acceptability and efficacy of medical abortion at home with no limit as to travel distance from provider.

Background: Medical abortion with mifepristone and misoprostol was introduced in Norway for abortion up to 9 weeks gestation in 1998. In 2006 home administration of misoprostol up to 63 days gestation was introduced at Haukeland University Hospital. At present it is the most common form of abortion for this gestational age at our unit.

Methods: In a prospective study of women requesting medical abortion up to 63 days gestation, all women over the age of 18 comprehending the information given were offered home administration of misoprostol as an alternative to hospital treatment. All women were requested to have somebody with them the day of the abortion. There was no limit as to travel time from home to the clinic. Detailed oral and written information about the procedure together with a contact phone number for the hospital was given. Intake of 200 mg mifepristone was done under nurse supervision at the hospital. All women were given 4 tablets of 200 µg misoprostol, 1g paracetamol and 50 mg diclofenac, for home use. All women self-administered 800 µg misoprostol vaginally 36–48 hours after intake of mifepristone, and were contacted by a nurse some hours after application of misoprostol and were asked to make a self-assessment of the level of bleeding and pain. They were also questioned if they were content with being at home or would have preferred to be in hospital. According to standard procedure for the clinic all were controlled with s-hCG 28 days after intake of mifepristone.

Results: In the study period 1018 women were included sequentially. Median age of the participants was 27 (range 17–48) years, and the median gestational age was 50 (range 35–63) days. A total of 7.0% lived more than 60 minutes travel from the clinic. 93.3% of the abortions were complete and needed no additional treatment. One woman (0.1%) received blood transfusion and three (0.3%) women had ongoing pregnancies. Moderate to strong pain was experienced by 68.4%, with 74.7% having moderate to heavy bleeding and 8.5% very heavy bleeding. There were no significant differences between the gestational age groups. Parous women had less likelihood of experiencing strong pain than nulliparous women OR 0.27 (95% CI 0.19–0.34). Surgical evacuation was performed in 50 (5.1%) cases. 95.1% of the women were content with staying at home, while 4.3% would have preferred to stay in the clinic. Women who did not comply with the follow-up routines were contacted by phone and 48 (4.7%) women were completely lost to follow-up. Travel distance did not influence treatment or acceptability.

Conclusion: Medical abortion with home administration of misoprostol is an effective and acceptable method for termination of pregnancy up to 63 gestational days independent of travel distance.

Ps12.2

Early post abortion insertion of intrauterine contraception

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Background: When opting for an IUS/IUD as contraception method post medical abortion, the insertion routinely takes place 3–4 weeks after the abortion. This means an obvious risk of a new pregnancy. We wanted to study if early post abortion insertion of LNG-IUS (Mirena) and Copper-IUD (Nova T) prior to resumption of ovulation could be safe and without an increased risk of expulsion or infection.
Material and methods: Women undergoing medical abortion and opting for post abortion IUC were randomized to early (day 5–9), or late (day 21–35) insertion of an IUC. The medical termination was performed according to clinical routine. An ultrasound examination was performed before IUC insertion. Complications such as infection and expulsion were recorded, and a diary of the bleeding pattern was collected from the patient.

Results: A total of 129 women were included in the trial. In all 66 women (34 LNG-IUS and 32 Cu-IUD) were randomized to early insertion and 63 women (31 LNG-IUS and 32 Cu-IUD) were randomized to late insertion. There were 62 (94%) successful early insertions of IUC, and 54 (86%) successful late insertions of IUC. In the early group significantly less women had regrets about the method, or did not show up for IUC placement (1.5%) compared to the late group (11%) (p=0.03). The proportion of women who had had intercourse after the abortion, previous to insertion of the IUC was significantly higher in the late insertion group (41%) than in the early insertion group (16%) (p=0.015). At the 4-weeks-follow up visit, there was no PID reported in any of the groups. There were no differences in expulsion rates between the groups; there were 6 expulsions in the early insertion group (9.7%), compared to 4 in the late insertion group (7.4%). At the 3, 6 and 12 months follow up, no differences could be found in regard to bleeding patterns, menstrual pain or compliance with the contraceptive method between the early and the late insertion groups.

Conclusion: Early placement of LNG-IUS as well as Cu-IUD is safe and well tolerated. There is no increased risk of expulsion, heavy or prolonged bleeding or PID associated with early insertion of neither LNG-IUS nor Cu-IUD. Women are more motivated to try IUC for contraception when offered early insertion, and more likely to return for IUC placement. Early IUC placement should be offered as a routine post medical abortion.

PS12.3

Medical vs. surgical induced abortion in primigravid women – is the next term pregnancy at risk?

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(5) Nordic School of Public Health, Gothenburg, Sweden

Background: First trimester surgical induced abortion has been increasingly replaced by medical abortion in all Nordic countries. Long-term safety data concerning the effects of medical abortion on subsequent term pregnancy is still scarce. The purpose of the present study was to assess the effects of first trimester medical vs. surgical abortion, performed in primigravid women, on the subsequent term pregnancy.

Methods: A prospective cohort study was conducted by using national registries (the Finnish Abortion Registry, the Medical Birth Registry and the Hospital Discharge Registry). All primigravid women who underwent an induced abortion by medical or surgical method during the first trimester between 2000 and 2009 and whose subsequent pregnancy resulted into a singleton delivery were identified. The risk of preterm birth (< 37 weeks of gestation), low birth weight (<2500g), small for gestational age (SGA) and placental complications (placenta previa, placental abruption, retained placenta and placenta accreta) was assessed after first trimester medical vs. surgical abortion.

Results: The population included in the study was 8294 women; 3441 in the cohort of medical and 4853 in the cohort of surgical abortion. There were no significant differences in the incidences of preterm birth (4.0 vs. 4.9%, P=0.062), low birth weight (3.4 vs. 4.0%, P=0.138), SGA (2.6 vs. 2.9%, P=0.436) or placental complications (2.6 vs. 2.8%, P=0.747) between medical vs. surgical study cohorts, respectively. After adjusting for gestational age at the time of abortion, inter-pregnancy interval, maternal age, cohabitation status, socioeconomic status, residence
and smoking during pregnancy, medical abortion was not a risk factor for preterm birth (adjusted odds ratio 0.87, 95% confidence interval, 0.68 to 1.13), low birth weight (0.90, 0.68 to 1.19), SGA (0.87, 0.64 to 1.20) or placental complications (0.98, 0.72 to 1.34) when compared to surgical abortion.

**Conclusion:** History of one first trimester medical vs. surgical abortion, performed in primigravid women, is associated with similar risks of preterm birth, low birth weight, SGA and placental complications in the subsequent term pregnancy. Moreover, the risks of preterm birth, low birth weight and SGA are equal to national levels of these conditions.

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**PS12.4**

**Does coffee consumption reduce the chance of pregnancy and live birth in ivf?**

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**Introduction:** Caffeine has been shown to consistently increase time to pregnancy and the risk of early miscarriage. However, hardly any studies are available on the effect of caffeine on results in IVF. The aim of this study was to examine the effects of coffee consumption during IVF and ICSI treatment on clinical pregnancy rate and live birth rate.

**Material and Methods:** A prospective follow-up study of 3959 IVF and ICSI cycles in women undergoing treatment with IVF or ICSI at a large public clinic in Denmark. Information on coffee consumption (cups per day) was obtained at the beginning of treatment and for each subsequent treatment cycle. Multivariate logistic regression analyses were performed, controlling for female age, female smoking habits and alcohol consumption, reason for treatment, female body mass index, FSH dose, and number of embryos retrieved. Robust standard errors standard errors were computed taking into account the non-independence of consecutive cycles in the same couple.

**Results:** Consumption of > 5 cups of coffee reduced the clinical pregnancy rate by 50% (RR=0.50 (95% CI: 0.26–0.97)) and the live birth rate by 40% (RR=0.60 (0.30–1.20)). No effect was observed for intake of 1–5 cups per day. Restriction to first treatment cycles only did not alter the conclusion.

**Conclusion:** In this study, the effect of consuming >5 cups of coffee per day was comparable to the detrimental effect of smoking, reducing the clinical pregnancy rate by 50%.

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**PS12.5**

**Antimüllerian hormone predicts pregnancy and live-birth rates after assisted reproduction and reflect oocyte quality besides oocyte quantity**

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**Background:** Previous studies suggest that the role for measures of ovarian reserve is mainly restricted to predict and individualize stimulation protocols in assisted reproduction. Results for associations with pregnancy and live birth rates have not been convincing. The objective of this study was to evaluate the association of Antimüllerian hormone (AMH) with treatment outcome, primarily pregnancy and live birth rates, in a large unselected cohort of patients and to find out if AMH may also reflect oocyte quality along with oocyte quantity.
Methods: A prospective observational study was conducted at a university-affiliated private infertility centre, among 1129 women undergoing 1608 IVF/ICSI treatment cycles. All patients had their AMH levels analysed before treatment and underwent long GnRH down-regulation. Ovarian hyper-stimulation was done with individual doses of rFSH or hMG. Levels of AMH were analysed for associations with treatment outcome and statistically adjusted for repeated treatments, age and number of retrieved oocytes.

Results: Mean age (±SD) was 36 (4.3) years. AMH ranged from <0.16 to 39.8 µg/l and was log-normally distributed with a median of 1.7 µg/l and a mean (±SD) of 2.54 (3.3) µg/l. Single embryo transfers were done in 74% and double embryo transfers in 26%. After logarithmic transformation levels of AMH were stratified into four groups corresponding to pregnancy rates 0–15% (group I; AMH 0–0.22), 16–25% (group II; AMH 0.23–1.1), 26–35% (group III; AMH 1.11–3) and >35% (group IV; AMH>3). Live-birth rates (% [CI]) were positively associated with stratified AMH in a linear way: 14 [3.2–24.7], 16.9 [13.1–20.7], 23.9 [20.6–27.2], 32.1 [27.4–36.8] for groups I-IV, respectively, ptrend<0.0001. The findings were significant also after adjustment for the age-dependent decrease in AMH and for the number of oocytes retrieved.

Conclusion: Pregnancy and live-birth rates are log-linearly related to AMH. AMH may serve not only as a marker of ovarian reserve but also as a prognostic factor of IVF/ICSI treatment success on the group level. The findings remained significant also after adjustment for the amount of oocytes retrieved, suggesting AMH as a marker of ovarian reserve comprises information on oocyte quality and not only quantity. Besides being a valuable tool at designing ovarian stimulation, AMH may also be used when counseling couples before treatment discussing chance on the group level as a benchmark for their expectations to be set on an appropriate level.

Keywords: AMH, IVF, ICSI, pregnancy, live birth, oocyte quality

PS12.6

Venous thromboembolism in users of parenteral hormonal contraception. A National historical follow-up study 2001–2010

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Background: Several newer epidemiological studies have assessed the risk of venous thromboembolism (VTE) in users of currently available oral contraceptives. We found no publications on the risk of VTE in users of contraceptive vaginal ring or subcutaneous implants, and few on the risk of VTE in users of transdermal combined patch, with conflicting results.

The aim of this study was to assess the risk of VTE in current users of parenteral contraceptive methods; transdermal patch, vaginal ring, subcutaneous implants, and levonorgestrel IUS.

Methods: Design. Historical National registry based cohort study.

All Danish non-pregnant women 15–49 years of age, free of previous thrombotic disease or cancer, were followed from January 2001 through December 2010 in four national registries for use of hormonal contraception and a first time VTE. A VTE diagnosis was confirmed through prescription of anticoagulation therapy after the diagnosis. Included confounders were age, calendar year, and education. Absolute incidence rates were assessed, and rate ratios between different product groups were estimated by Poisson regression.

Results: Within 9,429,128 observation years, 5,287 were recorded with a first ever VTE diagnosis, and 3,434 (65%) of these were confirmed. As compared with non-users, users of transdermal combined patches had a relative risk of confirmed VTE of 7.90 (3.54–17.7), and users of vaginal ring a 6.48 (4.69–8.94) fold increased risk of VTE. Women with a subcutaneous implant (progestogen only contraception) experienced a 1.40 (0.58–3.38) times increased risk, while users of levonorgestrel IUS did not increase their risk of VTE; RR 0.57 (0.41–0.81).
Interpretation: Users of combined hormonal transdermal patch or vaginal ring have a 7.9 and 6.5 times increased risk of confirmed VTE as compared with non-users, and a 2.5 and 1.9 times higher risk as compared with users of oral contraceptives with levonorgestrel and 30–40 µg oestrogen. Subcutaneous implant may slightly increase the risk of VTE whereas levonorgestrel IUS does not increase the risk of VTE.

**PS12.7**

**Hormonal contraception and thrombotic stroke. A follow-up study 1995–2009**

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**Background:** We lack knowledge about the influence of new types of hormonal contraception on the risk of thrombotic stroke. We aimed to provide this knowledge.

**Methods:** In a historical National cohort study we followed Danish non-pregnant women 15–49 years old, free of previous thrombotic disease or cancer, from January 1995 through December 2009. Exposure data, clinical end points and potential confounders were retrieved from four National Registries.

**Results:** After exclusions and censorings, 1,626,158 women were included and contributed with 14,251,063 observation years during which 3,311 first ever thrombotic strokes were observed. With non-users of hormonal contraception as reference, current use of combined oral contraceptives with 20 µg ethinylestradiol (EE) conferred the following relative risks of thrombotic stroke according to the progestogen type: With desogestrel conferred a RR of 1.6 (95% CI 1.3–1.9), gestodene 1.7 (1.4–2.2) and with drospirenone of 0.9 (0.2–3.6), and 30–40 µg pills with norethisterone a RR of 2.2 (1.5–3.2), levonorgestrel 1.6 (1.4–1.9), norgestimate 1.5 (1.2–1.9), desogestrel 2.2 (1.8–2.7), gestodene 1.8 (1.6–2.0), and with drospirenone 1.7 (1.3–2.2), respectively. Transdermal patches; RR 3.2 (0.8–12.7) and Vaginal Ring; RR 2.5 (1.4–4.4) conferred the highest risk estimates. Progestogen only contraception conferred RR ranging from 0.45 to 1.39, all in-significantly increased.

**Conclusion:** Combined pills with 20 µg EE increase the risk of thrombotic stroke 0.9–1.7 times and with 30–40 µg EE 1.4–2.2 times. Vaginal combined products confer a 2.5 times increased risk, while use of transdermal patch was associated with a non-significantly three times increased risk.

**PS12.8**

**Physical activity and endometriosis risk**

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**Background:** Life style factors seem to play a role in the development of endometriosis. There is data about physical activity and body size, but the results are not consistent. Endometriosis and low BMI have been found to be associated in many epidemiological studies. On the other hand, physical activity in adulthood has been reported to lower the risk for endometriosis. This is quite controversial, because regular exercise lowers body mass. Many of these studies are case-control designs and the results might be biased due to patient group selections. Cohort studies give more reliable data for risk-factor analysis. The aim of this study was to investigate the relation of endometriosis and physical exercise frequency in adolescence and adulthood. The association to different sports was evaluated.

**Material and methods:** The population-based Northern Finland Birth Cohort 1966 is a prospective study and it includes 5889 girls. There are 232 endometriosis cases in the cohort, giving a 3.9% prevalence. The diagnosis data was collected from the hospital discharge register. The physical activity data was collected by follow-up
questionnaires carried out in 1980 and 1997–1998, at the ages of 14 and 31. The response rate was 97% at age 14 and 75% at age 31. There were questions concerning physical activity frequency, participation in different types of sports, membership in a sports club and success in sports competitions at age 14.

**Results:** Frequent physical activity at adolescence presumes endometriosis. When categorizing activity levels in three classes: rarely (1–3 times a month or not at all), weekly and often (every day or every other day), at age 14 the prevalence of endometriosis increased from 3.8% to 4.7% to 5.4% (p<0.009). At age 31 the prevalence increased from 3.7% to 5.1% to 5.0% (NS). If the activity level was only rarely or weekly in adolescence and in adulthood the prevalence of endometriosis was always <4%. Women who were later diagnosed with endometriosis listed several endurance sports at age 14: running, swimming and several individual sports: downhill skiing, gymnastics, dancing. There were no differences in having a membership to a sports club or success in sports competitions at age 14 between women later diagnosed with endometriosis and those who were not.

**Conclusion:** This analysis suggests that physical activity has a role in the development of endometriosis. Women who are physically inactive at adolescence and at adulthood seem to have a lower risk for endometriosis. There seems to be an association between very active and physically demanding sports and later diagnosis for endometriosis. Life style factors seem to have far-reaching and unexpected consequences for female health. The mechanisms remain unsolved.

**PSI2.9**

**Burden of illness in women with endometriosis**

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**Objectives:** Endometriosis is a condition with an estimated prevalence of 10% among women in fertile age and with a varying impact on the affected women’s quality of life. We conducted this survey in order to estimate to what extent women affected by endometriosis consume healthcare resources and are on sick leave.

**Materials and Methods:** A postal survey consisting of 88 questions concerning health care consumption, occupation, sick leave and quality of life was sent to 800 women recruited from The Endometriosis Association, Sweden (n=400) and from five gynecology departments at five Swedish hospitals (n=400). 449 answers were received (56%). Descriptive statistics were performed.

**Results:** Data on endometriosis patients were compared to the general population, the most seminal findings being:

- Endometriosis patients qualify more frequently (42%) for free medical aid in the Swedish health care system (frikort för vård) compared to the general population (18%).
- Endometriosis patients qualify more frequently (31%) for free medicine in the Swedish health care system (frikort för läkemedel) compared to the general population (15%).
- Endometriosis patients report sick-leave in average 38 days per year compared to general population which reports 9 days per year.
- Endometriosis patients have undergone appendectomy in 19% compared to general population which has a cumulative lifetime risk for appendectomy of 7%.

**Conclusions:** Women with endometriosis consume more health care resources and medication than the general population. The reported absenteeism from work entails a significant cost for patients and society. The reason why women with endometriosis have undergone appendectomy more often than the background population could be explained by misjudgment of symptoms that in many cases probably was endometriosis related rather than related to an acute appendicitis. The diagnostic and treatment efforts as well as the support from health care providers and society in large must improve to give these women a better and fair quality of life.
Among women with major affective disorders, illness risk is much greater during the postpartum period than during pregnancy. Based on exposure-adjusted risk per pregnancy, episodes were 3.5 times more prevalent during the postpartum period than during pregnancy, and the risk was consistently higher with bipolar disorder (1).

A common mechanism for psychiatric illness episodes during pregnancy is discontinuation of prophylactic medication used for recurrent depression or bipolar disorder, resulting in an affective illness episode.

The relative risk of postpartum psychosis among first-time mothers with previous hospitalization for psychiatric disorder is increased more than 100-fold (2). Most cases of post-partum psychosis are manic-depressive in form, and there is much evidence for a close connection between puerperal psychosis and bipolar disorders.

Post-partum depression should be prioritised as it is a common disorder with a prevalence rate of about 13%. Treatment of depression in women after childbirth should integrate both psychosocial and biological modalities. Selective serotonin reuptake inhibitors (SSRIs) have been recommended as first line therapy in postpartum depression (3). Breast-feeding should not be generally discouraged in women using SSRIs (4). Numerous reports indicate that severe depression and puerperal psychosis responds well to electroconvulsive therapy.

Disorders of the mother-infant relationship are prominent in 10–25% of mothers referred to psychiatrists after childbirth (5).

If a woman with bipolar disorder is already using a prophylactic drug at the time of pregnancy, she can, with the exception of valproate, continue using this drug also during pregnancy. If the disorder starts during pregnancy, lithium, lamotrigine or a second generation antipsychotic drug are suitable alternatives. Drugs used during pregnancy can be continued in the post partum period, although some drugs including lithium require special precautions if the mother wishes to breast-feed (table 1). If treatment is initiated after delivery, the mother’s wish to breast-feed should be taken into consideration when a specific drug is chosen (6).

Although existing studies have weaknesses, there is today sufficient evidence to give qualified advice regarding choice of medication for depression and bipolar disorder during pregnancy and after delivery.

**Literature**

**PS13.2**

**Fear of childbirth – does it affect mode of delivery. The BIDENS study – results from six countries**

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**Background:** Severe fear of childbirth has been reported to affect mode of delivery, i.e. the rate of cesarean section. Women who request a cesarean for non-obstetric reasons often suffer from fear/phobia of vaginal delivery.

**Method:** A cohort of 7 200 unselected pregnant women in Belgium, Iceland, Denmark, Estonia, Norway and Sweden filled out the Wijma Delivery Expectancy Questionnaire (W-DEQ) during pregnancy. The sample included in this study was 6883 women. Fear of childbirth was defined as a W-DEQ score of ≥85. Mode of delivery was registered from hospital records.

**Results (preliminary):** Fear of childbirth in primiparous women was not significantly associated with cesarean section (p=0.059). Fear of childbirth in multiparous women was associated with an emergency cesarean section (p=0.038), and with an elective cesarean section (p=0.000). Women with a previous cesarean more often reported fear of childbirth (p=0.000). Adjusted for age, country and at least one previous cesarean, the OR with 95% CI for an elective cesarean was 1.62 (1.43 - 2.31) for multiparous women with fear of childbirth.

**Conclusion:** Pregnant women with a previous cesarean more often fear vaginal birth, which affects mode of delivery.

**PS13.3**

**Mental distress and life events during pregnancy – results from the BIDENS* study**

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**Background:** Sexual, emotional and physical abuse has traditionally been given little attention in antenatal care. However, abuse may cause severe mental distress and also impact on fear of childbirth and hence influence mode of delivery. The experience of delivery may be effected as well as the perception of health care services in general. There is a lack of studies addressing prevalence of mental distress and abuse among pregnant women. The aims of the Bidens study included the assessment of prevalence of abuse and mental health indicators with validated instruments in order to be able to compare countries and assess needs.

**Material and Methods:** Women were recruited at hospital and community antenatal clinics in the six participating European countries. Abuse history was assessed by a validated questionnaire (NorAq); depression by a short version of Edinburg Postnatal Depression Scale (EDS–5). Women were asked about posttraumatic stress symptoms (PTS); intrusive memories, avoidance of certain situations, and emotional numbness. Women were also asked to report their experience with previous childbirth as well as perception of health care in general.

**Results:** Of the 7200 participation women, 6846 gave sufficient answers on the NorAq abuse questionnaire during pregnancy; 831 in Belgium, 597 in Iceland, 1283 in Denmark, 890 in Estonia, 2276 in Norway and 969 in Sweden. The proportion of primiparous women ranged from 39 % in Iceland to 58 % in Denmark. Countries differed as to the reporting of any abuse; from 23 % to 46 %. Having a score 7 and above on EDS–5 was reported by a total of 9 %, ranging from 6 % to 13 % between countries. Posttraumatic symptoms were reported by 12 %. A
total of 22% reported their previous birth as a negative experience and 20% reported any negative experience with health care. We also addressed women's actual use of psychosocial services for fear of childbirth; and 5% reported that they had received such service, ranging from 1% to 11% between countries.

Conclusion: Reporting of abuse, mental health indicators as well as experiences with health care varied greatly between countries as did the use of specialized services during pregnancy addressing fear of delivery.

* Bidens is the acronym for the six participating countries: Belgium, Iceland, Denmark, Estonia, Norway, Sweden and the name of the yellow flower in our logo.

** On behalf of the Bidens study group; Belgium: Marleen Temmerman, An-Sofie Van Parys; Iceland: Thora Steingrímsdóttir, Hildur Krisjansdottir; Denmark: Ann Tabor, Anne-Mette Schroll; Estonia: Helle Karro, Made Laanpere; Norway: Berit Schei, Mirjam Lukasse; Sweden: Elsa Lena Ryding, Anne-Marie Wangel.

PS13.4

How to treat fear of childbirth

Terhi Saisto [(1)]

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Fear of childbirth is one of the most common reasons for obstetric consultation, and for an elective caesarean section. Approximately 5 to 6% of pregnant women suffer from severe fear of childbirth, which disturbs family- and working life, and prevents the preparation to normal childbirth and parenthood. It represents as nightmares, panic attacks, anxiety, and as numerous physical complaints and can make it difficult to form an early mother-infant-relationship. The risk for puerperal depression is also increased.

In Finland, the first out-patient clinic for fearful pregnant women started in 1996. The aim of these clinics is to relieve anxiety, give adequate information (about pain relief, risks and complications concerning both caesarean and vaginal delivery, foetus's wellbeing during labour and delivery), create positive imaginations about childbirth, and discuss questions around pregnancy, delivery, and parenthood in order to increase the patient’s confidence both on her own abilities and on the treatment at labour ward. However, there is no consensus on by whom the possible treatment should be given: obstetricians, midwives, or psychologists. In Finland and in Sweden, different strategies how to treat fear of childbirth have been applied to clinical practise (support from obstetrician or midwife, psychiatric consultation, psychotherapy, group psychoeducation).

Studies on the treatment for fear of childbirth are scanty. None of them has investigated either the possible reduction of anxiety, fear, or stress, or the possibly better adjustment to motherhood. In lack of that kind of data we have to judge the results of the treatment for fear of childbirth from the amounts of women who, after the treatment, withdraw their request for caesarean and, instead, prepare to a normal vaginal childbirth. Descriptive studies have showed that far more than one half of patients (50–87%) can, after the treatment, prepare to a normal vaginal delivery and caesarean without a medical indication can be avoided. Best results are from crisis-oriented counselling (Nerum 2006) and group psychoeducation combined with relaxation exercises (Toivanen 2006 and Rouhe, submitted). The two randomized studies (Bastani 2006 and Rouhe, submitted) have ensured the positive effects of treatment, as significantly more women were able to vaginal delivery after the intervention as compared to routine clinical surveillance s (63–79% vs 40–48%).

In various studies, the number of women ending up to caesarean because of fear of childbirth is lower among nulliparous (13–19%) than among parous women (14–34%). Previous caesarean delivery is the strongest predictor of fear of childbirth in next pregnancy, and previous vacuum or otherwise unsatisfactory experience (for example inadequate pain relief) plays also a remarkable role. The obstetrician should use one’s expertise to advice the parous woman, together with support, about her realistic possibilities to normal vaginal childbirth.
General: It has been evident the last years that understanding the regulation of gene expression is the key to understanding both normal and pathophysiological processes on the cellular level. Typically, 10–15 small molecules that bind to a so-called regulatory DNA sequence just upstream of the genetic code regulate the accessibility of a given gene. These transcription regulators bind to DNA and increase or decrease the likelihood that the genetic code is transcribed to mRNA.

Epigenome: One of the mechanisms that a cell may employ to adapt its gene expression pattern to the environmental demands is by chemical modification of DNA Cytosine residues in the binding sites of transcription regulators may be methylated preventing binding of these factors. Gene expression may be totally shut off “gene silencing” by this mechanism. The methylation pattern in a given cell may be called the “epigenome” of the cell.

Genomic imprinting: For a number of genes, it is paramount that we read from the allele inherited either from the father or from the mother. This is obtained by laying down the correct methylation pattern of these genes during gametogenesis (imprinting). The classical imprinting disorders are associated failure of this mechanism.

Metabolic adaption: During fetal life, the fetus is able to adapt its metabolism to the nutritional status of the mother. Both famine and a high caloric load will induce changes in the fetal metabolism that may persist throughout life. These adaptions are thought to be mediated by a change in the expression pattern of genes secondary to a change in DNA methylation pattern.

Short-term adaption: Cells may modulate their gene expression pattern in response to external stimuli by methylating/de-methylating genes. This is a dynamic process and the changes in the methylation patterns does not persist for a long time in the cell.

Assisted reproduction: It is well documented that assisted reproduction (ART) in some animal models will lead to phenotypical changes in the offspring attributed to a change in the epigenome. This is thought to occur during in vitro culture.

In humans, evidence is now accumulating that ART may lead to subtle changes in the phenotype of adolescents that may be caused by a change in the epigenome. We have data suggesting that infertility factors, lifestyle factors, hormonal stimulation and IVF contribute to this. A cause for concern is that different culture condition for the embryos in IVF seems to lead to different epigenomes. We still do not understand the clinical consequences of these small changes in the epigenome related to ART. The main reason for this is an almost total lack of understanding of the relationship between the epigenome of an early human embryo and the phenotype later in life.
Elective single embryo transfer and multiple births – trends in Nordic countries

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The most important outcome of infertility treatment is a birth of a healthy baby. Preterm delivery and low birth weight are the main factors accounting for the excess in neonatal morbidity. The use of elective single embryo transfer (SET) combined with cryopreservation can minimize the twin rate. In Nordic countries more than 2% of newborns nowadays are born after ART. All Nordic countries have registers reporting all IVF/ICSI/FET cycles. Differentiation between elective SET and compulsory SET cannot be performed, but based on earlier Nordic data the latter only constitutes 10–15%.

The percentage of transfers in relation to the number of embryos varies between countries. The major shift of SETs to around 50% in Finland and 65% in Sweden for 2004 reduced the twinning birth rates to 11% or even lower. At the same time, in all countries, the clinical pregnancy rates have been unchanged. Nowadays, in Nordic countries SET is practiced in 60–70% of the cycles and even 100% in some clinics. The number of cryopreservation cycles is increasing, which should result in higher cumulative delivery rates per oocyte pick-up. According to Finnish IVF statistics 43.9% of all embryo transfers in 2009 were FETs. Data from the latest report from the European Society of Human Reproduction and Embryology (ESHRE) on ART results in Europe showed a multiple birth rate of 22.3% (21.3% twin and 1.0% triplet) in 2007. The proportion of multiple deliveries had not decreased compared with 2006 (20.8%) and 2005 (21.8%). The numbers from the Nordic countries are better, the proportion of twins being around 10% or lower.

The implementation of eSET in different countries has occurred in different ways. In Finland the initiative for reducing the number of transferred embryos came from the IVF clinics concentrating on the safety of ART, initially when treating high-risk patients. The results of the preliminary experience convinced to continue and eSET strategy has been accepted gradually nation wide. Also in Denmark and Norway the shift has been voluntary, but also partly depending on the reimbursement system. In Sweden the implementation of eSET in a larger scale occurred in 2003 following the new rules from the National Board of Health and Welfare, which instructed that in ART only one embryo should be transferred, except in cases where the risk for a twin pregnancy is estimated to be low.

The Nordic experience confirms that the practice of reducing the number of transferred embryos can be implemented not only among single clinics and highly selected patient groups, but also across the whole country. Compared with DET, eSET results in a higher chance of delivering a term singleton live birth and reduces the risk of multiples and low birth weight. The final presentation will provide the latest national data on IVF/ICSI/FET results on the Nordic countries, Denmark, Finland, Iceland, Norway and Sweden.

Predictors of ongoing implantation – novel methods, better results?

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Metabolomics, proteomics, morphokinetic analysis through time-lapse and whole genomic gene expression. These are some of the hot topics in human embryology today at world congresses in human in vitro fertilisation (IVF). Molecular biotechnology has finally entered the world of IVF. All of the above techniques are leaving or have left the drawing board and are currently being tested in clinical settings in several trials.

The purpose of this lecture is to give you a quick and simple overview of these new techniques that are very much needed as we are still using relatively simple morphological markers to select the “best” embryo for transfer. Weather or not these new methods will increase clinical results remains to be seen but considering how much scientific activity that is going on in the field of embryology it would be very surprising if it didn’t.
When is the ovary no good? Prediction of ovarian reserve

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With increasing age female fertility declines due to loss of follicles and an increase in the frequency of oocyte aneuploidy, also resulting in a higher risk of miscarriages and chromosomally abnormal offsprings in those who conceive. There is a substantial variation in the onset of spontaneous age related infertility decline, therefore a considerable time lapse between the onset of biological ovarian ageing and chronological age may be observed. This is particularly seen during controlled ovarian stimulation (COS) for assisted reproduction where, quite unexpectedly, a poor response to FSH stimulation in terms of few developing follicles and few oocytes retrieved is frequently observed. A poor response may also be observed in women who for various reasons have previously undergone ovarian surgery, in smokers, women with thyroid disorders and in cases with a family history of early menopause. Poor response in assisted reproduction is quite frequent, and it is important to inform patients at risk about what they can expect from the treatment they shall undergo and consequently consider other options like oocyte donation.

The definition of poor response or poor ovarian reserve varies widely in published papers, therefore a consensus report was published in 2011 on the definition of "poor response" to ovarian stimulation for IVF (1). This definition takes into account the age of the female spouse, the response to COS in previous cycles and the results of some ovarian reserve tests (antral follicle count or Anti-Müllerian Hormone, AMH). There are several tests to investigate ovarian reserve and in addition to predicting response to COS, AMH has recently been shown to be highly predictive for timing of menopause which is of paramount importance in modern societies where childbearing is delayed.

Literature:

Regal and maternal outcome after assisted reproduction in the Nordic countries.
NFOG Collaborative project

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The aim of the Nordic collaborative project on the safety after ART is to evaluate infant and maternal health by combining outcome data from the Nordic ART and health registers.

Studies have found diverging results regarding the risk of stillbirth in ART pregnancies, and it remains undecided whether women with ART gestations should undergo induction of labour earlier than the current clinical recommendation of 42+0 weeks of gestation in Denmark. The present study addressed two questions: a) Does the stillbirth rate increase after ART? b) Do the stillbirths in ART pregnancies occur during the same gestational weeks as in spontaneously conceived (SC) pregnancies?

Methods: ART singletons (n=60,650) were compared with a control group of 360,022 SC singletons included from Denmark, Finland, Norway and Sweden, from the years where the respective national ART registers were established until December 2007. The ART children were matched with the control children regarding mother’s parity and year of birth. Multiple logistic regression analyses were undertaken with adjustment for maternal age
and offspring sex. Stillbirth was in this common Nordic study defined as delivery of a dead child after 22+0 weeks of gestation or with a birthweight of more than 500 grams. (The Swedish data only included data on stillbirth from 28+0 weeks of gestation).

Results: Among 60,650 ART singletons 295 stillbirths (0.5%) were identified versus 1367 stillbirths in the control group of 360,022 SC singletons (0.4%), p<0.0001. The overall risk of stillbirth was found to be increased among ART children, crude OR 1.3 [95%CI 1.1–1.5], p<0.0001 when compared with their SC peers, but in the adjusted analyses this increased risk was reduced to OR 1.1 [95%CI 1.0–1.3], p=0.05. When analysing the risk of stillbirth before versus after term, no differences was found between ART and SC pregnancies after 40+0 weeks of gestation, OR 1.2 [95%CI 0.9–1.6], p=0.2. This was also the case when comparing ART and SC pregnancies after 37+0 weeks of gestation, OR 1.1 [95%CI 0.9–1.4], p=0.3. The overall risk of stillbirth until gestational week 40+0 was found to be increased among the ART singletons, OR 1.2 [95%CI 1.0–1.4], p=0.01.

Conclusion: Our findings confirm an increased risk of stillbirth among children conceived after ART, but in singleton gestations the increased risk was marginal with an overrepresentation of 1 per 1000 pregnancies. Our data support the notion that some of the difference in risk of stillbirth between ART and spontaneously conceived children is due to parental factors related to the characteristics of the subfertile mother and father. The increased risk of stillbirth in ART children is not related to post term children after 40+0. Therefore our findings do not provide evidence that labour should be induced in singleton ART pregnancies before the norm for spontaneously conceived pregnancies due to concerns for stillbirths.

**Parallel session 15 – Free communications 4**

**Obstetrics: labour**

**PS15.1**

**The prevalence of fecal incontinence in singleton primiparae 20 years after vaginal or caesarean delivery**

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Background: The fear of permanent fecal incontinence (FI) after vaginal delivery is a major reason why some women opt for elective caesarean section. The evidence for a long-term protective effect of surgical delivery is however still lacking. In this study the prevalence of FI 20 years after one vaginal delivery or one caesarean section was determined and obstetric events such as vaginal tears (≥ 2nd degree laceration), episiotomy, and/or vacuum extraction were analysed as independent risk factors for involuntary leakage of feces.

Methods: The SWEPOP (Swedish pregnancy, obesity and pelvic floor) study combined data from the Swedish Medical Birth registry with current data (2008) reported in a questionnaire, specifically assessing pelvic floor function. Only singleton primiparae, delivered vaginally (n = 3995) or surgically (n = 1204), during 1985–1988 and no further births were included. Fecal incontinence was defined as involuntary leakage of liquid and/or solid stool. Covariance and logistic regression analyses were performed in crude and risk factor adjusted data.

Results: The prevalence of FI was higher after vaginal delivery compared with caesarean section (14.4% vs. 10.4%, OR 1.44; 95% CI 1.17–1.78), accounting for a 44% increased risk of FI after vaginal delivery compared with caesarean section. A higher proportion of women had severe FI (Wexner incontinence score ≥9) after vaginal delivery compared with caesarean section (4.4% vs. 2.8%, OR 1.86; CI 1.03–3.58). A perineal tear (≥ 2nd degree laceration) was associated with a higher prevalence and risk for FI (22.6% vs. 13.8%, OR 1.82; 95% CI 1.25–2.66). Episiotomy was associated with a lower prevalence and risk for FI (11.0% vs. 14.6%, OR 0.73; 95%
Vacuum extraction had no significant effect on FI. The combination of short mother ≤160 cm and infant birthweight (IBW) ≥4000g compared with ≤160 cm and IBW <4000g was not a risk factor for FI (OR 0.80; CI 0.40–1.63).

**Conclusion:** In women, two decades after one birth, vaginal delivery was associated with a 44% increased risk of FI and in incontinent women an 86% increased risk of severe FI compared to caesarean section. A perineal tear (> 2nd degree laceration) was associated with FI whereas episiotomy decreased FI. Vacuum extraction (VE) and disproportion between mother and child (short mother/large child) had no significant effect on FI.

**PS15.2**

**Does mode of second delivery after obstetric anal sphincter rupture influence the risk of anal incontinence?**

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**Objective:** To determine the prevalence and severity of anal incontinence (AI) in women with vaginal delivery or caesarean section after a previous anal sphincter rupture (ASR).

**Design:** Register based cohort study.

**Setting:** Validated questionnaire survey.

**Population:** All patients with ASR at a first singleton delivery and one subsequent singleton delivery in Denmark, 1997–2005.

**Methods:** Patients with a second vaginal delivery were compared to patients with caesarean section. The population was divided in four groups by signs of incontinence before the second pregnancy: no anal incontinence, flatus incontinence, and incontinence for liquid and for solid stool. Odds Ratios (OR) and 95% confidence intervals (95% CI) were calculated using the chi-squared test.

**Main Outcome Measures:** The prevalence, degree and type of anal incontinence including a Wexner score after the second delivery by mode of second delivery (vaginal vs. caesarean) and considering the type of incontinence before the second pregnancy.

**Results:** Out of 2,432 patients (77.5%) who returned the questionnaire, 2,208 were included. Of these, 1,540 (69.7%) had a vaginal delivery and 668 (30.3%) had caesarean section after the first delivery with ASR. The mean age at follow up was 41 years. We found that mode of second delivery did not influence anal incontinence or Wexner score (stratified into three groups; <5, 6–8, >9), when anal incontinence before second pregnancy was considered.

**Conclusion:** Women with symptoms of AI after a first delivery with ASR have a largely increased risk of long term AI compared to women with no symptoms after the first delivery. Vaginal delivery after a first delivery with ASR did not increase the prevalence or the severity of AI, regardless of AI before the second pregnancy.
The rate of the 3rd and 4th degree vaginal lacerations in the Finnish obstetric units as a patient safety indicator

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Background: The rate of the 3rd and 4th degree vaginal lacerations has been on a steady rise in Finland. We compared the rate of this obstetric trauma in a retrospective population-based register study. 246 504 women with vaginal singleton delivery between 2006 and 2010 were included.

Methods: We categorized the Finnish obstetric hospitals by the number of annual deliveries into 6 different groups - the very large units with more than 5000 annual deliveries (group I, 3 hospitals, 65 570 deliveries), the large units with 3000 to 4999 deliveries (group II, 4 hospitals, 62 301 deliveries), the middle-sized units with 2000 to 2999 deliveries (group III, 4 hospitals, 36 614 deliveries) and with 1000 to 1999 deliveries (group IV, 8 hospitals, 47 091 deliveries), and the small and the very small units with 500 to 999 deliveries (group V, 5 hospitals, 31 279 deliveries) and below 500 deliveries (group VI, 8 hospitals, 29 799 deliveries) - and analyzed the rate of the 3rd and 4th degree vaginal lacerations between these groups. Additionally, we compared the rate of obstetric trauma by the Robson classification on different parturient groups. The comparisons were performed using a stepwise logistic regression analysis adjusting for maternal age and parity or for maternal age (Robson groups 1 and 3).

Results: The rate of obstetric trauma was significantly elevated in the largest units (group I, trauma rate 1.30%) and in the smallest units (group VI, 1.07%). The rates of the other groups II-V (0.74% to 0.88%) showed no significant differences, and they were merged in one group. The risk ratio for obstetric trauma was 1.59 (95% CI 1.46–1.73) in the group I and 1.31 (95% CI 1.01–1.72) in the group VI. The background-adjusted ORs were 1.46 (95% CI 1.11–1.92) in the group I and 1.33 (95% CI 1.22–1.45) in the group VI, respectively. When using the Robson criteria the results were more informative. In the Robson 1 (primiparas, single cephalic pregnancy, 37 weeks or more, spontaneous labour) the risk of obstetric trauma was the highest in the largest hospitals where it occurred in 2.28% of the deliveries (RR 1.52, 95% CI 1.36–1.69, age-adjusted OR 1.46, 95% CI 1.11–1.92). The rate in the smallest hospitals (1.71%) was not increased compared to the rate in the mid-sized groups II-V (RR 1.12 95% CI 0.76–1.70). In the Robson 3 (multiparas, single cephalic pregnancy, 37 weeks or more, spontaneous labor) the smallest hospitals had the highest trauma rate (0.66%) with an almost three-fold risk of obstetric trauma (RR 2.68, 95% CI 1.61–4.46, age-adjusted OR 2.70, 95% CI 1.62–4.50) compared to that of the groups II-V. In the largest hospitals the rate was 0.34%, also statistically significantly increased (RR 1.37, 95% CI 1.06–1.77, age adjusted OR 1.34, 95% CI 1.03–1.73).

Conclusions: Delivery units with similar size have different types of parturient women and therefore the use of the Robson classification is essential for a more accurate and reliable comparison.
**PS15.4**

**Episiotomy characteristics and risk for anal sphincter injuries: a case-control study**

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**Background:** Obstetric anal sphincter injury is a serious complication during vaginal delivery. The role of episiotomy as a risk factor is debated. While there is strong evidence against midline episiotomy, consensus is lacking regarding the role of mediolateral episiotomy. Studies controlling the episiotomy technique relieved that episiotomy angle is significantly associated with obstetric anal sphincter injuries (OASIS). We investigated episiotomy characteristics defined from angle, length, depth and incision point and examined the association between these characteristics and OASIS.

**Methods:** A matched case-control study carried out at the University Hospital of North Norway and Nordland Hospital. Women were included in the study if they had one vaginal delivery only and an associated episiotomy. Cases were women with clinically identified OASIS, while controls had not. Cases and controls were matched for ventouse/forceps. Seventy-four women were willing to participate and signed a written consent. At a physical examination (on average 34.5 months after birth in cases and 25.9 months in controls), the vaginal introitus/perineum was investigated for the episiotomy scar, and a picture was taken. Adobe Photoshop was used to draw all relevant lines onto the photographs. The drawing and measuring of the episiotomy characteristics were performed once by a computer drafter and an experienced obstetrician, both blinded, and once with the computer drafter and the investigator. Interobserver reliability was assessed.

**Results:** The risk of sustaining OASIS decreased by 70% (odds ratio (OR) 0.30, 95% confidence interval 0.14–0.66) for each 5.5mm increase in episiotomy depth, decreased with 56% (OR 0.44; 0.23–0.86) for each 4.5mm increase in the distance from the midline to the incision point of the episiotomy, and decreased by 75% (OR 0.25; 0.10–0.61) for each 5.5mm increase in episiotomy length. Lastly, there was no difference in mean angle between groups, however there is a u-shaped association between angle and OASIS (OR 2.09;1.02–4.28) with an increased risk (OR 9.00; 1.1–71.0) of OASIS when the angle was either <15°or >60°.

**Conclusion:** The present study showed that scarred episiotomies with depth >16mm, length >17mm, incision point> 9mm lateral of midpoint and angle range 30–60° are significantly associated with less risk of OASIS. The episiotomy’s depth and length are of particular importance. Shrinkage of tissue must be considered.

**PS15.5**

**Is the operative delivery rate in low-risk women dependent on birth care level? A randomised controlled trial**

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**Background:** In 1999 the Norwegian Parliament decided to organise national birth care into three levels. Obstetric departments were also advised to organise birth care in units for low-risk and high-risk. The Department of Obstetric and Gynaecology at Østfold Hospital Trust, with approximately 3000 births per year, was divided into
three separate units, placed on separate floors, in 2004: The Midwife-led Unit (MU), the Normal Unit (NU) and the Special Unit (SU). To investigate possible differences in operative delivery rate among low-risk women in an alongside midwifery-led unit and in standard obstetric units within the same hospital, a randomised controlled trial was carried out at the Women’s clinic at Østfold Hospital Trust 2006–2010.

Methods: 1111 women assessed to be at low-risk at onset of spontaneous labour were randomised into one of the department’s three birth units. Main outcome was mode of delivery and secondary outcomes were augmentation, pain relief, post partum haemorrhage, sphincter injuries, intrapartum transfer, Apgar score < 7 at 5 min, metabolic acidosis and transfer to neonatal intensive care unit.

Results: There were no significant difference in total operative delivery rate between the three units, 16.3 % at the Midwife-led Unit, 18.0 % at the Normal Unit, and 18.8 % at the Special Unit. There were no significant differences in postpartum haemorrhage, sphincter injuries, or in neonatal outcomes. There were statistical significant differences in augmentation with oxytocin, Midwife-led Unit vs Normal Unit RR 0.73 (95 % CI 0.59–0.89) Midwife-led Unit vs Special Unit 0.69 (95 % CI 0.56–0.86), in epidural analgesia, Midwife-led Unit vs Normal Unit 0.68 (95 % CI 0.52–0.90), Midwife-led Unit vs Special Unit 0.64 (95 % CI 0.47–0.86), and in acupuncture, Midwife-led Unit vs Normal Unit 1.45 (95 % CI 1.25–1.69) Midwife-led Unit vs Special Unit 1.45 (95 % CI 1.22–1.73).

Conclusions: Level of birth care does not significantly affect the rate of operative deliveries in low-risk women without any expressed preference for level of birth care.

**PS15.6**

Risk of shoulder dystocia: the association with gestational age at birth. A population study of 2 029 910 births in Norway

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Background: Shoulder dystocia is an infrequent obstetric emergency situation with high risk of serious complications for both the mother and the child. It is assumed that the risk of shoulder dystocia at birth is higher in post-term pregnancies than in term or pre-term pregnancies, independent of offspring birthweight. We wanted to study whether gestational age at birth is associated with shoulder dystocia, with and without adjustment for offspring birthweight.

Method: We performed a population based study by using data from the Medical Birth Registry of Norway and included all vaginal births of singletons in cephalic position after gestational weeks 22 during the period 1967–2009, a total of 2 029 910 deliveries.

Result: Shoulder dystocia occurred in 0.73% of all births. The proportion of births complicated with shoulder dystocia increased with increasing gestational age at birth. Before gestational weeks 36 shoulder dystocia occurred in 0.20% of all births, and at gestational weeks 42–43 the prevalence was 0.97%. Using gestational weeks 40–41 as the reference, the crude odds ratio (OR) of shoulder dystocia was 0.24 (95% CI 0.20–0.29) at gestational weeks less than 36, and the OR was 1.17 (95% CI 1.11–1.22) at gestational weeks 42–43.

The direction of the association of gestational age at birth with shoulder dystocia was altered after adjustment for offspring birthweight. The OR for shoulder dystocia, after adjustment for birthweight, was 1.58 (95% CI 1.30–1.93) at gestational weeks less than 36, and the OR was 0.88 (95% CI 0.84–0.92) at gestational weeks 42–43 (reference weeks 40–41). Additional adjustment for induction of labor, epidural anesthesia in labor, prolonged labor, forceps-assisted delivery, vacuum-assisted delivery, maternal diabetes, parity and period of delivery
did not change the inverse association of gestational age at birth with shoulder dystocia. Birthweight was strongly associated with shoulder dystocia, but also within all categories of birthweight, the risk of shoulder dystocia was higher in preterm than in postterm pregnancies.

**Conclusion:** The absolute risk of shoulder dystocia increased with increasing gestational age at birth. However, after adjustment for offspring birthweight, the risk of shoulder dystocia decreased with increasing gestational age at birth. Thus, giving birth to an offspring with high birthweight preterm is associated with higher risk for shoulder dystocia than giving birth to an offspring weighing the same at term or post-term. For obstetricians this is important knowledge to bear in mind in clinical decision making.

**PS15.7**

Nordic Obstetric Surveillance Study (NOSS). Preliminary results and perspectives

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**Objective:** To assess the prevalence of severe obstetric complications in all Nordic countries.

**Design:** Prospective. Nordic collaboration.

**Setting:** The Nordic Obstetric Surveillance Study (NOSS), was founded in 2009 as a joint initiative between the Nordic Federation of Societies of Obstetrics and Gynecology (NFOG) and NOMBIR (The Nordic Medical Birth Registries). Data on severe obstetric complications were reported prospectively to a database by clinicians and retrieved from The National Medical Birth Registries, The Hospital Discharge Registries and The Nordic National Transfusion Databases by using ICD-10 codes on diagnoses and NCSP codes on surgical procedures. We present the preliminary results from the prospective data collection. Data will be further analysed to assess the incidence, case fatality and risk factors for severe obstetric complications and the relation to prior caesarean section.

**Sample and Methods:** Cases of uterine rupture, placenta accreta/percreta, peripartum hysterectomy and severe post partum haemorrhage reported from the Nordic maternity units during 1 April 2009 to 31 December 2011. Sweden (S), Iceland (I) and Finland (F) have ended the data collection by August 2011, and Denmark (DK) by the end of December 2011. Norway (N) will end data collection in August 2012.

**Main outcome measures:** Rates of reported severe obstetric complications in the Nordic countries.

**Results:** Severe obstetric complications were reported by the end of 2011 reported in a total of 711 cases of approximately 542,937 births (DK:376, NO:99, F:212, I:21, S:146). Complete uterine rupture was reported in 271 cases (DK:69, NO:40, F:61, I:14, S:87), placenta accreta/percreta in 190 cases (DK:103, NO:17, F:42, I:0, S:28), severe post partum haemorrhage in 147 cases (DK:27, NO:29, F:87, I:4, S:not collected) and peripartum hysterectomy in 103 cases (DK:35, NO:13, F:22, I:3, S:30).
Conclusion: Severe obstetric complications are rare, why it is essential to collaborate with other countries, to collect a sufficient number of cases for analysis. This Nordic initiative provide the foundation such studies and for future audit and common educational activities on severe obstetric complications, for obstetricians in the Nordic countries.

PS15.8

Severe maternal morbidity "near miss" in Sweden- are there differences between women from high-income and low-income countries?

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Introduction: Sweden has among the lowest levels of both maternal and perinatal mortality, in the world. However, studies have shown an increased risk among women from Sub Saharan Africa. Maternal near miss (MNM), severe maternal morbidity, has been recognized as a useful means to examine quality of obstetric care. By studying MNM, the higher number of cases can give earlier information that allows for corrective action to be taken on identified problems, than if only maternal mortality is studied. That the women has survived is also considered positive compared to cases of maternal death, when performing audits in order to improve obstetric care. MNM is defined as: “A woman who nearly died, but survived a complication that occurred during pregnancy, delivery or within 42 days of termination of pregnancy” (WHO 2009). The aim of this study was to see if there are any differences in MNM depending on the woman’s country of birth, classified as high-, middle- and low-income countries, according to the World Bank.

Method: We did a register study with 914 474 deliveries between 1998 and 2007. We used the Swedish Medical Birth Register and the National Patient Register. ICD 10 codes for organ failure, shock, cerebrovascular diseases, myocardial infarction, embolism, rupture of a dissection of the aorta, severe pre-eclampsia (HELLP, DIC), eclampsia, uterus rupture and sepsis were used as inclusion criteria for MNM. The Swedish Population Register gave the women’s country of origin and from the Education Registry of Statistics Sweden we attained the highest level of education.

Results: In total we found 2655 cases of MNM, 2.9 cases per 1000 deliveries. Women from low-income countries had a 2.4 times increased risk of MNM compared to other women. There were no differences in MNM frequency among women born in Sweden or in other high-income or middle-income countries. Adjustment for age, parity, BMI, smoking, type of hospital and education did not affect the risk increase for women from low-income countries. Women from low-income countries had an increased risk of MNM in all morbidity groups compared to Swedish born women. This risk was especially high for near-miss defined organ failure (OR 4.3 95% CI).

Conclusion: Women from low-income countries had an increased risk of MNM compared to women born in Sweden, in another high-income country or in a middle-income country. The results are in line with previous studies on perinatal and maternal mortality. The cause of the risk increase is most likely multi factorial. Higher disease burden, not studies socio-economic factors, differences in health care seeking behaviour and/ or substandard care might be of importance.
Ps15 / 09

Maternal mortality in the Nordic countries
The establishment of a Nordic maternal mortality collaboration

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Background: Despite improvements in medical care women are still dying because of pregnancy and labor. In the Nordic and other high-resource countries, the maternal mortality ratio is low. However, even such serious events are underreported, also in countries with well-established medical registers. In a few European countries, especially in United Kingdom and the Netherlands, maternal deaths have been registered and assessed systematically for decades. In the Nordic countries similar audit groups are developing and in 2011, based on these national groups, a Nordic Maternal mortality group was established for comparable registration of maternal deaths in the five Nordic countries under the framework of NFOG.

Aim: The aims of the Nordic collaboration are 1) to identify the number of direct, indirect and coincidental maternal deaths in the Nordic countries, 2) to classify deaths based on common classification criteria, 3) to register data, including assessment of cases, in a common Nordic database.

Material and methods: Yearly national data will be collected in each country by linkage of registers and direct reporting from hospitals. Assessment of cases by care, organization and compliance will be registered by the national audit-groups, with identification of learning points and areas that need further research, teaching or training. The cases are classified by the latest British CEMACE classification criteria. Results will be presented in 5-yearly Nordic reports.

Results: Initial data from the period 2005–2009 will be presented. During that period the maternal mortality ratio in the five countries, based on different, but reliable identification methods, differed significantly, ranging from 7.4 to 9.4 per 100,000 live births (WHO classification). In Iceland there were no deaths in 22,805 live births during this period.

The most common cause of death was preeclampsia, closely followed by cardiac disease, venous thromboembolism and suicide. In a majority of these cases there was a learning potential.

Discussion: Because maternal deaths are rare in our countries, a Nordic collaboration and a common database are necessary to follow trends with regard to causes of death based on a greater number of births. Even though there are differences, the demographics and the health care systems in the countries are comparable, which makes it possible both to pool and compare data. Dissemination of important learning points will assist in reducing further the number of maternal deaths.
Parallel session 16 – Living beyond cancer therapy – time for a change?

PS16.1

The value of gynecologic cancer follow-up: evidence-based ignorance?

Ole Mogensen (1)

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Objective: To elucidate the extent of evidence based data of follow-up after primary treatment for endometrial and ovarian cancer addressing perspectives of technology, organization, economics and patients.

Methods: Systematic literature searches according to the recommendations of the Cochrane Handbook for Systematic Reviews of Interventions were conducted separately for each of the four perspectives.

Results: None of the identified studies supported a survival benefit from hospital-based follow-up after completion of primary treatment for endometrial or ovarian cancer. The methods for follow-up were of low-technology (gynecologic examination with or without ultrasound examination). Other technologies had a poor sensitivity and specificity in detecting recurrence. Substantial differences especially in frequency and applied methods were found between departments.

Conclusion: The main purpose of follow-up after treatment for cancer is improved survival. Our review of the literature showed no evidence of a positive effect on survival in women followed after primary treatment of endometrial or ovarian cancer. The conception of follow-up among physicians, patients and their relatives therefore needs revision. Follow-up after treatment should have a clearly defined and evidence based purpose. Based on the existing literature, this purpose should presently focus on other endpoints than early detection of relapse and improved survival. These endpoints could be quality of life, treatment toxicity and economy.

PS16.2

Follow-up after cancer treatment, how does it influence quality of life?

Ingvild Vistad (1)

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For women with gynecological cancer, routine follow-up marks the transition from intensive treatment to survivorship. Most patients are followed up in a hospital setting for approximately five years. Follow-up of cancer patients accounts for a substantial part of outpatient activity, and alternative models of care are developing. In some countries, low-risk follow-up is already done in primary care, mainly in breast, and colorectal cancer. A questionnaire study among gynecological oncologists (N=375) in Europe, indicate that 42% of the responders preferred hospital follow-up for all patients, whereas 47% preferred follow-up by general practitioners (GPs) for either low-risk patients (38%) or for all patients (9%). Ten percent preferred no routine follow-up for low risk patients.

The role of follow-up is to provide clinical and cost-effective practices that detect recurrence and impact survival outcomes. In addition to detection of recurrence, the patients’ quality of life (QOL) is regarded as an increasingly important aspect of follow-up visits. Also, many gynecological cancer patients have physical and mental late effects after disease and treatment that may influence their QOL. Cancer survivors are aging and have other comorbid conditions which may also affect their QOL. Hence, it is a challenge to distinguish between potential problems related to their prior cancer and problems related to other conditions. Whether the patient’s GP or the gynecologist is best suited to provide such after-care is important to discuss.
Studies show that patients value the psychological and social support that cancer follow-up provides. Most patients are reassured by the ongoing tasks of surveillance and regular contact with the doctors at hospitals, and many patients believe that follow-up is best carried out by a hospital doctor, rather than a specialist nurse or GP. On the other hand, hospital follow-up may also lead to unnecessary tests, anxiety, and provide false reassurance. In questionnaire studies it has been shown that the patients feel more anxious than usual prior to the routine follow-up visits, while other patients report a strong preference for follow-up even if it would not lead to earlier detection of a recurrence. Randomized controlled trials exploring different follow-up-regimens of cancer patients are scarce, and the majority of studies are conducted in breast- and colorectal cancer patients. These studies show no significant differences in QOL, satisfaction and/or mental health between hospital follow-up and follow-up by GP or nurse.

In future studies, a critical look at costs and the use of resources in follow-up of gynecological cancer patients is important. The patients should be counseled on the benefits and pitfalls of disease monitoring, which should include impact on QOL of follow-up.

**PS16.3**

*Value of CA125 in ovarian cancer follow-up – what is the evidence?*

No abstract submitted

**PS17 | 15.30–17.00**

**Parallel session 17 – Abortion practice in transition from surgery to medication**

**PS17.1**

*The Nordic approach*

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An increasing number of women in Europe opt for medical abortion instead of surgical abortion and for home administration of misoprostol wherever this option is available. This trend is especially marked in the Nordic countries. It is expected to continue in the next years world-wide.

Medical abortion using the antiprogestin mifepristone (Exelgyn; Paris, France) combined with a prostaglandin has been available in Europe since 1988 for termination of pregnancy up to 49 days of amenorrhea and since 1991 for terminations up to 63 days of amenorrhea. A few years later it was also approved for second trimester abortion. More recently it was shown that medical abortion is safe and acceptable for use at terminations between 9 and 13 weeks of gestation.

Critical aspects of the development of medical abortion include the regimen of mifepristone and misoprostol, the interval between the drugs, pain medication, home-use of misoprostol, very early abortion, how to diagnose a complete abortion, post abortion contraception and the role of midlevel providers in medical abortion care.
**PS17.2**

**Abortion and risk of mental disorders**

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**Background:** We know that deliveries are followed by a marked increase in mental disorders, whereas conflicting results have been found for induced abortions.

**Objectives:** To assess mental disorders in women undergoing induced abortion.

**Design:** Historical follow-up study 1995–2007.

**Material and methods:** Exposure data were achieved from the National Registry of Patients, and outcomes from the Danish Psychiatric Central Registry. We included all women free of previous psychiatric admissions until nine months before an induced abortion during the period 1995–2007, and assessed the incidence rate of first time in- or outpatient contact with any type of mental disorder from nine months preceding to 12 months after having a first time 1st trimester induced abortion.

**Results:** During the study period 82,375 women had a first 1st trimester induced abortion, and the incidence rate of a mental disorder contacts during the nine month before the abortion was 1.40 per 100 exposure years, and 1.55 per 100 exposure years within the first 12 months after the abortion (NS). During the same study period 279,768 women gave birth to their first live-born child and the corresponding rates during pregnancy were 0.38 and after delivery 0.68 first time psychiatric contacts per 100 observation years, respectively.

**Conclusion:** While the incidence rate of a first psychiatric contact increases with 79% after as compared with before delivery, we found no significant difference in such contacts after versus before an induced abortion.


**PS17.3**

**Medical abortion at 9–12 weeks**

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**Aim:** Implementation of late first trimester medical abortion both at one single Norwegian hospital and at the national level.

**Background:** Medical abortion as a treatment for early pregnancy termination up to 9 weeks gestation has become a frequent and well-established procedure in the western world. Many studies have shown it to be an effective and safe treatment alternative and most women find the method acceptable. In the Nordic countries, medical protocols are exclusively used for second trimester abortions. For late first trimester abortions (performed between 9–12 weeks) the method used in most countries has been exclusively surgically, although Ashok et al already in 1998 reported medical abortion with mifepristone and misoprostol as an effective, safe, and acceptable treatment alternative also for this gestational age. In October 2005, as the first hospital in Norway, medical abortion between 9–12 weeks gestation was introduced at the Department of Obstetrics and Gynecology, Haukeland University hospital, Bergen.

**Methods:** Both the implementation of a new procedure and the practice as an established method were surveyed. All women received mifepristone 200 mg orally and were admitted as day patients 36–48 hours later where 800 µg misoprostol was administered vaginally. Misoprostol was repeated every 3 hours orally to a maximum of 5 doses if needed. The termination was confirmed by visual inspection by members of the nursing staff. The
women were followed-up closely with either ultrasound or s-hCG measurements. Acceptability of the procedure was measured in the implementation period by a standard questionnaire that the women filled out at the follow up visit. In 2012 a national survey to all hospitals was conducted to establish the access of late first trimester abortion in Norway.

**Results:** A total of 254 pregnant women with gestational age 63–91 days were included during the implementation phase. Median gestational age was 69 days (range 63 – 90). The successful termination rate was 91.7%. Surgical evacuation was carried out in 21 (8.3%) women. A total of 85 (33.5%) women aborted after only one dose of misoprostol while 228 (89.8%) had aborted after three doses of misoprostol. Median induction-to-abortion time was 4.5 (range: 0–15.5) hours and 214 had completed the procedure (93.9%) within 8 hours. Most women (91.0%) found the method of treatment highly acceptable, 76.1% would opt for the method of treatment if they ever needed a termination of pregnancy again and 81.9% would recommend the treatment to a friend. After the implementation period a consecutive registration of 705 patients show a drop in surgical evacuation rate to 5.4%. The method is now available in Norway at more than 50% of the hospitals that perform abortions.

**Conclusion:** Medical abortion is confirmed to be an effective and acceptable method for termination of pregnancy in late first-trimester and is now a prevalent method at hospitals in Norway.

**PS17.4**

**Abortion in minors**

Oskari Heikinheimo (1), S. Leppälähti (1), M. Mentula (1), M. Niinimäki(1), M. Gissler (1)

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Only few countries have reliable statistics on teenage pregnancy, capable of differentiating delivery and termination of pregnancy (TOP). Moreover, the proportion of teenage pregnancies resulting in a TOP varies by country. The incidence of teenage TOP is relatively low in Finland (13/1000 in 2009) compared to USA (14.6/1000), England (24/1000), or Sweden (24/1000). In recent years 61% of all teenage pregnancies have resulted in TOP in Finland, 80% in Sweden and 23% in USA.

We have analyzed the trends in teenage TOP, and the proportion of induced TOPs of all teenage pregnancies in Finland between 1987 and 2009 using the Finnish national registry on induced abortion. We find that the incidence of teenage TOP fluctuated significantly during the study period, most likely associated with varying public financing of sexual education programs in schools. However, a declining trend was seen in the 2000’s. Early TOPs became much more common, which is likely to be related to introduction of medical abortion. However, the proportion of second-trimester TOP did not decline. Young age and nonuse of contraception were related to a higher risk of second-trimester TOP. The incidence of repeat TOP increased markedly in the 2000’s, especially among girls aged 16–19 years. Beside age, living in an urban area and having undergone a second-trimester TOP were risk factors for repeat TOP. The use of intrauterine contraception for planned post-abortal contraception increased, especially among girls with repeat TOP.

In addition, we have assessed the safety of medical abortion among adolescent vs. adult women using the various national health registries. In these analyses the incidence of adverse events among adolescents was similar or lower than in the adult cohort. The risk of haemorrhage (adjusted odds ratio 0.87, confidence interval 0.77 to 0.99), incomplete abortion (0.69, 0.59 to 0.82) and surgical evacuation (0.78, 0.67 to 0.90) were lower in the adolescents. In sub-analysis of primigravid women, the risks of incomplete abortion (0.68, 0.56 to 0.81) and surgical evacuation (0.75, 0.64 to 0.88) were lower in the adolescents.

We conclude that the rate of teenage TOP seems to rapidly reflect changes in national sexual health care policies. Several encouraging developments - declining overall rate of teenage TOP, their performance in earlier gestation and increasing use of intrauterine contraception for post-abortal contraception are currently taking place. However, the rate of second trimester TOP has not declined and the rate of repeat abortion has increased. These may
represent signs of marginalization. As medical abortion is safe among adolescent women, its use can be recommended also among minors. Nevertheless, multidisciplinary efforts are important in order to maintain a low rate of abortion among teenagers.

PL3 | 09.00–10.15

Penary 3 - Maternal health in global perspective

PL3.1

Reproductive changes over generations
No abstract submitted

PL3.2

Reproduction: evolutionary and lifecourse perspectives

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Non-communicable diseases (NCDs) present enormous humanitarian and economic threats to developed, and increasingly to developing, societies especially those which have gone through economic transition rapidly. NCDs are often thought to be solely consequences of sedentary lifestyle and unbalanced diets in adulthood. Yet this does not explain why some individuals or population groups are at greater risk in the same environment; nor why interventions targeted at improving adult lifestyle are sometimes ineffective or cannot be sustained; nor why the risks differ in men and women. We seem to be focussing on the proximate causes of NCD rather than asking about the ultimate causes: i.e. how evolution and development influence responses to contemporary environmental challenges.

Many developmental processes evolved to provide a fitness advantage – viz. survival to successful reproduction. Evolution drives fitness, rather than health, in a predicted environment. If the prediction is inaccurate, risk of NCD is increased. Development incorporates a degree of variation into phenotypes induced, explaining the ranges of responses to a mismatched contemporary environment, and the associated risks of NCD. In many species, maternal and paternal effects affect induction of the offspring phenotype depending on environmental conditions (e.g. nutrition, stress levels) and aspects of parental phenotype (body composition, age, parity etc). Moreover phenotypes induced show sexual dimorphism, relating to lifecourse strategies, again to maximise fitness. All these processes operate within the normal range and so it is incorrect to view the process acting in development as disruptive or as early signs of pathophysiology.

We are now learning how epigenetic mechanisms confer developmental plasticity in gender-specific ways and how they can affect “heritable” risk of NCDs without changes in the genome. They can be passed to more than just the next generation. Epigenetic differences may provide valuable perinatal biomarkers of an individual's responses to their developmental environment and predictors of their later NCD risk. They may help customise interventions appropriately.

Consideration of the origins of NCD risk stresses the importance of education and other initiatives to promote the lifestyle and body condition of parents-to-be, especially adolescent girls. Such initiatives have to be culturally specific and raise societal issues but will repay investment substantially, even in the short-term, by assisting the next generation to have a healthier start to life.

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Among the bacterial STIs, genital Chlamydia is by far the most common infection in the Nordic countries. In Norway approximately 250,000 tests are taken annually of which ca 9% are positive. The highest incidence is found among women and those below 25 years of age. In a recently published survey from the population registries in the Nordic countries, the overall prevalence was 17% for reporting ever having had genital Chlamydia. Surveillance data from all the Nordic countries has shown increasing incidences the past decades and the effectiveness of the main preventive strategies may be questioned.

Fundamental to prevention and control of transmission of genital Chlamydia (and other bacterial STIs) is safer sexual behaviour (through condom use). Also, opportunistic screening and early testing of symptomatic individuals resulting in early diagnostics and treatment is essential. However, thorough contact tracing must not be forgotten, and the importance of compliance to the guidelines is emphasized.

The increasing evidence for Mycoplasma genitalium as a microbe of equal pathogenicity as Chlamydia trachomatis, challenge our test routines both in symptomatic and asymptomatic individuals. However, there are no national guidelines. Also, the varying availability of laboratory test for Mycoplasma as well as the refunding policy has an impact on the management of this infection. Furthermore, new therapeutic challenges have occurred in the era of this "novel" STI and will be discussed.

Gonorrhoea has shown a substantial decline over the last decades, and is today a rare infection among heterosexuals. The life time prevalence varies significantly by birth cohort and can be seen as a periodic effect reflecting the introduction of oral contraceptives in the 60’s. Female cases are nowadays most often infected by their steady partner who has contracted their infection abroad (most in Asia). However, Nordic local outbreaks among young heterosexual occur and should challenge our thinking about who is at risk. With the new nucleic acid amplification tests (NAAT) for gonorrhoea, problems of sensitivity have largely been overcome. However, the increasing problem of antibiotic resistance should remind us about the need to include cultures in testing and also ensure test of cure, partner notification and treatment of steady partner.

Syphilis is no longer a health problem in the Nordic female population. However, immigrants may carry serological scars from previous infection of both venereal and non-venereal treponematoses challenging our interpretation of screening test results. We should, however be aware that congenital syphilis remains a major health problem worldwide when discussing our screening routines in pregnancy.

Of the viral STIs, only HIV will briefly be discussed in this presentation.
Recurrent vulvovaginal candidiasis, vulvodynia and emotion – what is the connection?

Sophia Ehrstöm (1)
(1) Danderyd Hospital, Danderyd, Sweden

Introduction: Vulvovaginal candidiasis is one of the most common causes of vaginitis in Western countries. Together with bacterial vaginosis, vulvovaginal candidiasis accounts for more than 90% of all cases of vaginitis in Sweden. Approximately 75% of all women will experience an episode of vulvovaginal candidiasis at least once in their lifetime. For most women, vulvovaginal candidiasis is sporadic. Unfortunately, 5–8% of all women of reproductive age suffer from recurrent vulvovaginal candidiasis (RVVC), defined as more than four infections/year. Women with RVVC account for frequent appointments at several health care providers, since the condition is difficult to treat. Untreated, RVVC, probably due to repeated topical antifungal treatments, may develop into dyspareunia and localized provoked vulvodynia (LPV). LPV is characterized by an extremely painful and erythematous area around the Bartholini glands and the hymeneal ring, which makes sexual intercourse virtually impossible for the woman. LPV is diagnosed by Friedrichs criteria, i.e. pain when palpating the vulva, superficial dyspareunia at penetration, erythematous vulvar mucosa in the areas mentioned, with duration of symptoms for at least six months. Most women are young, with a mean age of 25 year. The condition is chronic and, as a consequence, may cause great discomfort and severe impact on the sexual life for the woman and her partner. 75% of all women with LPV report recurrent genital fungal infections in their previous medical history.

Risk factors for RVVC: Repeated use of antibiotics is a well known risk factor for developing RVVC. Immunodeficient women, such as women with uncontrolled diabetes mellitus, pregnant women or women treated with cytostatics are at risk of developing RVVC. An elevated prevalence of atopic eczema, allergic rhinitis and asthma has been reported in some studies, in women with RVVC. Studies regarding local and general immunity in women with RVVC have been inconclusive. There is ongoing research regarding innate immunity in women with RVVC.

The use of modern oral contraceptives and intrauterine devices has been discussed as risk factors for RVVC, but studies are contradictory.

Many women with RVVC live a stressful life with their minds constantly occupied by the discomfort produced by fungal infections. Our research indicates that, compared with healthy controls, women with RVVC, and women with LPV show signs of chronic stress. Our study is presented in detail.

Discussion: It is difficult to identify whether the infections are a cause or a consequence of chronic stress, but it is of importance to take into consideration stress management in the treatment of RVVC.

Report from stress management in women with LPV at the Vulvar Outpatient Clinic at Danderyd hospital, Stockholm, Sweden.

The management of pelvic abscess

Knut Gjelland (1), E Ekerhovd (2), Seth Granberg (3)
(1) Department of Obstetrics and Gynecology, Haukeland University Hospital, Bergen, Norway
(2) Clinic Sør, Telemark Hospital, Porsgrunn, Norway
(3) Department of Obstetrics and Gynecology, Akershus University Hospital, Lørenskog, Norway

Introduction: Standard treatment of tuboovarian abscess (TOA) is laparoscopy and antibiotics. During the past few years transvaginal ultrasound-guided aspiration (TVS) in combination with antibiotics has emerged as an alternative approach for treatment of TOA. The main advantage of laparoscopy is that it provides direct visualiza-
tion of pelvic and abdominal organs. Thereby, the extent of the infection can be assessed, and not only drainage of purulent material, but also surgical procedures such as adhesiolysis, salpingotomy, and excision of necrotic tissue can be performed.

The main advantages of TVS are that this procedure provides a direct route from the vagina into the cul-de-sac or adnexal regions where TOAs normally are located and that general anesthesia normally is not necessary.

**Materials and Methods:** This was a retrospective study of 302 women, mean age 35 years, who were treated for pelvic abscess by means of TVS and antibiotics at Haukeland University Hospital between July 1986 - July 2003. A 16–18 Gauge needle was used for drainage of abscess.

**Results:** In 282 (93.4%) women the treatment strategy was successful. No procedure-related complications were registered. In the other 20 (6.6%) women surgery was performed. The main indications for surgery were diagnostic or therapeutic uncertainty, such as suspected residual TOA or pain.

**Conclusions:** Transvaginal ultrasound-guided aspiration combined with antibiotics is an effective and safe treatment regimen for TOA. The high success rate indicates that it could be a first-line procedure.

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**Parallel session 20 – Alloimmunisation in pregnancy**

**PS20.1**

**Foetal and neonatal alloimmune thrombocytopenia (FNAIT) – immunological basis and prevention**

Heidi Tiller (1,4), Edsteen M (1), Husebekk A (1,4), Skogen B (1,4), Killie A (4), Chen P (2), Ni H (2), Kjeldsen-Kragh J (3),

(1) University of Tromsø, Tromsø, Norway
(2) Department of Laboratory Medicine, Keenan Research Centre, St Michael’s Hospital and Canadian Blood Services, Toronto, Ontario, Canada
(3) University of Oslo, Oslo University Hospital, Oslo, Norway.
(4) University Hospital North Norway, Tromsø, Norway.

Foetal and neonatal alloimmune thrombocytopenia (FNAIT) is caused by maternal platelet antibodies that target fetal or neonatal platelets. The majority of FNAIT cases in the Caucasian population are caused by maternal alloimmunization against the human platelet antigen- (HPA-) 1a. The incidence of FNAIT due to anti-HPA-1a antibodies is 1 per 11,000 live-born neonates.1 The main reason for clinical concern is the risk of intracranial haemorrhage, which is reported to occur in 10–30% of severe FNAIT cases. The current opinion has been that immunization against the HPA-1a antigen takes place during the first HPA-1 non-compatible pregnancy. FNAIT was therefore believed to be principally different from haemolytic disease of the foetus and newborn (HDFN), in which alloimmunization mainly occurs in connection with delivery and primarily affects subsequent pregnancies. However, results from a large and recent screening study in Norway found that the majority of women were immunized around time of delivery, and not so often during pregnancy.1,2 This indicates that FNAIT could be more similar to HDFN than previously thought. To prevent HDFN, antibody mediated immune suppression (AMIS) is induced by administration of anti-D IgG antibodies in connection with D-negative pregnancies. It is conceivable that the same principle could be used to prevent FNAIT by administration of anti-HPA-1a antibodies in HPA-1a-negative pregnancies. This concept was tested in a mouse model of FNAIT in which AMIS was induced by intravenous administration of murine anti-platelet antibodies as prophylaxis following transfusion of murine incompatible platelets. By inhibiting the immunization using this prophylactic approach, neonatal platelet counts were significantly increased in pups where the mother received prophylaxis. The incidence of intracranial haemorrhage, miscarriage and dead-born pups in mice receiving prophylaxis was reduced to that of normal controls.4 This work conceptually proved that prophylactic administration of platelet antibodies may be used as a strategy to prevent maternal alloimmunization against
platelet antigens and also prevent clinical complications in FNAIT. We propose to administer anti-HPA-1a IgG antibodies after birth to HPA-1a negative women where no anti-HPA-1a antibodies are detected during pregnancy. However, to study the possible effect of a prophylaxis, antenatal screening for HPA-1a negative pregnancies must be in place to identify potential candidates for prophylaxis.

Reference List

PS20.2

FNAlT in pregnancy and intracranial haemorrhage
Heidi Tiller, Anne Husebekk, Olof Flodmark, Marije Kamphuis, Nikos Papadogianakis, Anna Davis, Sinikka Koskinen, Susanna Sainio, Kaija Javela, Agneta Wickman, Rita Kekomaki, Humphrey Kanhai, Dick Oepkes and Magnus Westgren

Information on the occurrence of intracranial haemorrhages (ICH) due to FNAIT is scarce, but important when deciding on preventive and treatment strategies. The aim with the present study was to identify common denominators of HPA-1 alloimmunized pregnancies complicated by ICH and to provide information about the natural course.

Material and methods: All countries which had registered FNAIT cases in a large international registry (www.Noich.org) were invited to participate in this observational cohort study of ICH cases. Pregnancies recorded in the NOICH registry complicated by fetal or neonatal ICH were identified, and included if both the diagnosis of FNAIT and ICH were confirmed. A case was included if the FNAIT diagnose was considered definite or probable and if the ICH diagnose was considered certain. All neuroradiological studies were evaluated by an experienced pediatric neuroradiologist (OF) and the autopsy reports by a perinatal pathologist (NP).

Results: In total, 43 confirmed cases of ICH due to FNAIT were recorded from 37 mothers from five different countries including Finland, Sweden and Norway. More than half of all ICH cases were first-born children. If we study only the 37 index ICH cases, 26 (70.3%) cases were first-born children. The fetus/neonate were male in the majority (74.4 %) of ICH cases. There was no significant difference in maternal anti-HPA-1a antibody levels, birth weight, APGAR scores or platelet counts when comparing boys and girls. A majority of the patients bled already in the second trimester. Of these cases (16 of 26) were estimated to have started to bleed before week 25. Approximately half of ICH fetuses were born alive, but developed neurological sequelae: Nine infants had records of cerebral palsy, eight were reported to be moderate/severely mentally retarded or severely disabled, six neonates were reported to have epilepsy and four were blind or with severely reduced vision. In addition, one case of autism and one case of impaired vision were reported. Fifteen (34.9%) died either before of shortly after delivery, whereas only 5 (11.6%) ICH neonates were reported to be alive and well.

Conclusion: the present study indicates that fetal ICH due to FNAIT often occurred in the first child and that a majority of these children will bleed already in the second trimester or in the early part of the third trimester. Thus effective preventive strategies need to be based on screening to identify the patient at risk early, and a possible intervention to reduce risk need to be introduced already before the 20th week of gestation.
First trimester non-invasive screening for fetal RHD and targeted antenatal anti-D prophylaxis – does it work?

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(1) Center for Fetal Medicine, Dep. Of Obstetrics and Gynecology, Karolinska University Hospital, Stockholm, Sweden

**Background:** RhD immunization during pregnancy pose a potentially serious threat to the fetus and newborn. Sensitization to the RhD antigen can be efficiently prevented by anti-D prophylaxis after delivery and interventions during pregnancy that carry a risk of fetomaternal hemorrhage. It has been shown that routine antenatal anti-D prophylaxis (RAADP) in the beginning of the third trimester to all RhD negative pregnant women significantly reduces the incidence of immunizations. In the Scandinavian countries, RAADP has previously not been offered and the prevalence of RhD immunization during pregnancy is about 1% in the Swedish RhD negative pregnant population. Non-invasive prenatal genotyping of fetal RHD from maternal plasma offers the opportunity to administer RAADP only to women carrying a RHD positive fetus and avoid exposure in women not at risk. This is an advantage since RAADP is a human plasma product. In September 2009, a maternal screening program was introduced in Stockholm including routine cell-free fetal DNA genotyping in the first trimester of pregnancy combined with RAADP in the beginning of the third trimester only to women with an RHD positive fetus. The aim of this study was to determine if this approach reduces the incidence of RhD immunization in our population.

**Methods:** We performed a prospective observational cohort study including the entire pregnant population in the Stockholm area from September 2009 to December 2011. In women blood typed RhD negative at the first antenatal visit, fetal RHD genotype was determined using a RT PCR assay designed for the detection of exon 4. This method has previously been validated with a diagnostic accuracy close to 99 percent in an unselected screening population. Women at risk were offered anti-D immunoglobulin (250–300 µg) in gestational age 28–30 weeks. The incidence of RhD immunization in the study population was determined by presence of anti-D antibodies in maternal blood samples at delivery and 6–10 month after delivery. As reference group we used the RhD negative pregnant population in the same region 2003–2008, before introduction of routine antenatal prophylaxis.

**Results:** By the end of December 2011 7.500 RhD negative women have been included in the study and 4.525 women have received targeted RAADP when fetal RHD genotype was positive. Preliminary analysis indicates a reduction of new RhD immunizations by more than 50 percent. We are currently analysing all data and the final results regarding incidence of RhD immunization after introduction of targeted RAADP will be presented at the meeting.

**Conclusions:** By analysing fetal RHD genotype in the first trimester of pregnancy, unnecessary exposure to RAADP can be avoided not only in the third trimester, but also in cases of second trimester abortions and after invasive procedures. Testing in early pregnancy also allows time for collection of a new sample at a subsequent routine visit in cases where results are equivocal.

Rh-immunisation; a prenatal strategy of prophylaxis

Finn Stener Jørgensen (1)
(1) Fetal Medicine Unit, Dept. Obstetrics and Gynecology, Hvidovre Hospital, University of Copenhagen, Hvidovre, Denmark

The Danish National Board of Health published new national guidelines for Rhesus prophylaxis to be implemented by January 1, 2010. The main change was that in addition to standard postnatal prophylaxis, targeted antenatal prophylaxis should now be given to those Rh. neg. women being pregnant with a Rh. pos. fetus. To make the program targeted avoids unnecessary treatments and the use of anti-D immunoglobulin in approx. 40% of the women.
Denmark was the first country to introduce a nationwide, non-invasive, genetically based method for the screening of the fetal RhD gene (RHD) using a maternal blood sample.

The Danish program for the prevention of D immunisation consists of the following steps: D typing and antibody screening are performed using a maternal blood sample collected by a general practitioner between the sixth and tenth gestational week. If the outcome of the antibody screening is negative, the test is repeated for D negative women at 25 weeks. Then a blood sample is collected from the pregnant woman by a general practitioner at 25 weeks, and antenatal screening of fetal RHD is performed. Results are reported electronically to the general practitioner and the midwife. Anti-D is injected into pregnant D negative women who carry an RHD positive fetus at 29 weeks. Lastly, a midwife collects fetal blood from the umbilical cord at birth, and postnatal serological D typing of the newborn is performed. D negative women who deliver a D positive infant receive a postnatal injection of anti-D. The postnatal serological determination of a fetal D type from umbilical cord blood is planned to stop after two years. In addition to routine antenatal and postnatal RhD prophylaxis, extra prophylaxis is recommended for potentially sensitizing antenatal events. The introduction of the new guidelines necessitates close collaboration between general practitioners, midwives, gynecological-obstetric departments, and the clinical immunology laboratories that conduct the screening.

To examine the compliance of this new targeted antenatal D immunisation program we have performed a study at Dept. of OB/GYN at Hvidovre Hospital. We examined the treatment outcome of 239 D negative pregnant women who gave birth at our hospital between June and September 2010.

The majority of these women (90%) underwent antenatal RHD screening, 86% of the women who were recommended antenatal prophylaxis received anti-D, and 99% of the women who delivered RhD positive infants received postnatal anti-D.

In conclusion: We found the compliance results acceptable since they were obtained only a few months after the initiation of the new prophylaxis regime. Suggestions to further improve compliance have been discussed and are in the process of being implemented.

PS20.5

Anti-D prophylaxis in early pregnancy and abortion – what is the evidence?

Susanna Sainio (1)

(1) FRC Blood Service, Helsinki, Finland

Since the introduction of routine post-delivery immunoprophylaxis in the late 1960s proved to be highly successful, anti-D immunoglobulin was soon adopted to a number of potentially sensitising events during pregnancy. First, in the 1970s anti-D prophylaxis was recommended for spontaneous miscarriages and terminations of pregnancy and in the early 1980s for invasive fetal diagnostic procedures. There have been no randomised trials or cost-benefit analyses for the use of anti-D prophylaxis in early pregnancy, nor will there ever be. The evidence in favour of these widely accepted policies is mostly extrapolated from studies showing detection of fetal red cells in the maternal circulation at various clinical situations and the risk of alloimmunisation following these situations. Some of these early, but most exiting studies will be reviewed here as well as current recommendations and guidelines in Scandinavia and Europe. The appropriate clinical use of anti-D prophylaxis in early pregnancy is not only a question of evidence-based medicine and economics but availability and ethics of anti-D immunoglobulin. The Council of Europe has established a working group on anti-D alloimmunisation and European self-sufficiency of anti-D immunoglobulin.
Ps21 | 11.00–12.30

Parallel session 21 – Nordic thesis session NFOG

Ps21.1

The clinical effect of lifestyle intervention during pregnancy and obese women

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(2) Aarhus University Hospital, Skejby, Aarhus, Denmark

Maternal obesity is associated with adverse outcomes for mother and infants. More than 12% of Danish pregnant women are obese (BMI >30 kg/m2). Pregnancy offers the opportunity to manage or prevent obesity. The overall aim with this thesis was to study the clinical effects of lifestyle intervention in Danish obese pregnant women.

The LiP (Lifestyle in Pregnancy) Study is based on a RCT among 360 obese pregnant women from Odense and Aarhus University Hospital. The intervention consisted of dietary counseling including advice and individually estimated energy requirements. Women were equipped with a pedometer, free membership in a fitness center, and training classes one hour/week. Both groups were followed with measuring of weight, blood pressure, fitness test, and blood samples during pregnancy. A follow-up was performed six months postpartum.

In paper I the effect of intervention on gestational weight gain (GWG) and five major obstetric and neonatal outcomes was studied: Gestational diabetes, preeclampsia, cesarean section, large for gestational age infants and admission to neonatal intensive care unit. Intervention resulted in a significantly lower GWG (7.0kg versus 8.6kg). Adherence to weight gain according to Institute of Medicine (IOM) recommendations was highest in the intervention group. Though GWG was lower in the intervention group the clinical outcomes were similar in the two groups.

In paper II the aim was to study the effect of restricted GWG on postpartum weight retention (PPWR) six months after birth and to determine the effect of breastfeeding on PPWR. A lower percentage of women from the intervention group had retained weight postpartum, but the difference was not significant. Women with GWG within recommendations (<9kg) had significantly lower PPWR compared to those exceeding. Full breastfeeding for six months was negatively associated with PPWR.

Paper III evaluated the metabolic effects of the intervention. Fasting lipids, insulin, and glucose was measured. Insulin resistance was estimated (HOMA-IR), and oral glucose tolerance test performed three times during pregnancy. The physiological decrease in insulin sensitivity during pregnancy was less pronounced in the intervention group. No significant difference in fasting glucose or glucose level after OGTT was measured. Lipids increased during pregnancy, but there was no difference between the groups.

Lifestyle intervention in obese pregnant women has the potential to improve feto-maternal outcomes. In the LiP Study only a limited effect was found concerning clinical and biochemical effects of the intervention. This might be due to different considerations concerning study power, the control group being motivated for lifestyle changes themselves or the nature of the intervention. So far there is no sufficient evidence that intervention improves clinical outcomes. Importantly, there has been no reporting of adverse effects of the performed interventions as well.
Multiple pregnancies in Norway 1967–2008

Anne Tandberg (1)

(1) Haukeland University Hospital, Bergen, Norway

Aims: The incidence of twin pregnancies has been rising in industrialized countries during the last twenty years. Our aim was to investigate the incidence, causes and several consequences of multiple pregnancies.

Methods: All three studies are population based cohort studies with data from the Medical Birth Registry of Norway 1967–2008. Pregnancies from assisted reproductive technologies (ART) were available from 1988. Outcomes for twins and triplets were compared with those for singletons and relative risks were estimated between the time periods (1967–1987 and 1988–2006).

Results: Incidence: The twin birth rate in Norway increased from 1.1% in 1967 to 1.9% in 2004. Excluding pregnancies from ART, the twin birth rate increased from 1.1% to 1.6%, same period. The triplet rate increased epidemiologically from the late eighties and through the nineties, followed by a decline from year 2000. After excluding ART pregnancies, the triplet rate increased more modestly to a maximum of 2.6 per 10,000 births in 1997–2001, followed by a slightly decline. In spontaneous conceptions, the chance to be pregnant with twins increased up to age 38, followed by a strong downward trend. In ART pregnancies, the highest risk was among women 25–30 years and a steep decline thereafter. The likelihood to conceive with twins was also studied in relation to maternal birth characteristics. The relative risk to conceive with twins in the study population was dependent on the mother’s birth weight, but not on her gestational age at birth.

Perinatal outcome: The gestational age declined and the cesarean section rate increased in both twin- and triplet pregnancies from the first to the second period. Risk of perinatal mortality in twins improved slightly, but was unchanged in triplets relative to singletons over time, although the overall perinatal mortality rates improved significantly.

A mother’s birth characteristics have significant impact on the outcome of her reproduction, especially if she is pregnant with twins. Mothers born at 27–31 weeks had four times higher risk of losing one or both of her twins compared to term born mothers (RR 3.82; 1.56–9.36). Term mothers with birthweight-by-gestational age z score <-2 experienced the highest mortality in twin offspring [RR 2.42 (1.37–4.29)] relative to the most favourable z-score (1–1.99).

Conclusions: The twin birth rate in Norway increased significantly in all age groups during the last decades, even when pregnancies from ART were excluded. The perinatal mortality rate for triplets and twins has declined considerably during the last 40 years, but the improvement was not so favourable for triplets compared to singletons. We found no difference in perinatal death between multiples from ART and non-ART pregnancies. A twin pregnancy is a high-risk pregnancy in general, but even more so if the mother herself was born preterm or was growth restricted at birth.
Ovarian Cancer and Gene Therapy – Modelling, Angiogenesis and Targeting Vascular Supply

Hanna Sallinen (1)
(1) Department of Obstetrics and Gynecology, Kuopio University Hospital, Kuopio, Finland

Ovarian cancer is the most lethal of all gynaecological malignancies. Despite current treatment approaches, surgery and chemotherapy, the prognosis still remains poor. Therefore, new therapies are required to improve outcome in this disease. Solid tumours need a vascular supply to grow and metastasise. The aim of this study was to evaluate the treatment effects of adenoviral gene therapy with antiangiogenic and antilymphangiogenic genes in a human ovarian cancer xenograft model. This new and highly reproducible animal model resembled the disease of clinical patients with intraperitoneal tumours and ascites. Finally, we explored the circulating levels of angiopoietin-1 (Ang-1) and angiopoietin-2 (Ang-2) in patients with benign, borderline or malignant ovarian neoplasms and correlated them with prognosis of patients with epithelial ovarian cancer.

Human SKOV-3m ovarian carcinoma cells produced intraperitoneal tumours in nude mice within three weeks after tumour cell injection. Magnetic resonance imaging (MRI) was used to confirm the existing tumours before gene therapy. Soluble vascular endothelial growth factor (VEGF) receptors sVEGFR-1, -2 and -3 and their combinations as well as soluble angiopoietin receptors sTie1 and sTie2 were used as treatment genes. Gene transfer was done intravenously via the tail vein. It was shown that antiangiogenic and antilymphangiogenic gene therapy significantly reduced tumour growth, tumour vascularity and ascites formation, as assessed by weekly MRI, histology and immunohistochemistry. Specifically, combined gene therapy with sVEGFR-1, -2 and -3 or combination of sVEGFR-1 and -3 and sTie2 had the most powerful antitumour effects.

In the clinical setting we found that Ang-1 and Ang-2 levels in the serum of patients with epithelial ovarian carcinoma were elevated compared with patients with benign or borderline ovarian tumour or compared with healthy women. Moreover, high levels of Ang-2 predicted poor overall survival and recurrence free survival in patients with epithelial ovarian carcinoma. In clinic, Ang-2 may serve as an angiogenic marker of decreased patient survival in ovarian cancer.

In conclusion, the established ovarian cancer animal model was suitable for in vivo gene therapy studies. Antiangiogenic and antilymphangiogenic gene therapy appeared to have significant potential in treatment of ovarian cancer. These results warrant further studies to define the most efficient and safe dose and schedule for such a treatment, and suggest that this approach could be used clinically along with other anticancer therapies.

Allopregnanolone effects in women: clinical studies in relation to the menstrual cycle, premenstrual dysphoric disorder and oral contraceptive use

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(1) Umeå University, Faculty of Medicine, Department of Clinical Science, Obstetrics and Gynaecology, Umeå, Sweden

Background: Premenstrual dysphoric disorder (PMDD) affects 3–8% of women in fertile ages. Combined oral contraceptives (OCs) are widely used and some users experience adverse mood effects. The cyclicity of PMDD symptoms coincides with increased endogenous levels of allopregnanolone after ovulation. Allopregnanolone enhances the effect of β-aminobutyric acid (GABA) on the GABAA receptor, the principal inhibitory transmitter system in the brain. The sensitivity to other GABAA receptor agonists than allopregnanolone (i.e. benzodiazepines, alcohol and the 5 β epimer to allopregnanolone, pregnanolone) has been reported to depend on menstrual cycle
phase and/or PMDD diagnosis. Isoallopregnanolone, the 3ß epimer to allopregnanolone, has previously been used to verify specific allopregnanolone GABAA receptor effects. Saccadic eye velocity (SEV) is a sensitive and objective measurement of GABAA receptor function.

**Aims:** To study the pharmacological effects, and any effect on gonadotropin release, of intravenous allopregnanolone in healthy women. A second aim was to explore whether allopregnanolone sensitivity differs over the menstrual cycle or during OC use in healthy women, and thirdly in PMDD patients.

**Methods:** Ten women were challenged with a cumulative dose of intravenous allopregnanolone in the follicular phase of the menstrual cycle. The effect on FSH and LH was compared to women exposed to isoallopregnanolone. A single dose of allopregnanolone was administered once in the follicular phase and once in the luteal phase in another ten healthy women and in ten PMDD patients, and additionally in ten women using OCs. Repeated measurements of SEV, subjectively rated sedation and serum concentrations after allopregnanolone injections were performed in all studies.

**Results:** Allopregnanolone dose-dependently reduced SEV and increased subjectively rated sedation. Healthy women had a decreased SEV response in the luteal phase compared to the follicular phase. By contrast, PMDD patients had a decreased SEV response and subjectively rated sedation response to allopregnanolone in the follicular phase compared to the luteal phase. There was no difference in the SEV response to allopregnanolone between women using oral contraceptives and healthy naturally cycling women. Allopregnanolone decreased serum levels of FSH and LH whereas isoallopregnanolone did not affect FSH and LH levels.

**Conclusion:** Intravenous allopregnanolone was safely given and produced a sedative response in terms of SEV and subjectively rated sedation in women. The sensitivity to allopregnanolone was associated with menstrual cycle phase, but in the opposite direction in healthy women compared to PMDD patients. The results suggest mechanisms of physiological tolerance to allopregnanolone across the menstrual cycle in healthy women and support that PMDD patients have a disturbed GABAA receptor function. In addition, one of our studies suggests that allopregnanolone might be involved in the mechanism behind hypothalamic amenorrhea.
Poster session

NOTE: abstracts are numbered alphabetically by presenting authors' last name, but physically the posters are grouped by topic. So if you look for the poster of abstract 1, you will find the designation PoOb 46 at abstract 1 in this book – that is the poster position PoOb 46. If you stand by the poster, and would like to find the abstract number in this book, use the table below.

Posters will be on display during the whole congress. There are 172 poster presentations, 62 PoGy and 110 PoOb. Abstracts are listed from page 95.

IMPORTANT: A selection of posters will be chosen for 4 oral poster sessions. In each session 12 posters will be presented for 2 minutes plus 1 minute for discussion (maximum of three slides). Selected posters will be notified by a note on the poster. Poster presenters, please look for a note on your poster. The two parallel poster sessions will be held on the first floor next to the posters.

Oral poster sessions:
- Obstetrics, pregnancy:
  Sunday at 1700–1800 in the area A
- Obstetrics, labour:
  Monday at 1700–1800 in the area A
- Gynecology, surgery, oncology:
  Sunday at 1700–1800 in the area B
- Gynecology, general:
  Monday at 1700–1800 in the area B
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**ABSTRACT 1**

Poster position PoOb 46

Subcuticular Suture versus Staples for Closure of the Skin after Caesarean Section: A Randomised Trial with case as own control

Anna Aabakke (1), Lone Krebs (1), Niels Secher (2)

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(2) Department of Obstetrics and Gynaecology, University of Copenhagen, Hvidovre Hospital, Hvidovre, Denmark

**Objective:** To cosmetically compare subcuticular sutures (SS) with staples as skin closure after caesarean section (CS).

**Methods:** Women with planned CS (primary CS n=32, multiple CS n=31) were randomized to side distribution of skin closure methods (staples right/SS left, SS right/staples left) and followed 6 months postoperatively. Randomization was computer-generated, with allocation concealment by opaque sequentially numbered sealed envelopes. Primary outcome was the patient's cosmetically preferred side of the scar 6 months postoperatively. Secondary outcomes were patient's preferred method of closure, difference in objective cosmetic scores between the two sides of the scar as evaluated by two plastic surgeons, infection rates and difference in pain between the two sides of the scar before removal of staples on postoperative day 1 and after removal of staples on day 3 measured regularly for 6 months. Outcome assessors were blinded to group assignment as were the participants the first 24 hours.

**Results:** The last control of the last patient was on January 17th 2012. Randomization is planned to be broken in February and data will be analysed during March 2012. The analysis is planned to include 59 women (primary CS n=30, multiple CS n=29).

**Conclusions:** A revised abstract will be sent to NFOG as soon as the final results are available.

**Trial Registration:** clinicaltrials.gov; Identifier: NCT01217567

**ABSTRACT 2**

Poster position PoOb 99

The effect of using Transcutaneous Electrical Nerve Stimulation (TENS) in acupuncture points (Hegu [LI-4] and Sanyinjiao [SP-6]) on labor pain reduction

Azar Aghamohammadi (1), Abbas Rajabi (1)

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**aim:** This study has been performed with aim of assessing the efficiency of transcutaneous electrical nerve stimulation (TENS) on specific acupuncture points to reduce the labor pain.

**Methods:** In this double-blind, placebo-controlled trial study, we assigned 64 nulliparous women, randomly who were in the active phase of the first labor stage. According to TENS on four acupuncture points(Hegu [LI-4] and Sanyinjiao [SP-6]) (n = 32) or the Sham TENS (n = 32).Based on selecting and omitting conditions, the items were chosen as goal-oriented. Then, they were accidently put in two groups in the way that women were divided in to two groups by chance through their recorded even and odd numbers in their registration form. the first stage of labor pain assessed in two groups.

**Results:** TENS application on acupuncture points was resulted in significantly better pain relief than that of TENS placebo (p<0.0001).
Conclusion: TENS used on acupuncture points can be as a non-drug methods to reduce labor pain without any side effects on mother and fetus.

Keywords: TENS; acupuncture points; labor pain

**ABSTRACT 3**
Poster position PoOb 100

The effect of calcium supplementation during pregnancy on preterm delivery and preeclampsia in nulliparous beyond age 35

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Department of midwifery, Sari Branch, Islamic Azad University, Sari, Iran, Sari, Islamic Republic of Iran

Background/aim: Mother’s high age can be independent factor for preterm delivery and preeclampsia. The aim of this study was to assess the effect of calcium supplementation during pregnancy on preterm delivery and preeclampsia in nulliparous beyond age 35.

Method: 100 singleton healthy nulliparous beyond age 35 were randomly assigned between the 15th and 20th weeks of gestational age to receive 2000 mg/day of elemental calcium and or placebo and were followed-up until delivery.

Results: The incidence of preterm delivery and preeclampsia was significantly less in the calcium than in the placebo group.

Conclusion: Calcium supplementation appears to reduce the occurrence of preterm delivery and preeclampsia in nulliparous women beyond age 35.

**ABSTRACT 4**
Poster position PoOb 22

Prevalence of ultrasonographic fetal soft markers during the second trimester ultrasound screening and its correlation to Down Syndrome

Annika Åhman (1), Gordan Maras (1), Christine Rubertsson (1), Ove Axelsson (1), Peter Lindgren (1)
Department of Women’s and Children’s Health, Uppsala University, Uppsala, Sweden

Background: Genetic sonogram in the second trimester is discussed. Furthermore, follow-up procedures upon detection of ultrasonographic markers at routine anatomy scanning vary widely in Sweden.

Objective: To investigate the prevalence of isolated markers during the second trimester ultrasound screening in an unselected low risk population in Sweden, its association with Down Syndrome (DS) in fetuses and the incidence of invasive chromosomal diagnostic testing after detection of isolated markers.

Study design: A prospective observational study at Uppsala University Hospital consisting of all fetuses examined by ultrasound at 15+0 to 22+0 weeks gestation between July 2008 and March 2011. Cases with isolated markers, that is, plexus choriodeus cyst (PCC), echogenic intracardiac focus (EIF), pyelectasis, thickened nuchal fold and hyperechogenic bowel were verified for outcome data by hospital records, including results from invasive testing. Fetuses with DS, other than those with ultrasonographic markers, were identified from laboratory records.

Cases with ultrasonographic markers were compared to non-cases in terms of frequency of DS and invasive diagnostic testing. The results were analysed to determine the sensitivity, specificity and positive likelihood ratio (LR+) for the detection of DS.

Results: Second trimester ultrasound screening was performed on 10,914 fetuses during the study period. Seventeen percent of the study population had a first trimester screening for DS and 15 of these pregnancies were diagnosed with DS and terminated. An additional 17 fetuses were diagnosed with DS later in pregnancy or after birth.

Isolated markers in the second trimester anomaly scan were detected in 5% (540/10,914) of the fetuses; 176 with PCC, 266 with EIF, 85 with pyel-
ectasis, 4 with thick nuchal fold and 9 with hyper-echogenic bowel. There were 72 cases (0.7%) with multiple markers. The prevalence of DS was 0.16% (17/10,914), and among these fetuses, 2 had isolated EIF and 2 had isolated pyelectasis. Three cases of DS were associated with multiple soft markers. The remaining 10 cases had no association with ultrasonographic soft markers.

The sensitivity, specificity and LR+ of DS was 14.3%, 97.6% and 5.86, respectively, in the cases with isolated EIF and 14.3%, 99.2% and 18.6, respectively, in fetuses with isolated pyelectasis.

Frequency of invasive testing for aneuploidy was 30% in pregnancies where isolated soft markers were detected compared to 7% in the total population.

Conclusion: Genetic sonogram in an unselected Swedish population, without specific information about soft markers before routine anomaly scan, increases the invasive diagnostic testing, although the association between DS and isolated markers is low. Larger studies are needed to confirm the level of correlation in a low risk population.

**ABSTRACT 5**
Poster position PoOb 16

**Facts first, then reaction - expectant fathers’ experiences of an ultrasound screening identifying soft markers**
Annika Åhman (1), Peter Lindgren (1), Anna Sarkadi (1)
Department of Women’s and Children’s Health, Uppsala University, Uppsala, Sweden

**Background:** expectant fathers often attend pregnancy ultrasound but their needs are poorly examined, especially in connection with adverse findings.

**Objective:** to explore men’s expectations of routine ultrasound and experiences when soft markers were discovered.

**Design/setting:** a qualitative study at Uppsala University Hospital in Sweden where semi-structured, in-depth interviews were conducted with 17 expectant fathers 6–12 weeks after the discovery of a soft marker at the routine ultrasound scan.

**Findings:** five major themes emerged: (1) ‘immediate reaction: frustration and thoughts about consequences,’ (2) ‘need for facts to gain control,’ (3) ‘concern about the partner,’ (4) ‘in retrospect: almost okay but routines need changing’ and (5) ‘amniocentesis or not: a joint decision with several considerations’.

**Conclusions and implications for practice:** These findings contribute important knowledge about men’s needs related to pregnancy ultrasound with unexpected findings, and their role in decision-making concerning fetal diagnostics. Our results show that men enter a role of a kind of fact manager and have both a psychological need as well as the capacity to perceive important information during the process following the detection of a soft marker in the fetus. Practitioners conducting pregnancy ultrasound should therefore have relevant knowledge to be able to provide immediate information about soft markers, including risk assessment for chromosomal defects. In addition to this, written information about soft markers should be available to expecting parents in this situation.

**ABSTRACT 6**
Poster position PoOb 55

**Analysis of uterine rupture cases in 40 years in Norway**
Iqbal Al-Zirqi
Oslo Universitetssykehus, Rikshospitalet, Oslo, Norway

**Objective:** To study characteristics of uterine ruptures in Norway between 1967–2008.

**Population:** 471 mothers with uterine ruptures among 2,422,930 identified from all units through both Medical Registry of Norway and patients medical records.

**Method:** The explanatory variables were: Period of time divided into 1.1967–1989 and 2. 1990–2008; labour starts divided into elective Caesarean section (CS), emergency prelabour CS, spontaneous labour, and induced labour; Manipulation during labour, complete or partial ruptures (dehiscence), and intact or scarred uterus. The outcome measures were: severe postpartum haemorrhage (PPH), hysterectomy, Perinatal deaths/cerebral sequela (PND/Seq), and severe perinatal asphyxia.
**Results:** A total of 471 ruptures comprised 286 complete ruptures (60.7%) and 185 deheisences (39.3%). Uterine scars were present in 79%. There were 23 ruptures (4.9%) at elective CS, 54 (11.5%) at emergency prelabour CS, 246 (52.2%) at spontaneous labour and 148 at induced labour (31.4%).

Compared with deheisences, complete ruptures had significantly higher risk for severe postpartum haemorrhage (PPH) (OR: 16.2; 95% CI: 9.4–27.9), hysterectomy (OR: 23.0; 95% CI: 5.5–95.4), PND/Seq (OR: 38.5; 95% CI: 9.3–159.0) & severe asphyxia (OR: 20.3; 95% CI: 4.8–84.6). Complete ruptures were increased by manipulation (OR: 12.8; 95% CI: 3.0–54.2), & Oxytocin induction (OR: 2.8; 95% CI: 1.4–5.8).

Compared with scarred uterus, ruptures of intact uterus had higher rates of each complete ruptures (OR: 12.2; 95% CI: 5.5–26.9), severe PPH (OR: 9.7; 95% CI: 5.5–16.8), hysterectomy (OR: 7.2; 95% CI: 4.0–12.9) & PND/seq (OR: 3.5; 95% CI: 2.1–6.0).

At elective CS, there was only one complete rupture with severe PPH with no perinatal death or asphyxia. Compared with ruptures at spontaneous labour, ruptures after induction increased risk of severe PPH (OR: 1.8; 95% CI: 1.2–2.7). Only Oxytocin induction increased risk for PND/Seq (OR: 3.6; 95% CI: 1.9–6.7).

Of 471 ruptures, 126 (26.8%) were in 1967–1989, comprising 96 complete & 30 deheisences, while 345 (73.2%) were in 1990–2008 comprising 190 complete and 155 dehiscences. Compared with 1967–1989, ruptures of 1990–2008 were significantly increased by 2.7 times, and were 5 times more more associated with uterine scars. Complete ruptures in this period were associated with lower rates of each of severe haemorrhage (OR: 0.4; 95% CI: 0.2–0.5), hysterectomy (OR: 0.2; 95% CI: 0.1–0.4), PND/Seq (OR: 0.2; 95% CI: 0.1–0.3), Oxytocin induction (OR: 0.3; 95% CI: 0.2–0.5) and manipulation (OR: 0.3; 95% CI: 0.1–0.6), but were associated with increased perinatal asphyxia (OR: 2.5; 95% CI: 1.2–5.3).

**Conclusion:** Uterine ruptures generally and ruptures of scarred uterus specifically are significantly more frequent in 1990–2008 vs. 1967–1989, but resulted in much less serious maternal and perinatal outcomes. Induction with oxytocin and manipulation should be practiced with caution.

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**ABSTRACT 7**

Poster position PoGy 35

**Limited evidence of the effect of prophylactic pelvic floor muscle training on genital prolapse**

Sidsel Andersen (1, 2), Pinar Bor (1)

(1) Regional hospital of Randers, Randers, Denmark
(2) Landssygehuset, Tórshavn, Faroe islands

**Background and Objective:** The number of women requiring prolapse surgery is increasing. Women have 11% lifetime risk of undergoing at least one surgical treatment for prolapse or incontinence, and up to 30% of these women will be re-operated due to recurrence. The purpose of this study is to investigate the effect of pelvic floor training on genital prolapse. We evaluate by a literature review whether conservative treatment (pelvis muscle exercises) can prevent prolapse or be used as preoperative treatment, so surgery can be postponed, and re-operation can be avoided.

**Method:** Literature review. A search on available literatures is conducted through PubMed using the keywords: rectocele, cystocele, pelvic organ prolapse, genital prolapse, pelvic floor muscle training, pelvic floor exercise, conservative treatment, treatment outcome and cost.

**Results:** To our surprise it is only possible to identify 4 relevant studies, with focus on conservative treatment (pelvic floor exercises) of genital prolapse. The studies include a total of 812 participants who have been diagnosed with genital prolapse. The participants are randomized to either pelvic floor exercise in connection with routine care or routine care/no treatment. It is complicated to compare these 4 studies because of variations among them concerning: design of the study, intervention, follow-up time, and outcome.

**Results:** To our surprise it is only possible to identify 4 relevant studies, with focus on conservative treatment (pelvic floor exercises) of genital prolapse. The studies include a total of 812 participants who have been diagnosed with genital prolapse. The participants are randomized to either pelvic floor exercise in connection with routine care or routine care/no treatment. It is complicated to compare these 4 studies because of variations among them concerning: design of the study, intervention, follow-up time, and outcome.

**Conclusion:** Because of the very limited material in the literature it is difficult to conclude whether pelvic floor exercises have any effect on genital prolapse or not. The evidence in this area is limited. There is a need larger randomised studies concerning the short and long term effect of pelvic floor training on genital prolapse, including a cost-benefit analysis.
ABSTRACT 8
Poster position PoGy 62

F1+2- a predictor of hypercoagulability in pregnancy?

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(2) Clinical Trial Unit, Glostrup Hospital, Glostrup, Denmark
(3) Institute of Cancer Epidemiology, Danish Cancer Society, Copenhagen, Denmark
(4) Department of Clinical Biochemistry, Aalborg Hospital, Aalborg, Denmark

Background: Pregnancy is a hypercoagulable state in which most blood coagulation factors and fibrinogen are increased, whereas fibrinolysis is depressed as a physiological precaution to prevent major hemorrhage at delivery. This hypercoagulable state is even more profound in pregnancies complicated by preeclampsia, one of the most clinically significant complications of human pregnancy worldwide and a major contributor to maternal and fetal morbidity and mortality.

Objective: Prothrombin fragment 1.2 (F1.2) is a direct measure of thrombin generation and thus of activation of the haemostatic system. Our aim was to investigate urinary elimination of F1.2 (uF1.2) to assess hypercoagulability in pregnancy and investigate uF1.2 as a non-invasive method of screening for preeclampsia.

Methods: All singleton pregnancies with hypertensive disorders and randomly selected normotensive controls were identified from a prospective cohort. Blood and urine samples were collected regularly, or in a separate cohort of patients with severe preeclampsia only once before delivery. Standardized data on pregnancy, delivery, placenta and neonatal outcome were collected. Three clinical entities were established: preeclampsia (N: 82), gestational hypertension (N: 33) and normotensive controls (N: 91) and uF1.2 was analyzed throughout pregnancy. Secondly, to investigate the relationship between plasma F1.2 and uF1.2 and whether uF1.2 was influenced by proteinuria, plasma and urinary levels of F1.2, albumin and creatinine and plasma D-dimer were measured repeatedly in 62 pregnancies with preeclampsia and 10 randomly selected normotensive controls from the same cohort.

Results: In all pregnancies, levels of uF1.2 and plasma F1.2 increased with gestational age from the 20th gestational week. This increase was even more pronounced in pregnancies complicated by preeclampsia. Levels of D-dimer demonstrated only a little increase with gestational age in all pregnancies whereas creatinine was fairly constant throughout pregnancy. In preeclampsia, albuminuria was significantly increased at 30 and 37 gestational weeks, coinciding with declining plasma levels. There was no significant association between levels of uF1.2 and albuminuria. Levels of uF1.2 in the last samples taken within 5 days of delivery were significantly higher in pregnancies with preeclampsia, especially in severe preeclampsia, but levels of uF1.2 did not increase significantly compared to controls until diagnosis of preeclampsia was evident.

Conclusions: This study confirms that pregnancy itself is a hypercoagulable condition with elevated procoagulants. Levels of uF1.2 reflect plasma generation of F1.2 and thus the amount of thrombin generated. F1.2 was eliminated in urine irrespective of the co-existence of proteinuria; although in our study uF1.2 was merely a confirmatory marker - but not a predictor of preeclampsia.

ABSTRACT 9
Withdrawn

ABSTRACT 10
Poster position PoGy 53

Preoperative CA125 and HE4 in patients with endometrial cancer

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Background: A preoperative tool such as a biomarker could help stratify patients with endometrial cancer preoperatively into high-risk or low-risk categories, possibly correlating with deep invasion and/or metastatic disease. This information could be used by the gynaecologic oncology surgeon when planning the extent of surgery. In this study we aimed to describe levels of preoperative CA125 and HE4 measurements in endometrial cancer patients and correlations to specific clinical variables.

Methods: In this prospective cohort/observational study patients with a biopsy verified endometrial cancer or atypical endometrial hyperplasia had blood samples taken before surgery at three gynaecological oncology centres in Denmark. The surgical specimens were evaluated by gynaecological pathologists. We correlated the preoperative CA125 end HE4 levels with stage, grade, histology, and lymph node metastases. Further examinations to define the value of CA125 and HE4 in the management of endometrial cancer patients are planned.

Results: Serum samples from 379 endometrial cancer patients (229 stage I, 40 stage II, 47 stage III and 6 stage IV) and 14 women with atypical endometrial hyperplasia were analysed. Both HE4 and CA125 were significantly correlated with stage, grade, lymph node status and menopausal status. A significantly increase was found with increasing stage for both markers. Similarly, a positive significant increase was found between grade and the level of the markers (grade 1 vs. 2: HE4 p<0.0001, CA125 p=0.04 and grade 1 vs. 3: HE4 p=0.005, CA125 p=0.004). Significant differences in levels of the markers were found between patients with positive vs. no positive lymph nodes (HE4 p=0.003, CA125 p=0.001) and between pre-menopausal and post-menopausal women (HE4 p=0.01, CA125 p=0.5).

Statistical analyses are planned regarding sensitivity, specificity and positive- and negative predictive values for HE4 and CA125 alone and in combination as well as logistic regression models and receiver operating characteristics (ROC) curves. Furthermore, an endometrial-ROMA index will be constructed.

Conclusion: Our preliminary results in this large study demonstrate some possible useful markers in the preoperative evaluation of endometrial cancer patients. Extensive examinations of the clinical usefulness of the markers are on-going and will be presented.

ABSTRACT 11
Poster position PoGy 41

Attendance to mass screening program among young women with cervical carcinoma in Finland


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Background: In Finland 30–60 year old women have been invited to cervical cancer screening with Pap-smear 5-yearly since 1960’s. Some municipalities start screening at age 25. While the general incidence of cervical cancer is low (3.5/100 000 in 2010), the incidence among young women (<45 years of age) has for unknown reasons increased from 3.0 to 8.2/100 000 women during the last 20 years. The aim of this study was to compare the frequency of invitations and attendance to screening in cervical carcinoma patients and their matched controls.

Materials and Methods: The study population consisted of 99 women diagnosed at age 45 or before with cervical carcinoma in 1988–2009 at Turku University Hospital. Six controls for each case were sampled from the same age-cohort and home community as the corresponding case at the time of diagnosis. In all, the number of controls was 594. Data on the invitation and attendance before cervical cancer diagnosis was collected from the files of the Finnish Mass Screening Registry from 1982 on. Coverage of registration improved since 1990.

Results: Of the patients, 13% were diagnosed before age 30, 27% at age 30–34 years, 22% at age 35–39 years, and 37% at age 40 years or more. Sixteen % of the patients were diagnosed before year 1995 and thus data on earlier screening invitations may be limited. Due to matching, controls have the same limitations in terms of data on invitations and attendance to screening.
Twenty-two patients (22%) and 120 (20%) controls were invited to screening during the year of cancer diagnosis. Four of the patients (18%) and seven of controls (6%) were invited because of previous cytological abnormality. Of cancer patients, 14 (64%) and of controls 87 (73%) attended screening.

One to five years before diagnosis, 70 (71%) of the cases and 457 (77%) of controls were invited to screening and the respective attendance rates were 49% and 67%. Six to ten years before diagnosis, 49% of patients and controls (48 and 288 women) were invited for screening and 29% and 53%, respectively, attended.

In all, 84 Pap smears were taken from the cancer patients and 1207 from the controls before diagnosis within more than 20 years.

Conclusion: Attendance to cervical mass screening with conventional Pap smear up to 10 years before cervical cancer diagnosis was significantly lower among women with cervical carcinoma than among controls.

ABSTRACT 12
Poster position PoGy 22

Steroid hormone receptor expression, proliferative activity and microvessel density in the endometrium of women with polycystic ovary syndrome

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Background: Women with polycystic ovary syndrome (PCOS) have an almost three-fold increased risk of developing endometrial cancer and the association between PCOS and endometrial cancer is mainly confined to premenopausal women. There are several lines of evidence that show an association between PCOS and abnormal endometrial gene and steroid receptor expression as well as a dysregulated endometrium. This may lead to development of endometrial hyperplasia in women with PCOS and subsequent progress to endometrial cancer. The aim of this project was to study the association between steroid hormone receptor expression, proliferative activity and microvessel density in endometrium from women with PCOS and healthy controls.

Methods: The study population includes 19 premenopausal women >35 years of age previously diagnosed with PCOS and 13 controls. Lipid variables, fasting plasma glucose, fasting insulin, estradiol, progesterone, testosterone, SHBG, and FSH were measured by standard laboratory techniques. The cellular localization and level of expression of ERα, ERα1, ERα2, ERα5, PRA+B, PRB and AR was determined in endometrial biopsies using immunohistochemistry and HSCORE was calculated. Immunohistochemical stainings of Ki67 were used for calculation of proliferative activity and CD31 for calculating microvessel density.

Results: Anovulatory PCOS patients had higher serum testosterone levels and free androgen index than both ovulatory PCOS patients and controls. The expression of ERα2 in stroma and AR in stroma and luminal epithelium was significantly higher in the endometrium of anovulatory PCOS patients than in controls. The endometrial proliferative index (Ki67) was significantly higher in anovulatory PCOS patients than in secretory phase PCOS patients and controls, but comparable with proliferative phase endometrium in both ovulatory PCOS patients and controls. The microvessel density in the anovulatory PCOS endometrium was significantly lower compared with the endometrium from ovulating PCOS women and controls in the proliferative phase but significantly increased compared to controls in secretory phase.

Conclusion: Women with PCOS and anovulation thus have endometrial properties that differ from the normal endometrium and that of women with PCOS that ovulates. Whether the diverging endometrial expression of ERα2 and AR is associated with cancer development remains to be shown. The relatively high endometrial proliferative activity seen in women with anovulatory PCOS might however predispose for the development endometrial hyperplasia and cancer.
**ABSTRACT 13**

Poster position PoOb 21

**Pregnancy outcome of 1064 fetuses with increased nuchal translucency**

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**Background:** Increased nuchal translucency (NT) is associated with different chromosomal and structural defects as well as genetic syndromes. Parental counseling in cases with only moderately increased NT, normal chromosomes and no obvious structural defects in repeated ultrasound examinations is challenging. Our objective was to study the outcome of singleton pregnancies from unselected population with increased NT in order to provide information for parental counseling.

**Methods:** All singleton pregnancies with increased NT (≥ 3 mm until 1.3.2004 and ≥ 95th percentile for crown-rump length thereafter) detected at the first screening ultrasound examination at 10+0 to 14+0 gestational weeks referred to the Department of Fetal Medicine at Helsinki University Central Hospital during years 2002–2007 were included in the study group. Information about NT thickness, maternal age, pregnancy outcome and healthiness of live born children until discharge from the delivery hospital were gathered from hospital databases and analysed.

**Results:** Of 1195 pregnancies with increased first-trimester NT 1064 (89%) were suitable for analysis. Of these, karyotype was normal in 835 (78.5%), abnormal in 224 (21.0%) and unknown in 5 pregnancies (0.5%). Termination of pregnancy was performed in 209 (20%) and miscarriage occurred in 36 (3%) of pregnancies. There were 7 (1%) perinatal deaths. A total of 812 (76%) children were born, of which 70 (9%) were unhealthy, 27 (3%) having abnormal karyotype. The percentage of healthy live born decreased from 83% in fetuses with NT thickness between 95th centile - 3.4 mm to 18% in fetuses with NT thickness ≥ 6.5mm. Structural defects or genetic disorders were observed in 74 (9%) of cases with normal karyotype, of which 43 resulted in livebirth, 25 in termination of pregnancy and 6 in perinatal death.

**Conclusions:** Majority of fetuses in our study were in the lowest NT thickness group. Percentage of chromosomal defects and distribution of different chromosomal defects was approximately the same as reported in previous studies. Even modest increase in NT thickness increased adverse pregnancy outcome significantly also in cases with increased NT and normal karyotype. Parental counseling and pregnancy follow-up are of essential importance in such cases. Long-term follow-up study is needed in order to provide information about neurodevelopmental problems in pregnancies with increased NT and normal karyotype.

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**ABSTRACT 14**

Poster position PoGy 3

**Development of Liposomal Formulation with Curcumin Targeted for the Treatment of Vaginal Inflammation**

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Curcumin is the principal component of turmeric powder (curry spice) obtained mainly from the rhizome of Curcuma longa. As a traditional medicine, turmeric powder has been extensively used for centuries to treat a diversity of disorders. Recent research (more than 12000 citations in SciFinder database) has revealed that curcumin might be a potential anticancer drug because of its strong links to antioxidants and anti-inflammatory activities together with other vital molecular cascades. The poor therapeutic outcome in the past clinical trials has been alleged to its poor solubility and low bioavailability, however several clinical trials are currently in progress focusing on
various types of cancers and Alzheimer’s disease attributed to the strong evidence of its therapeutic potential at the molecular level. Our target is the treatment of vaginal inflammation, for which liposomal curcumin destined for local administration might be an ideal formulation.

Methods: Curcumin/curcuminoids (curcumin analogues) were standardized by UV-VIS/HPLC/MS/NMR. Liposomal curcumin/curcuminoids were characterized through their stability, size and entrapment efficiency. Antioxidant activities of curcuminoids and liposomal curcuminoids were evaluated by DPPH/ABTS⁺/O₂⁻ and SOD activities. Anti-inflammatory activities of liposomal curcumin and curcumin were compared based on in vitro measurement of NO production and pro-inflammatory cytokines such as IL-1β, TNF-α, IL-8 in macrophages (J774.1) and human origin vaginal cells lines (End1/E6E7, Ect1/E6E7, VK2/E6E7).

Results: Phospholipid based vesicles (with and without curcumin) with the average size of 200 nm were found to be stable incorporating high amount of curcumin/curcuminoids. Liposomal curcumin was found to be 2 to 6 folds more potent than corresponding curcumin in inhibiting NO production and pro-inflammatory cytokines in macrophages. The pro-inflammatory cytokines such as IL-8 were inhibited up to 67% by the liposomal curcumin in human vaginal cells lines (End1/E6E7, Ect1/E6E7, VK2/E6E7). The mixture of curcuminoids was found to be more potent than individual compounds in respect to their antioxidant and anti-inflammatory activities.

Conclusion: Standardized liposomal curcuminoids might be an appropriate and cost-effective formulation for the treatment of vaginal inflammation and might lead to improved therapy.

Keywords: Curcumin, liposomes, turmeric powder, Curcuma longa, anti-inflammatory, antioxidant, vaginal inflammation


The project was partly financed by Phospholipid Research Center, Heidelberg, Germany.

ABSTRACT 15
Poster position PoOb 97

Low to Moderate Alcohol Intake During Pregnancy and Risk of Psychomotor Deficits

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Objective: To examine the effects of low to moderate alcohol consumption during pregnancy on child motor function at age 5.

Methods: A prospective follow-up study of 685 women and their children sampled from the Danish National Birth Cohort based on maternal alcohol consumption during pregnancy. At 5 years of age, the children were tested with the “Movement Assessment Battery for Children” (MABC). Parental education, maternal IQ, prenatal maternal smoking, the child’s age at testing, and gender of child were considered core confounders, while the full model also controlled for prenatal maternal binge drinking episodes, age, maternal prepregnancy body mass index, parity, home environment, postnatal parental smoking, health status, and indicators for hearing and vision impairment.

Results: There were no systematic or significant differences in motor function between children of mothers reporting low to moderate levels of average alcohol consumption during pregnancy and children of mothers who abstained.

Conclusions: In this study, we found no systematic association between low to moderate maternal alcohol intake during pregnancy and child motor function at age 5.
Assisted Reproduction and Child Neurodevelopment - a population-based cohort study

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Background: Infertility affects 10–20% of couples in industrialized countries, and increasing numbers seek medical treatment. During the last few years, several studies have been published on potentially adverse pregnancy outcomes, however few studies have been performed on the neuropsychological development and especially long-term follow-up is sparse. Some previous studies find an increased risk of developmental deficits, while other studies are more reassuring. Generally the existing literature is limited by methodological shortcomings such as limited sample size and most importantly, lack of sufficient control for important confounders such as maternal intelligence or parental education, which are key predictors of child intelligence and neurodevelopment.

The infertility of the parents, the higher prevalence of chromosomal abnormalities in sub fertile men and the possible increased risks of genomic imprinting disorders are among the biologically plausible reasons for increased vigilance.

The aim of this study was to investigate the association between ART and the risk of child mental retardation, behavioral, emotional and hyperkinetic disorders.

Materials & methods: We studied a population of 33,139 children conceived after assisted reproduction and 555,828 children born after natural conception corresponding to all children born in Denmark from 1994–2003. The risk of light, moderate and severe mental retardation and the risk of hyperkinetic and emotional disorders were compared between the two groups by linkage of nationwide population based registries. All analyses were adjusted for maternal age, parity, smoking, educational level, and multiplicity using survival analyses techniques. Additional analyses adjusted for birth weight and gestational age, since they primarily were considered intermediating factors. Further, sub analyses examining possible associations with specific procedures, medications or reason for infertility were conducted.

Results: Will be presented at the conference.

Conclusion: Will be presented at the conference.

Management by pregnant women of activity restriction during hospitalization - a question of yielding and not feeling deprived of a sense of control

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Background: Maternal activity restriction (AR) is an obstetric intervention that is recommended widely to prevent preterm birth. Despite limited evidence of its preventive effect and obvious adverse effects, both physical and psychological, women are still prescribed AR. Some manage it well, others poorly. The purpose of the study was to investigate and explain why pregnant women respond to AR differently during hospitalization.

Methods: Using grounded theory, eight pregnant women were interviewed during their inpatient AR treatment (minimum of 7 days).

Results: The emerging theory “Managing Activity Restriction - a question of yielding and not feeling deprived of a sense of control” showed that the core category “being without a sense of control” was shared by the women. Whether this category was managed well or poorly depended on the way in which the women managed five challenging dimensions: “having to find meaning”, “being in a helpless and dependent state”, “having to put aside values”, “tolerating limitations of freedom”, and “having confidence in the AR therapy”.
Conclusion: Managing AR is less stressful when women yield control rather than feeling deprived involuntarily of a sense of control. Yielding requires the self-determined management of being without control, which can lead to a more acceptable and meaningful experience of being hospitalized. While further research will prove or disprove the protective effect of AR in regard to preterm birth, awareness of the challenging physical and psychosocial dimensions of AR can help health care providers to identify the most difficult challenges for each woman and to support her accordingly.

ABSTRACT 18
Poster position PoGy 38

Retrospective study of urinary incontinence after posterior colporrhaphy vs. posterior colporrhaphy + perineorrhaphy

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Background: In women with prolapse isolated rectocele is relatively rare, only seen in 7% of those who are operated. The need for concomitant perineorrhaphy by the time of posterior colporrhaphy is unknown. In theory perineorrhaphy might reduce SUI due to an increased muscular support through reunion of the Bulbocavernous muscles.

Method: Retrospective review of patients operated with PC and PC + P, respectively, at a University Hospital. Data were collected from electronic medical records and paper records. UI was defined as an ICI-Q score of 2–10. The Fisher’s exact test, the students t-test and logistic regression were used for statistical analysis.

Results: 142 women underwent surgery from October 2007 to December 2009. 34 underwent PC and 108 underwent PC + P. The two groups were comparable with respect to BMI (27 vs. 26), UI before the operation (48 vs. 63 %), and local HRT after surgery (61 vs. 73 %). The groups differed significantly regarding age (63 vs. 59 years, p = 0.029). The logistic regression analysis showed an OR of 1.97 (95% CI 0.83–4.85) for UI after surgery in the case of PC + P compared to only PC, but this was not significant (p = 0.13).

Conclusion: The study revealed a tendency toward an increased risk of unspecific UI after PC + P compared with PC alone. However, this was not significant. A prospective study is needed to confirm or invalidate this result.

ABSTRACT 19
Poster position PoOb 76

Biomarkers of coagulation, inflammation and angiogenesis are independently associated with preeclampsia

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Background: There is still no generally accepted etiology of preeclampsia, but an increasing body of evidence indicates that involvement of the immune system with a defective tolerance to the conceptus is an integral part of the pathogenesis. Studies on the pathogenesis and biomarkers of preeclampsia have not shown entirely consistent findings. Furthermore, although preeclampsia has been associated with inflammation, coagulation and angiogenesis, their correlation and relative contribution is unknown.

Method: During the study period from year 2004 until year 2006 in the Southeast region of Sweden, 114 women with preeclampsia, 31 with early onset (EOP) and 83 with late onset preeclampsia (LOP) and 100 normal pregnant controls, matched for gestational age and maternal age, were included. The blood samples were drawn at daytime, after admission to the delivery ward for the preeclampsia women and...
daytime at routine visit at the maternity care centers for the controls. Corticosteroid treatment was controlled for. A broad panel of 32 biomarkers reflecting coagulation, inflammation and angiogenesis was analyzed.

**Results:** Preeclampsia was associated with decreased antithrombin, IL-4 and Placental Growth Factor levels and with increased C3a, pentraxin-3 and sFlt-1 levels, with more marked differences in the EOP group. The Th1-associated chemokines CXCL10 and CXCL11 were significantly higher in the preeclampsia and EOP group than in controls, respectively. No correlations between these biomarkers were found in preeclampsia. Multivariate logistic regression tests confirmed the results.

**Conclusion:** Cytokines, chemokines and complement activation seem to be part of a Th1-like inflammatory reaction in preeclampsia, most pronounced in EOP, where chemokines may be more useful than cytokines as biomarkers. The biomarkers that were related to preeclampsia were not correlated, suggesting partly independent or in time separated mechanisms.

**ABSTRACT 20**

Poster position PoGy 14

**Lost to follow-up rate by serum human chorionic gonadotropin testing in women having a medical abortion**

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**Background:** Medical abortion, which accounts for approximately 50% of all early abortions in Denmark, requires follow-up to evaluate treatment success, diagnose and treatment of complications. Different kinds of follow-up procedures are described in the literature consisting of transvaginal ultrasound examination, serum human chorionic gonadotropin testing (sHCG), urine-pregnancy testing and telephone interview. The present study examined the lost to follow-up rate 3 weeks after medical abortion by sHCG testing which is the routine follow-up procedure at our outpatient clinic.

**Methods:** Retrospective study. Women (n=110), who attended the outpatient clinic at the Regional Hospital of Randers, Denmark in 2007 and underwent medical abortion before 9 weeks gestation were included in the study. All of these patients were invited to follow-up by sHCG testing 3 weeks after medical abortion.

**Results:** Twenty-seven of these women (25%) did not show up for this control procedure by sHCG testing performed 3 weeks after medical abortion.

**Conclusion:** Lost to follow-up rate is high with sHCG testing performed 3 weeks after medical abortion. The reason for this observation is unknown, but we speculate that our control procedure 3 weeks after medical abortion might be late. Thus, our follow-up procedure and timing needs probably to be optimized.

**ABSTRACT 21**

Poster position PoGy 40

**Socioeconomic characteristics, housing conditions and criminal behavior in women with cervical intraepithelial neoplasia (CIN) between 1960 and 2006**

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**Objective:** Cervical neoplasia has historically been associated with social disadvantage and modern studies have confirmed an association with socioeconomic factors. It is unclear if the sexual revolution and the introduction of modern contraceptives have equalized these differences among socioeconomic groups. This study aims to see if there is still an association between cervical neoplasia, criminality and socioeconomic factors such as occupation, education and housing conditions.

**Methods/materials:** 1331 women with cervical biopsies showing cervical intraepithelial neoplasia (CIN) I-III or invasive cervical cancer (58 cases) were compared with age-matched controls from the same geographical area in Sweden. Registers used were the Population and Housing Censuses (PHCs) in 1970, 1980 and 1990, including questions about civil status,
education, housing conditions, housing equipment, employment, occupation and income. The National Register of Conviction Decisions was used to access information on criminal offences.

Results: Women with a diagnosis of cervical neoplasia were more likely to be divorced, less likely to have a university education, high socioeconomic status and to own their own house or apartment than their age-matched controls. A significant association with severe criminal activity was observed, although criminal offences were quite rare both in the study population and the control group. When two generations of women were studied separately, we saw more marked differences compared with controls in the younger part of the cohort regarding university education, owning ones residence and size of living area. Information from the 1960 PHC was also available, but at this time point no differences between cases and controls were evident.

Conclusions: The results of this study indicate that women with cervical neoplasia belong to a socioeconomically more disadvantaged group. It also provides information about an association with criminal offences, which persists after adjusting for socioeconomic status. Surprisingly, some differences in socioeconomic factors had not diminished in the younger, compared to the older part of the cohort.

**ABSTRACT 22**

**Poster position PoOb 3**

**Group B streptococci have increased significantly in pregnant women from 2002–2010 - A retrospective cohort study**

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**Background:** Group B streptococci (GBS) can cause preterm delivery, sepsis and meningitis in infants younger than 90 days. Maternal colonization with GBS in the genitourinary tract is the primary risk factor. The incidence of GBS is rising worldwide. A similar rise is seen in infections caused by Escherichia coli (EC). EC also causes neonatal sepsis. Another main concern is antimicrobial resistance. In EC resistance towards ampicillin is increasing. Ampicillin is used in antenatal care to prevent ascending infections causing preterm birth and neonatal infections.

**Objective:** To determine the rates of GBS and EC among pregnant women giving birth at Rigshospitalet (RH), Copenhagen, Denmark and the frequency of ampicillin resistance among EC. We also wanted to describe the incidence of neonatal GBS morbidity and association to mothers with a positive GBS culture during pregnancy.

**Methods:** All microbiological requisitions from Department of Obstetrics at RH were extracted from the microbiology database (MADS) in the period 2002–2010. The number of patients, diagnoses and obstetrical data were obtained from the internal database at RH and the Danish Obstetrical Database.

**Material:** 146,920 patients (70,306 outpatients, 76,614 hospitalized) were seen in the department. 24,724 cultures were taken from 16,587 patients. There were 33,616 deliveries during 2002 to 2010 and among these deliveries we identified 48 infants with severe GBS infection.

**Results:** 5,648 (23%) samples from 4,087 patients were culture positive. 139 bacterial species were found in 50 different sample categories. The main sample categories were urine with 3,803 tests (67%) and 1,242 swabs (22%). The proportion of the culture positive and interrelationship between urine tests and vaginal swabs practically remained unchanged during the 9 year period. The overall rate of GBS and EC were 15 and 19%, respectively. However, in the urine the positive rates were higher (GBS 18% and EC 25%). The overall rate of GBS positive samples is significantly rising (13% in 2002 to 29% in 2010, OR 2.7, p<0.0001, 95%CI (1.9–3.9)). The resistance to ampicillin among EC isolates remained unchanged (52%). We found an association between mothers with a positive GBS culture during pregnancy and infants born with GBS septicemia (OR 6.05, p <.0001, 95%CI (2.4–15.3)).

**Conclusion:** Despite substantial focus in the clinic on GBS, the rate of maternal colonization with GBS is increasing. More research on preventive measures is needed, but updated guidelines, screening and intrapartum antibiotic prophylaxis continue to be the cornerstones of early-onset GBS disease prevention. The high rate of ampicillin resistance for EC calls for revised empiric antibiotic strategy.
Maternal mortality over 25 years in a small high-resource population

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Background: Maternal mortality has declined to very low levels in high-resource countries within the last half century. Iceland has a small and largely homogenous population with comprehensive health care and supposed good record-keeping and registers, where a new systematic evaluation of maternal death was needed.

Methods: Maternal death, during or within 42 or 365 days from pregnancy, was evaluated by cross-checking national census information on all deaths of women 15–49 years during the 25 years 1985–2009 against the national birth registry and computerized hospital admission/diagnostic files, for any possible pregnancy. Death certificates and hospital case records were scrutinized for potential cases.

Results: Thirty women died; 26 after ≥22 weeks (birth) and four earlier in pregnancy. For 107.871 births the overall mortality rate was 27.8/100 000. Direct deaths were four (3.7/100 000), indirect five (4.6/100 000) and unrelated 21 (19.5/100.000). By WHO criteria (direct and indirect ≤42 days) the maternal mortality rate was 5.6/100.000. Direct deaths were caused by severe preeclampsia and choriocarcinoma, indirect by sepsis and pre-existing cardiac and diabetic illness. No woman died due to postpartum hemorrhage, anesthesia or ectopic pregnancy. Death rates fell progressively and no death falling within WHO criteria occurred in the last 5-year period. Suboptimal care was noted in some cases.

Conclusion: Maternal death in Iceland is among the lowest reported in the world. Improved systems for ongoing linking of any death of a woman in the fertile age to birth registration and hospital-ICD and -procedure coding is required to track maternal deaths securely.

Trends in Caesarean section rates in Iceland

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In Iceland the caesarean section (CS) rate has increased from 5% in 1975 to 10% 1981, 15% in 1996, 17.9% in 2000 (was highest in the Nordic countries from 1997 to 2001) to a peak at 18.2% in 2003. It has been suggested that a rate above 15% may not be of benefit for either the mother or fetus.

Clinical audit using Robsons 10 group classification which has been associated with a reduction in CS rate, has been published in the annual report from the Icelandic Birth Registry since 2004 for each Icelandic labour ward in the whole country. Since then the CS rate has decreased to 14.6% in 2010 and 15.0% in 2011 and has not been lower since 1995. With 4500–5000 deliveries per year there are inevitably substantial variations between years. In 2010 groups 1 (nullip., ceph., >37w, spont. labour) and 2 (nullip., ceph. >37w, induced) contributed 4.3 % of the total 14.6% CS rate where group 1 was 27.5% of all deliveries, with 7.9% CS rate, contributed 2.1% and group 2 was 8.9% of all deliveries with 24.6% CS rate and contributed 2.2% to the total CS rate. Since 2004 the combined size og groups 1 and 2 and contribution to the CS rate has been similar but more CS are now done in group 2 because the size of the group has increased by 50%. More details of changes over time will be presented at the congress. In 2010 group 5 (prior CS) was 10.1% of total deliveries but had a third of all CS (4.8% of 14.6%) with a CS rate of 47.6%. Group 4 (multip., ceph., >37w induced or CS) (9.1% of all deliveries) contributed 1.2% where 0.7% were CS before labour. Group 6 (nullip., breech) with 95% CS rate contributed 1.1%. All the other groups contributed less than 1% including the large group 3 (multip., ceph., >37w, spont. labour) with 36% of all deliveries which had 2.2% CS rate and contributed only 0.8% to the total CS rate. This shows as often pointed out, that the most important groups are 1 (large group with low CS rate) and 2 (small group with high CS rate) because
they have a large contribution to the CS rate and the women in those groups who have CS will be in group 5 in their next delivery, where the CS rate is always high.

It is difficult to determine the optimal CS rate for the best perinatal and maternal outcomes. However, at the same time as the CS rate seems to be decreasing towards 15% the perinatal mortality has never been lower with the average 4.8/1000 (22v, 500g) for the last 5 years. It is urgent that further research is carried out on changes in maternal and fetal morbidity such as perinatal hypoxic complications.

Conclusion: After an increase in CS rate in Iceland to 18.2% in 2003 it is has decreased to 15% and is now the lowest in the Nordic countries. The introduction of the Robsons 10 group labour audit may have been instrumental in these changes. At the same time the perinatal mortality rates are still decreasing and stand at 4.8 per 1000.

ABSTRACT 25
Poster position PoGy 60

Pseudomyxoma Peritonei;
Symptoms, treatment, prognosis and sensitivity to cytostatic drugs in vitro

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Introduction: Pseudomyxoma peritonei (PMP) is a rare disease with a heterogeneous histopathology within the patient population and must be considered as an important differential diagnosis in cases with suspected ovarian cancer with peritoneal carcinomatosis (PC) and ascites.

In patients with PC there has been development towards more individualised treatment, and selected patients are offered debulking or cytoreductive surgery (CRS) followed by hypotherm intraperitoneal cytostatica (HIPEC).

Earlier studies have shown a wide variation considering sensitivity to cytostatic drugs, even within groups of patients with the same histopathological diagnosis.

The aim of the study is to describe characteristics in patients with PMP and to study in vitro tumour cell sensitivity to cytotoxic drugs in the same patient population.

Methods: 68 patients (35 men and 33 women) that underwent surgery for PMP at the Department of surgery, Uppsala University Hospital may 2006-december 2009 was included in the study.

The median age at the time of surgery was 57+-14 and 55+-12 years respectively.

Tumour cells were sampled during operation and incubated in the presence of cytostatic drugs. Cytostatic/toxic effect was measured with fluorometric microculture cytotoxicity assay (FMCA). FMCA data of five frequently used drugs was related to prospective collected clinical data.

Results: The first symptoms differed between males and females. Most patients experienced abdominal pain and distension of the abdomen while women more often had gynaecological symptoms and male patients more often presented with an inguinal hernia.

Men more often went through appendectomy in case of surgery prior to CRS. The PMP diagnosis was more often unexpected in woman, 18%, than in men, 3%, and appeared when the woman was operated on suspicion of other diagnosis.

51% of the men had not undergone surgery when permitted for CRS, while the women in 76% of the cases had earlier abdominal surgery, in almost all the cases because of suspicion of ovarian cancer (p<0.05)

43 of the 68 patients had radical surgery and at the time of the latest follow up only six of them had relapsed.

The sensitivity to cytotoxic drugs differed between individuals, but not between sex, histological degree or earlier exposure to cytostatics.

Conclusions: It is important to keep in mind PMP as a differential diagnosis in patients with a long history of pain and distension of the abdomen. After macro-radical surgery the prognosis is god.

Long-term follow up will be needed to evaluate if sensitivity to cytotoxic drugs in vitro is correlated to progression free survival.
Neonatal and Maternal outcomes in Insulin Dependent and Non-Insulin Dependent Diabetes Mellitus and Gestational Diabetes in Troms, Norway

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Background: Diabetes is known to complicate a pregnancy with increased risk for congenital malformation, macrosomia and pre-eclampsia. As pre-pregnancy care and care during pregnancy is improved, we aimed to study if diabetes still is associated with complications.

Methods: We included all 256 singleton pregnancies at the University Hospital North Norway who had pre-existing insulin-dependent (IDDM) or non-insulin-dependent diabetes mellitus (NIDDM) before pregnancy and those who developed gestational diabetes (GDM) between Jan 2004 and Dec 2010. We explored the associations between HbA1c and BMI with birth weight, macrosomia, pre-eclampsia and caesarean section in women with a singleton term pregnancy (≥ 37 weeks gestation) using linear and logistic regression analyses.

Results: In 69 pregnancies with IDDM the prepregnancy mean (standard deviation, SD) HbA1c was 7.8% (1.5), BMI 26.5 kg/cm2 (5.1), birth weight 3621 g (827), 10.6% (7/66) had macrosomia, 21.7% (15/69) pre-eclampsia and 56.5% (39/69) caesarean section. In this group, HbA1c and BMI were not associated with birth weight or macrosomia, but each SD (5 kg/cm2) higher BMI was associated with 3 fold higher risk for pre-eclampsia (OR 3.07; 95% CI 1.23–7.68). In 26 pregnancies with NIDDM the prepregnancy mean (SD) HbA1c was 7.6% (1.6), BMI 35.4 kg/cm2 (7.8), birth weight 3663 g (1101), 7.7% (2/26) had macrosomia, 26.9% (7/26) pre-eclampsia and 57.7% (15/26) caesarean section. In 161 pregnancies with GDM the prepregnancy mean (SD) HbA1c was 5.8% (0.4), BMI 30.2 kg/cm2 (6.1), birth weight 3761 g (750), 14.6% (23/158) had macrosomia, 15.0% (24/160) pre-eclampsia and 31.1% (50/160) caesarean section. In this group, HbA1c was associated with birth weight; each SD (0.6%) higher HbA1c was associated with 0.2 SD (150 g) higher birth weight (p = 0.04). HbA1c was also associated with 71% increased risk for pre-eclampsia (OR 1.71; 95% CI 1.04–2.83), while BMI was not associated with macrosomia and pre-eclampsia.

Conclusion: Although the care before and during pregnancy have improved, diabetes is still associated with increased risk for macrosomia, pre-eclampsia and caesarean section, so further reduction in HbA1c and BMI may improve the newborn and maternal outcomes.
Conclusion: Our preliminary results suggest that PUR could be a problem in women requiring oxytocin for induction of labor. Thereby, we recommend that these women should be closely observed after delivery.

ABSTRACT 29
Poster position PoGy 43

Increasing participation in cervical cancer screening: Telephone call to long time abstaining women in Sweden. Results from RACOMIP, a randomized controlled trial

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Background: Non-participation is the foremost risk factor for cervical cancer, related to screening programs. The aim was to study the effectiveness of an intervention to increase participation within the framework of a well run screening program.

Methods: Telephone contact with non-attendees, offering an appointment to take a smear, was compared with a control group in a population-based randomized trial in Western Sweden starting in September 2009. Out of 8,800 randomly selected women, aged 30 to 62, without a registered Pap smear in the two latest screening rounds, 4,000 women were randomized to a telephone arm, 800 were offered a high-risk human papillomavirus (HPV) self-test by mail (not in this presentation) and 4,000 constituted a control group. The endpoints were the frequency of testing, frequency of abnormal smears and further assessment of abnormal tests.

Results: The compliance rate in a year was significantly higher in the telephone arm than in the control group, 718 (18.0%) versus 422 (10.6%) (RR 1.70 95% CI 1.52–1.90) and number of detected abnormal smears were 39 and 19 respectively (RR 2.05 95% CI 1.19–3.55) and 34 and 18 with further assessment (RR 1.89 95% CI 1.07–3.34). Twice as many high-grade diseases (CIN2+) were detected and treated in the telephone arm, 14 respective 7. Data on cost effectiveness will be presented.

Conclusion: Telephone contact with women who have abstained from cervical cancer screening for long time increases participation. The intervention leads to a significant increase in detection of atypical smears. This strategy, within the framework of a screening program, is feasible.

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Poster position PoOb 107

A letter to the male partner increases antenatal attendance and HIV testing in eastern Uganda: results from a randomized facility-based intervention trial

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Background: The objective of the study was to evaluate the effect of a written invitation letter to the spouses of new antenatal clinic attendees on attendance by couples and on male partner acceptance of HIV testing at subsequent antenatal clinic visits.

Methods: The trial, parallel group, randomised health facility-based intervention, was conducted with 1060 new attendees from October 2009 to February 2010 in an antenatal clinic at Mbale Regional Referral
Hospital, Mbale District, eastern Uganda. The intervention comprised an invitation letter delivered to the spouses of new antenatal attendees, while the control group received an information letter, a leaflet, concerning antenatal care. The primary outcome measure was the proportion of pregnant women who attended antenatal care with their male partners during a follow-up period of four weeks. Eligible pregnant women were randomly assigned 1:1 to the intervention or non-intervention groups using a computer-generated randomization sequence. Respondents, health workers and research assistants were masked to group assignments and to letter allocation to the groups.

Results: The trial was completed with 530 women enrolled in each group. Participants were analyzed as originally assigned (intention to treat). For the primary outcome, the percentage of trial participants who attended the antenatal clinic with their partners were 16.2% (86/530) and 14.2 % (75/530) in the intervention and non-intervention groups, respectively (OR=1.2; 95% CI: 0.8, 1.6). For the secondary outcome, most of the 161 male partners attended the antenatal clinic; 82 of 86 (95%) in the intervention group and 68 of 75 (91%) in the non-intervention group were tested for HIV (OR=2.1; 95% CI: 0.6 to 7.5).

Conclusions: The effect of the intervention and the control on couple antenatal attendance was similar. The pre-trial partner participation was 5%. The trial also demonstrated that a simple intervention, such as a letter to the spouse, could increase couple antenatal clinic attendance by 10%. Significantly, the majority of male partners who attended the antenatal clinic accepted HIV testing. Therefore, to further evaluate this simple and cost-effective intervention method, adequately powered studies are required to assess its effectiveness in increasing partner participation in antenatal clinics and the programme for prevention of mother to child transmission of HIV.

ClinicalTrials.gov Identifier: NCT01144234.

ABSTRACT 31

Poster position PoOb 82

Cognitive deficits in adult offspring of women with gestational diabetes reflect confounding

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Background: Exposure to intrauterine hyperglycemia affects offspring metabolism into adulthood through pathways that are not fully understood. The pathogenesis may be mediated through epigenetic changes, and it is known from animal studies that structural changes in the hypothalamus are involved. There are no animal studies of cognitive function in diabetes exposed offspring, but several studies of mature diabetic animals have shown that glucose exposure leads to structural changes in the hippocampal regions of the brain, which serves cognitive functions. Human studies of cognitive function in diabetes exposed offspring are few, small and conflicting.

Objectives: To evaluate the cognitive function in adult offspring of women with diet-treated gestational diabetes (GDM).

Research design and methods: In 2003–2005 we did a follow-up study of adult offspring of women with diet-treated GDM (n=153) and 118 offspring from the background population (n=118). Subjects were 18–27 years old. The main outcome measure was offspring cognitive function measured by global cognitive score, derived from Ravens Progressive Matrices and three verbal subtests from the Weschler Adult Intelligence Scale. Exposure variables were: maternal fasting- and 2-hour blood glucose during the diagnostic oral glucose tolerance test as well as belonging to the GDM-group.
Results: In absolute figures offspring of women with GDM had a lower global cognitive score, than offspring from the background population (93.1 vs. 100.0, p<0.001). This was also the case when adjusted for potential confounders like: maternal age, parity, maternal smoking during pregnancy, sex and offspring age (β -7.1, 95% CI -10.8 to -3.4; Model 1), birth weight and gestational age (β -6.4, 95% CI -10.2 to -2.7; Model 2), perinatal complications (β -6.7, 95% CI -10.4 to -3.1; Model 3) and social class based on family occupation (β -4.0, 95% CI -7.4 to -0.7; Model 4). But when adjusted for parental educational level (β -2.7, 95% CI -5.9 to 0.4, Model 5) or all potential confounders from Model 1 to 5 (β -1.4, 95% CI -5.0 to 2.1; Model 6), cognitive scores no longer differed significantly between the two groups. In univariate analysis the fasting blood glucose but not the 2-hour blood glucose was negatively associated with offspring cognitive function (β -4.1, 95% CI -7.7 to -0.5). This association remained significant when adjusted for birth weight, gestational age and perinatal complications, but not when adjusted for the remaining confounders.

Maternal age, offspring age, male sex and parental educational level were independent positive predictors of offspring global cognitive score, whereas multiparity was associated with a lower cognitive score.

Conclusion: Cognitive deficits in adult offspring of women with gestational diabetes compared with offspring from the background population apparently reflects differences with respect to well-known confounders.

Background: Fetal growth is determined by both genes and the intrauterine environment, and disturbances in fetal growth may lead to adverse long-term outcome. Prior studies found that offspring of women with type 1 diabetes had increased risk of early fetal growth delay (EFGD) compared with offspring from the background population, furthermore offspring with EFGD had developmental impairment in early childhood.

Objectives: To evaluate the impact of EFGD on cognitive function in adult offspring of women with type 1 diabetes.

Research design and methods: We included 62 adult offspring (18 to 27 years) of women with type 1 diabetes and a documented regular menstrual cycle (28 to 30 days). Sonographic gestational age was based on crown-rump length <14 weeks of gestation. EFGD was defined as ≥6 days delay between the sonographic and menstrual gestational age. Outcome measure was global cognitive score derived from Ravens progressive matrices and 3 verbal WAIS subtests. Multiple linear regression analysis was applied including the following covariates:

Maternal: age at delivery, parity, smoking during pregnancy, mean glucose in 1th and 3th trimester, severe hypoglycaemia during pregnancy.

Neonatal: gestational age, birth weight, neonatal hypoglycaemia, perinatal complications

At follow-up: offspring age, sex, family occupational social class, parental educational level.

Results: Offspring with EFGD (N=20) had significantly lower global cognitive scores than offspring with normal early fetal growth (86.8 vs. 95.8, P=0.03). This difference remained statistically significant after adjusting for: maternal age at delivery, parity, smoking during pregnancy, mean glucose in 1th and 3th trimester, severe hypoglycaemia during pregnancy.

Discussion: This study adds to the growing evidence that fetal growth delay is associated with cognitive impairment in adult offspring of women with type 1 diabetes.

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Early fetal growth delay is associated with cognitive impairment - in adult offspring of women with type 1 diabetes

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24%, P=0.60), neonatal hypoglycaemia (65% vs. 52%, P=0.35) or preterm delivery <37 weeks (5% vs. 12 %, P=0.39) differed between the two groups.

Conclusion: Early fetal growth delay in offspring of women type 1 diabetes was associated with impaired cognitive function in adulthood.

ABSTRACT 33
Poster position PoOb 108
Interventional radiology in multidisciplinary management of placenta percreta

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Objectives: To describe various endovascular techniques available for adjunctive support in the treatment of severe postpartum hemorrhage and placenta percreta.

Background: Placenta percreta is a rare life-threatening obstetrical condition associated with severe hemorrhage and massive transfusion. The most important risk factors are placenta previa and previous cesarean section. Early diagnosis by ultrasound in high risk pregnancies is essential for identification of cases for follow-up and advance multidisciplinary planning of cesarean section. The object of interventional radiological adjunctive support is to reduce hemorrhage, transfusion requirements, and allow for appropriate surgery in multidisciplinary setting, which may imply a low maternal and fetal morbidity and mortality as well as maintained fertility.

Methods: Based on the current literature and experience from a tertiary center, we provide an overview of various endovascular techniques available for adjunctive support in the multidisciplinary treatment of placenta percreta. Transarterial balloons may be inserted prior to elective surgery or in cases of unexpected excessive hemorrhage. Transarterial balloons can occlude the internal iliac arteries, the common iliac arteries or the abdominal aorta. Transarterial embolization may be an option in selected cases.

The indications, implications and possible complications associated with the different management modalities for severe postpartum hemorrhage will be discussed.

Conclusion: Interventional radiology provides an important contribution to the multidisciplinary treatment of placenta percreta. However, the risk of complications should be considered when choosing a specific interventional radiology management modality.

ABSTRACT 34
Poster position PoOb 32
Cervical ripening- Bishop score, cervical length and hormonal status in post-term pregnancies

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Background: Cervical ripening in post-term pregnancies is complex and little understood. Sex hormones are suggested to be involved. In the present study we investigated the correlation between serum estrogen, androgen and progesterone levels versus cervical length and Bishop score in a population of post-term pregnancies.

Methods: This cohort study is part of a RCT at department of Obstetrics, St.Olav’s Hospital, Trondheim University Hospital. 508 post-term women were randomized to induction of labor or expectant management one week beyond estimated day of delivery. Bishop score, cervical length and serum concentrations of dehydroepiandrosterenedione sulphate (DHEA-S), androstendione, testosterone, free testosterone index (FTI), estriol, estradiol, progesterone and 17-OH-progesterone were determined at inclusion.
Correlations between hormone levels and cervical status have been studied in multivariate regression analysis, adjusted for age, parity, BMI and gender.

**Results:** We found no correlations between androgens and cervical length. Estriol correlated negatively to cervical length (p=0.019). When grouping the population according to parity neither androgens nor estrogens or progesterone correlated to cervical length in nulliparous women. In multiparous women however, there was a negative correlation between estriol, estradiol, progesterone and 17-OH-progesterone.

Androgens did not correlate to Bishop score. Estriol and progesterone correlated positively to high Bishop score (p=0.035, p=0.046) in all women. Estriol, progesterone and 17-OH-progesterone correlated to high Bishop score in multiparous women.

**Conclusions:** Androgens did not have any impact on cervical ripening in post-term pregnancies. None of the assessed hormones seemed to have any impact on cervical length in nulliparous women. In multiparous women high levels of estrogen, progesterone and 17-OH-progesterone were associated with ripening of the cervix.

**ABSTRACT 35**

Poster position PoOb 8

**The cerebroplacental pulsatility ratio is higher in macrosomic non-diabetic fetuses during the last weeks of pregnancy**

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**Background:** The cerebroplacental ratio (CPR) is a valuable tool for evaluating the cerebrovascular response to the feto-placental exchange. The combined CPR (i.e. the pulsatility index (PI) in the middle cerebral (MCA) relative to PI in the umbilical artery (UA)) gives more information than the UA and MCA PI alone. Macrosomic fetuses show augmented umbilical venous and arterial circulation. We tested the hypothesis that in macrosomic fetuses of healthy mothers the CPR differs from that in normally growing fetuses.

**Methods:** We recruited 58 healthy non-diabetic pregnant women that previously had given birth to a large neonate (>90th centile) to an observational study that included Doppler measurements of the middle cerebral and umbilical arteries. The women were examined 4 times during the last half of pregnancy and compared with a reference population. The birth-and placentalweights were noted.

**Results:** 29 of the 58 women gave birth to a macrosomic neonate (>90th centile), and only observations (n=94) from these pregnancies were included in the statistical analysis. While the MCA PI was not statistically different from the reference population (p=0.094), the UA PI was significantly lower (p<0.0001), and the combined CPR was higher compared with the reference population from 28 weeks onwards (Figure). The birthweight to placentalweight ratio was not different from the reference population.

**Conclusion:** The CPR is higher in macrosomic fetuses of non-diabetic mothers than in the reference population from 28 weeks of gestation. This combined with the finding of unchanged birthweight to placentalweight ratio suggests that the high CPR in the last trimester is a physiologic relative vasoconstrictor response to the abundant placental return in macrosomic fetuses.

**ABSTRACT 36**

Poster position PoOb 28

**Oxytocin augmentation and labour outcome**

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**Background:** In most Norwegian units midwives and obstetricians start oxytocin augmentation when they think uterine contractions are insufficient. The overall augmentation rate in Norway was 34% in 2002. Over-stimulation is the most important risk factors for birth asphyxia. We wanted to investigate if targeted use of oxytocin would influence labour outcome.

**Methods:** We performed a quality assurance study at Stavanger University Hospital from January 2009 to July 2011. In 2009 no strict definition of labour dystocia was used. From January 2010 the use of oxytocin augmentation was restricted to women with defined labour dystocia according to WHO criterias. Prolonged first stage of labour was defined when cervix dilatation crossed an “action line” four hours delayed related to “alert line”. Only women with
spontaneous start of labour were included. The frequencies of women with augmentation of labour and the frequencies of obstetrical outcomes in 31 months were compared using linear regression.

**Results:** Altogether 9827 deliveries were analysed. The frequencies of oxytocin augmentation were 22.0% in 2009, 13.0% in 2010 and 14.6% in the first six months of 2011. The acute cesarean section rate was 9.4% in women with labour augmentation and 6.8% in women with spontaneous labours (p< 0.01 after adjustments for parity, gestational age and birth weight). The regression equation was $y = 6.3 + 0.18x$ ($p = 0.03$) and Pearson correlation coefficient $(r)$ was 0.39 and $r$ square = 0.15; i.e. 15% of acute cesarean section might be related to oxytocin augmentation. We also found a significant association between operative vaginal deliveries and oxytocin augmentation ($p = 0.02$, $r$ square = 0.18) and third degree tears and oxytocin augmentation ($p = 0.02$, $r$ square = 0.16). The associations between oxytocin augmentation and post partum haemorrhage or children with metabolic acidosis were not significant. The frequencies of labours with duration more than 12 hours increased from 5.1% in 2009 to 6.8% in 2010 and 7.4% in 2011.

**Conclusion:** Pros and cons related to oxytocin augmentation should be balanced. We think the reduced frequencies of operative deliveries and perineal tears outweigh the increased frequency of prolonged labours.

**ABSTRACT 37**
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**AMH in diagnosis of PCOS - Can morphologic description be replaced?**

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**Context:** Anti-Müllerian hormone (AMH) has been suggested as an alternative to antral follicle count (AFC) in diagnosing polycystic ovarian syndrome (PCOS). Proposed cut-off values for AMH gives an acceptable specificity but a rather poor sensitivity, leaving up to one third of PCOS women undiagnosed.

**Objectives:** The aim of this study was to explore the diagnostic power of AMH levels and the relationship between AMH and different diagnostic criteria of PCOS.

**Design, setting and participants:** We used data from a cross sectional, case-control study on women with prior preterm birth and their controls, i.e. women with prior term birth. Among 262 women, 56 met the Rotterdam criteria (PCOS-R), and 44 the Androgen Excess-PCOS Society (PCOS-AES) criteria of PCOS.

**Material and Methods:** Fasting blood samples were collected; a trans-vaginal ultrasound investigation and a clinical examination were performed. PCOS-R and PCOS-AES were re-diagnosed by replacing polycystic ovarian morphology (PCOM) with AMH.

Main outcome measures: The prevalence of PCOS, PCOM, hirsutism, oligoamenorrhoea and serum levels of AMH and androgens.

**Results:** When replacing PCOM with AMH, both specificity and sensitivity for PCOS-R and PCOS-AES remained high at AMH values above 20 pmol/L.

**Conclusions:** AMH may be a good substitute for PCOM in diagnosing PCOS.

**ABSTRACT 38**
Withdrawn

**ABSTRACT 39**
Poster position PoOb 44

**Antibiotic prophylaxis at caesarean section - the impact of guideline on surgical site infection**

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Background: The Norwegian gynecological association recommends antibiotic prophylaxis (ABP) for all emergency cesarean deliveries (CD) and on indications such as long duration of surgery, high body mass index, and severe bleeding in planned CD. Cochrane recommendation is ABP in all CDs at start of surgery. A survey in 2008/2009 revealed that 33 departments practiced ABP in emergency surgery, 4 departments to all CDs, whereas 4 departments had no guidelines, and one department practiced on indications, only.

Objectives: to assess impact of guideline of ABP on superficial and deep surgical site infections (SSIs) in CDs.

Methods: Since 2005 all Norwegian hospitals performing CDs are required to undertake surveillance of SSIs until 30 days post-discharge over the months September through November. The departments do active surveillance by contacting the puerperal women 25 days after discharge. The hospitals report uniformly according to standard definitions for SSIs (CDC definitions) to the Norwegian surveillance system of health care associated infections (NOIS) at the National institute of public health. Within the NOIS-database we merged guideline on ABP from the survey to hospital affiliation of individual data; and thus were able to analyze guidelines vs. “as practiced” on SSI for the years 2009/2010. All analyses were done in SPSS version 19.0 with chi-square test and logistic regression. Due to the many differences in maternal and obstetric risk factor in planned vs. emergency CS we did separate analysis for planned and emergency CD.

Results: Post-discharge surveillance was complete for 90% of the patients. Compliance with guideline was significantly higher in departments that practiced ABP to all vs. emergency CDs in both planned (98,9% vs. 11.8%) and emergency (97,5% vs. 87.3%) CDs. The prevalence of superficial and deep SSIs were lower in planned, but not in emergency CD, in women who had surgery in departments that practiced ABP to all vs. in emergency CDs, only (planned CD: 1,5/4,0% (superficial SSI) and 0,5/1,3% (deep SSI)).

Conclusions: Departments that practiced ABP to all complied significantly better with guidelines than other departments. The differences seen in SSIs in planned CDs may be explained by the difference observed in compliance with ABP guideline, whereas the significant compliance difference seen in emergency CDs were of no clinical importance as adherence to guidelines (97,5% vs. 87.3%) were high in both ABP groups. The study was not designed to study timing of ABP at start/before surgery versus after clamping.

ABSTRACT 40
Poster position PoOb 90
Qualitywork in the Deliverycare at Sollefteå Hospital 2005–2011
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Conclusion: Deliverycare at Sollefteå hospital has with a qualified work succeeded to lower the Caesarean sectionrate from 17,5% 2007 to 9,8% 2011 and this is below the WHO norm for Caesarean section, which is 10%.

Introduction: In the year of 2007 the deliverycare started their qualitywork. Acute delivery training and training on the acute rescuing of babies, ALSO and CEPS courses were planed. A project in Sweden called “Safe Deliveries” was organized. Every 46 women departements in Sweden participated in “Safe deliveries” and all the specialists for gynaecology, midwives, neonatal doctors were working in this project.

Aim: The aim of our deliverycare was:
- to carry on a modern and safe deliverycare.
- lower the Caesarean sectionrate for acute or elective.
- lower the sfinkter ani ruptures
- the personal should regularly practice acute obstetric situations (ALSO) and neonatal HLR (CEPS)
- to have a better documentation, better diagnoses.

Methods: Individual deliveryplans started with the intence collaboration with the specialist midwifery department. Schedule for only competent old obstetricians. Routines, criteria and indications for Caesarean section and induction were thoroughly updated.

We also started looking at our Robsonfigures, an international qualityregister in deliverycare. In Sweden, we think that a strong quality indication is Robson group 1 (healthy, normal women from the week of 37+0, who starts to deliver spontaneously).
We also started yearly CTG-examination for doctors and midwife.

The delivery department works with a modified Dublin model (active management of labour) to avoid very long deliveries.

Result: The project “Safe Deliveries” was finished 2010 and it secures the same quality in all 46 delivery clinics in Sweden. In the year of 2009 the small clinic Sollefteå had the lowest number of Robson 1 deliveries. The perinatal mortality was only 0.13% (Stockholm was lowest in the country). The highest in Sweden of perinatal mortality was 0.68%.

2010 we had the lowest total Caesarean section frequency in Sweden, 7.9%.

The north region we can compare us with the clinics of Skellefteå and Lycksele and they had a Caesarean section that was 15% and about 16%.

Costs: In Sweden 2010:

DRG 373 - Delivery without complications Sollefteå hospital 19.758:- (22.000:-).

DRG 371 - Caesarean sections without complications Sollefteå hospital 39.168:- (44.000:-).

During the years of 2007 until 2011 we lowered our figures from 17.6 to 9.8%. Our Robsongroup was going from 10.2% to 5.2%. Our vacuum delivery was going from 6% to 7% and our epidural frequency went from 20% to 20%. Our inductions were 20.4% to 15.8%. Caesarean sections, inductions from 13% to 14%.

Our Caesarean sections during the years is now lower than 10% under three years and we are going on with our quality work and we are studying and trying to analyze the cases with a cord pH <7. We are also again trying to lower our sfinkter ani ruptures.

Background: Maternal death is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes. Since the definition is complicated maternal mortality is more difficult to calculate than other cause of death statistics. The Swedish official maternal mortality statistics, reported to the WHO and used in international comparisons, is based on cases with an underlying cause of death related to pregnancy in the cause of death register. The thought behind this is to capture the direct maternal mortality, which to a larger extent is avoidable. When only underlying cause of death is used, indirect deaths when pregnancy aggravates a pre-existing condition are often excluded, cases that should be included according to the definition. Underreporting of maternal deaths is extensive, even in countries with vital statistics of high quality. The aim of this study is to use the existing information in national registers and cause of death certificates, to acquire statistics of maternal mortality which is more congruent with the international definition.

Methods: Among the 27 952 women of reproductive age who died during 1988–2007 we searched for diagnoses related to pregnancy in the 1) cause of death register, 2) medical birth register, and 3) national patient register. When such a diagnosis was found, we examined the cause of death certificates and maternal deaths were classified as direct or indirect.

Results: In 75 cases the underlying cause of death was related to pregnancy and thus constituting the official number of maternal deaths. Direct maternal deaths dominated in this group. After searching in the three national registers and examining the cause of death certificates 134 maternal deaths were identified. If this number is used to calculate the mean maternal mortality during the years 1988–2007 the figure increases from 3.6/100 000 live births to 6.5, which is an increase with 80%. Both direct and indirect maternal deaths were found among the additional cases.

Conclusion: By using information in existing registers and death certificates we identified 80 % more maternal deaths than what is officially reported to the WHO. The study shows that the present method of reporting maternal deaths not only identifies the direct deaths, and that both direct and indirect are missed. If we
want to identify maternal deaths according to the definition, we need instruments enabling that purpose. To improve the maternal mortality statistics we suggest routine linkage of registers, the introduction of a box on the death certificates for marking if the death occurred during or short after pregnancy, and further development of national surveillance systems. With improved statistics we can easier follow trends in the maternal mortality and perform international comparisons.

**ABSTRACT 42**

*Not too far to walk but too far for reciprocity: Maternal mortality in a migration context using the ‘three delays’ framework*

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**Introduction:** African immigrants living in westernised countries are more susceptible to adverse obstetric outcomes than western-born women. Based on earlier findings, we coin the phrase maternal migration effect to describe this phenomenon in relation to women’s utilisation of a fully-equipped hospital facility.

**Aim:** This study thus aims to contextualise a migration-based conceptual framework by identifying influences of pre-migration socio-cultural factors on post-migration care-seeking and utilisation of optimal obstetrics care.

**Method and Material:** Individual in-depth and focus group interviews were conducted in London, with 59 immigrant African or African-Caribbean women and 62 maternal care providers. Study design relies on a hermeneutical, naturalistic inquiry method as a proxy for anthropological data collection and analysis, and recruitment by snowball and purposive sampling. We modify the ‘three delays’ model, which was developed for exploring maternal mortality in rural Africa, for this high-income setting.

**Results:** Perceived mutual lack of trust, as a barrier to care-seeking, causes delays at facility-level during encounters between care providers and women - especially with regard to compliance of treatment interventions. The resulting lack of reciprocity at facility level suggests that migration-based phase 1 barriers have stronger influence on phase 3 delays than what was shown in the Africa-based model, where most perceived delays influence care-seeking at phase 1. Likewise, access barriers in phase 2 go beyond those described for infrastructure and instead involve mutual language discordance between providers and migrant women. These create facility-level delays for reciprocal care, especially when a suboptimal interpreter system exists. Limited availability of clinical guidelines meant to address women’s refusal of treatment is identified as an additional barrier in phase 3.

**Conclusion:** Findings theorised an explanatory lack of reciprocal trust between women and providers, discordant health communication, and incongruent conceptualisation of preventive obstetrics care as a matter of course to explain adverse maternal outcome in this setting. The model could be tested in future audit studies in multi-ethnic settings.

**ABSTRACT 43**

*Induction of labour at 41+3 and impact on clinical practise An evaluation of a changed practice towards prolonged pregnancy in a Danish hospital*

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**Background:** A change in the national guideline on post-date pregnancy led to a change in practise. Until Oct 2010 induction was offered at 42+0 weeks of gestation. After Oct 2010 induction was offered at 41+3 weeks of gestation.

**Objective:** To evaluate the effect of induction of labour at 41+3 weeks of gestation and how pregnant women received the offer.

**Design:** Register study

**Setting:** a local study based on data collected from deliveries in Sygehus Sønderjylland 15 months before and 15 months after the intervention.

**Population:** 262 low risk woman induced due to prolonged pregnancy.
Method: Data from all deliveries in the area were collected in a database (SPSS)

Results: The rate of induction on the indication prolonged pregnancy increased from 4.2% (induction at 42+0) to 11.2% (induction at 41+3).

The rate of cesarean section for women induced due to prolonged pregnancy decreased from 17.6% to 15.7%.

The need for epidural analgesia for women induced due to prolonged pregnancy decreased from 42% to 39.1%.

The rate of newborn with Apgars score less than 7 at 5 minutes with gestation 41+3 and more was 1 out of 2805 before the intervention and 1 out of 2422 after the intervention.

When induction was offered at 42+0 33% of the low risk post date women delivered without induction.

When induction was offered at 41+3 23.5% of the low risk post date women delivered without induction.

Conclusion: Induction of labour at 41+3 weeks of gestation due to post-date pregnancy did not result in an increase of cesarean section or epidural analgesia. There was no change in newborn with asphyxia. The changed practice was well accepted according to the decreased rate of pregnancies, delivering without induction.

ABSTRACT 44

Poster position PoGy 58

ErbB2 (HER2/neu) and transcription factor GATA-4 are new prognostic factors for granulosa cell tumor recurrence

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Background: Granulosa Cell Tumors (GCTs) are hormonally active and highly vascularized ovarian tumors, representing 5% of all ovarian cancers. GCTs are characterized by their slow growth and indolent prognosis with a tendency toward late recurrence. Advanced stage at primary diagnosis is the only prognostic factor explicitly associated to worse prognosis in GCTs. Since the majority of GCTs are diagnosed at stage I, molecular prognostic factors are needed. ErbB2 (HER2/neu) is a known oncogene that is associated to worse prognosis in ovarian and breast cancers, but its prognostic role has not been clarified in GCTs. We previously showed that aggressive behavior of GCTs is linked to high expression of transcription factor GATA-4.

Objective: To study the prognostic significance of ErbB2 and GATA-4 protein expressions in GCTs.

Patients and Methods: We utilized a tumor tissue microarray (TTMA) of 80 consecutive GCT patients diagnosed at Helsinki University Central Hospital 1956–2003. Full clinical data were retrospectively collected from hospital files, and survival data was retrieved from death certificates. The TTMA was immunohistochemically stained for ErbB2 and GATA-4 and the expression profiles were correlated to clinical data. Histopathological features of the tumors, e.g. nuclear atypia, mitotic index and tumor subtype, were evaluated from the TTMA.

Results: We found that high ErbB2 and GATA-4 expressions associate to tumor recurrence, and that ErbB2, GATA-4 and high nuclear atypia are prognostic to shorter progression free survival (PFS). In cox regression analysis, high expression of both ErbB-2 and GATA-4 was independently prognostic to shorter PFS (RR 6.3, 95%CI 1.85–24.59, p=0.003), also when studied only in stage I or stage Ia tumors (RR 11.5, 95%CI 1.76–79.41, p=0.01). The disease specific survival was shorter in tumors of advanced stage (II-III), with high GATA-4 expression and with high nuclear atypia.

Conclusions: The protein expressions of ErbB2 and GATA-4 are useful markers in identifying GCT patients with high risk of recurrence, most importantly among patients with stage I disease.
ABSTRACT 45
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Mitochondrial function of women in reproductive age with subclinical hypothyroidism and TPOab positivity
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Background: Studies have demonstrated a relationship between subclinical hypothyroidism (SH) and obstetric complications such as pre-eclampsia, stillbirth and perinatal mortality. Euthyroid women with positive thyroperoxidase antibodies (TPOab) have increased risk of miscarriage, placental abruption and preterm delivery. Thyroid hormones have major influence on mitochondrial activity. The basal oxygen consumption reflects the intracellular stimulation of mitochondria by thyroid hormone. The mitochondrial membrane potential (MMP) reflects the functional status of the mitochondria and is believed to be a measure of direct stimulation by thyroid hormone. The MMP can be determined by flow cytometry analysis of stained mononuclear blood cells (MNBCs). Our research group has previously shown that subclinical hypothyroidism affects mitochondrial activity. We have examined the frequency of SH and positivity against thyroperoxidase among 1755 female participants (20–50 years of age) in the General Suburban Population Study of Region Zealand, Denmark (GESUS). Ten % had subclinical hypothyroidism and 13 % were positive of TPOabs. These results are in consistence with other studies. The hypothesis of the study is that mitochondrial function is impaired in women with SH and TPOab positivity. Mitochondrial dysfunction may be the link between SH and TPOab positivity and miscarriages and obstetric complications.

Methods: A controlled study of the mitochondrial function of 160 female participants (20–50 years of age) in the GESUS. The 80 cases have either raised serum concentrations of thyroid stimulating hormone (TSH) > 3.4 mU/l and normal serum levels of free thyroxine (10–26 pmol/l) and triiodothyronine (1.2–1.8 nmol/l) or TPOab positivity (TPOab > 60 mU/l). Cases have experienced a minimum of one early miscarriage (defined as spontaneous abortion before 12 weeks of gestation) and have not reported any thyroid medication or thyroid disease in the GESUS questionnaire. The 80 controls have normal serum levels of TSH and thyroid hormones and have TPOab < 60 mU/l. Controls have experienced a minimum of one early miscarriage and have not reported any thyroid medication or thyroid disease in the GESUS questionnaire. Clinical information regarding abortion and obstetric complications will be obtained from interviews and medical records.

The mitochondrial function will be examined by different methods. Basal oxygen consumption will be measured by analysis of respiratory gas and volume measurements (OxyconPro). The MMP of stained MNBCs will be measured by flow cytometry.

Results and conclusion: In March 2012, the inclusion of participants will start. We expect to be able to present preliminary results at the Nordic Congress of Obstetrics and Gynecology in Bergen in June 2012.

ABSTRACT 46
Poster position PoGy 46

Modeling CC in the post HPV vaccination era in Norway
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Background: A national school-based vaccination program against HPV-types 16/18 was initiated in 2009/2010 to all 12-year old girls free of charge. The introduction of a costly HPV vaccination program raises new questions concerning systematic cervical cancer screening in the years to come.

Aim: To evaluate long-term incidence of cervical cancer in the post HPV vaccination era in Norway.
Methods: A dynamic HPV transmission model incorporating pre-cancerous and cancerous lesions was calibrated to Norwegian registry data 1990–2008. The model was used to project cervical cancer in a 50 year perspective. Strategies considered: (1) 3-yearly screening of women 30–69 years, (2) 3-yearly screening of women 25–59 years, (3) 5-yearly screening of women 25–69 years. Uncertainties studied included timing of revised screening policy, vaccination coverage, screening compliance among vaccinated women and the duration of vaccine protection.

Results: After introduction of HPV vaccination, strategies covering women 25–59 years are most effective in preventing cervical cancer (-55%), and 5-yearly screening least effective. High vaccination coverage, with long vaccine protection, is most influential in reducing cervical cancer compared to high screening compliance. Stopping screening at age 59 will be most effective after 40 years of vaccination.

Conclusion: The majority of health benefit is obtained by screening of women below 60 years. Altering the current start or screening interval is not advisable.

ABSTRACT 47
Poster position PoOb 56

Use of Bakri balloon tamponade in the treatment of postpartum hemorrhage: A series of 50 cases from a tertiary teaching hospital

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Background: Massive postpartum hemorrhage (PPH) is one of the most serious delivery complications and a major cause of maternal morbidity and mortality worldwide. The most common causes of PPH are uterine atony, lower genital tract trauma, abnormal placentation, retention of placenta, and coagulation abnormalities. The approach to the management of PPH differs depending on the etiology. The primary management includes treatment of uterine atony with uterotonics, uterine massage, removal of retained products, surgery of the birth canal trauma, and early replacement of blood loss. Hysterectomy is commonly performed when other conventional treatment attempts fail.

Bakri balloon tamponade (BBT) is a novel conservative management option for PPH. It is the only balloon exclusively designed for this purpose, but only few small studies have addressed this procedure in the management of PPH. Since little is known of the effectiveness of BBT, we wanted to evaluate retrospectively a large case series from one tertiary teaching hospital.

Methods: The study population consisted of all women who delivered at the Department of Obstetrics and Gynecology, Helsinki University Hospital (HYKS) between October 2008 and June 2011 and had PPH managed by BBT (Cook ® Medical Incorporated, Bloomington, Indiana, USA) when other conventional measures had failed. Hospital charts were reviewed retrospectively to identify patients who had BBT. We reported obstetrical indications for BBT, the amount of hemorrhage, the total time of balloon left in situ, the volume of the inflated balloon, and the use of additional procedures.

Results: Fifty women with massive PPH during vaginal birth (58%) or cesarean section (42%) were managed by BBT. The indications for BBT were uterine atony (16%), cervical rupture (16%), vaginal rupture and/or paravaginal hematoma (22%), placenta previa (18%) and placental retention (28%). The overall success rate was 86%. Seven (14%) of the fifty patients needed additional procedures. Of the seven failures, supravaginal uterine amputation or hysterectomy was required in four cases and embolization of the uterine arteries in three cases. Six patients developed complications but none of the complications were due to BBT.

Conclusions: BBT is a simple, readily available, effective and safe procedure for the management of PPH in selective cases. Laparotomy and hysterectomy can often be avoided. BBT does not exclude the use of other procedures if necessary. Even if BBT failed, it may provide temporary tamponade and time to prepare for other interventions or transportation from local hospital to tertiary centre. We suggest that BBT should be included in the PPH protocol.
Routinely Removal of the Fallopian Tubes at Concomitant Hysterectomy? A Danish cohort study, 1947–2010

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Background: To assess whether the Fallopian tubes should be removed routinely at hysterectomy on benign indications. This purpose was elucidated by analyzing the risk of salpingectomy after hysterectomy with retained Fallopian tubes. Hysterectomy is the most frequently performed gynaecological surgical intervention among women of reproductive age. In Denmark, approximately 5,000 hysterectomies on benign indication are performed each year, and the Fallopian tubes are retained as standard. The risk of salpingectomy after sterilisation was assessed for comparison. The Fallopian tubes are retained at sterilisation as well as hysterectomy. In most sterilisations laparoscopic coagulation at the 2–3 cm long isthmic portion is performed, thus leaving the risk of tubal pathology and succeeding salpingectomy.

Methods: A national cohort study. Danish women born in 1947–1963 were randomly chosen (N=10,000 per each year) from the Danish Civil Registration System. A total of 170,000 women were included in the study. End of follow-up period was 31 December, 2010.

The data were analyzed by a Cox proportional hazards approach with time-dependent covariates.

Results: Compared to women without hysterectomy or sterilisation, hazard ratio for salpingectomy after hysterectomy was 2.13 (95% confidence interval 1.88 to 2.42), and after sterilisation 2.42 (2.21 to 2.64). Comparative analysis based on a prospective matched cohort design showed similar results.

Conclusions: Women undergoing hysterectomy or sterilisation with retained Fallopian tubes have at least a doubled risk of succeeding salpingectomy as compared with women without these surgeries. These results should be taken into account when discussing routinely removal of the Fallopian tubes at a hysterectomy.

The Danish Urogynecological Database - establishment, completeness, and validity

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Background: The Danish Urogynecological Database (DugaBase) is a nationwide clinical database established in 2006 to monitor, ensure, and improve the quality of urogynecological surgery. This study aimed to describe its establishment and completeness, and to validate selected variables.

Methods: The database completeness was calculated as a comparison between urogynecological procedures reported to the Danish National Patient Register and to the DugaBase. Validity was assessed for selected variables from a random sample of 200 women reported to the DugaBase between 1 January 2009 and 31 October 2010, using medical records as reference.

Results: A total of 16 509 urogynecological procedures were registered in the DugaBase by 31 December 2010. The database completeness has increased by calendar time, for public hospitals from 38.2% one year after the start to 93.2% in 2010. All medical records were retrievable for the validation study. The overall percent agreement was at least 90% for the following variables: surgical procedure code, hospital department, date of surgery, the use of antibiotic prophylaxis, prior gynecological surgery, height, weight, parity, and smoking.
Conclusions: The database completeness of the DugaBase has improved over time, now with a virtually complete registration from all public hospitals in Denmark. The overall percent agreement between selected variables and medical records is high. We conclude, that the DugaBase offers a unique possibility for continuing quality assessment of urogynecological surgery in Denmark and for future research due to high degree of database completeness and data of high reliability and validity.

**ABSTRACT 50**

Poster position PoGy 30

Patient-related outcome measures on female urinary incontinence and pelvic organ prolapse in Denmark, 2006–2011

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**Background:** To evaluate the effect of surgery for urinary incontinence or pelvic organ prolapse on patient-related outcome measures.

**Methods:** A population-based cohort study, using data from the Danish Urogynecological Database. We included all Danish women above 18 years reported to the Danish Urogynecological Database because of surgery for urinary incontinence or pelvic organ prolapse from April 2006 to Dec 2011. Quality of life was the primary outcome assessed by the frequency of symptoms and the bother of the disorder on visual analogue scale (0–10) based on validated questionnaires and measured both pre- and postoperatively.

**Results:** During the study period, 20,629 procedures for urinary incontinence or pelvic organ prolapse were performed. Of these one third had completed the questionnaires on frequency of symptoms and visual analogue scale both pre- and postoperatively. For urinary incontinence surgery, 83% had improved symptoms, 13% were unchanged, and 4% had worse symptoms postoperatively. For pelvic organ prolapse surgery, 80%, 17% and 3% were improved, unchanged, and worse, respectively. Quality of life was improved after surgery: the bother of the symptoms and interference on everyday life evaluated by visual analogue scale were reduced significantly for both urinary incontinence and pelvic organ prolapse (p<0.001).

Conclusions: Based on patient-related outcome measures from the Danish Urogynecological Database, surgery for urinary incontinence and pelvic organ prolapse is an effective treatment to alleviate symptoms associated with urinary incontinence or pelvic organ prolapse, and it can improve quality of life in symptomatic women. Validated questionnaires are useful tools in assessing symptomatic outcome measures after surgery when used pre- and postoperatively.

**ABSTRACT 51**

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Alcohol and drug findings in women subjected to sexual assault in Trondheim, Norway - associations with background and assault characteristics and clinical variables

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**Background:** The Sexual Assault Center in Trondheim, Norway offers medical treatment such as emergency contraception and post-exposure prophylaxis for sexually transmitted infections. In addition the trained staff documents anogenital and extragenital injuries and collects forensic evidence, including urine and/or blood for drug and alcohol analysis. A considerable number of women contact the center suspecting they have been drugged and assaulted.
**Objectives:** We wanted to describe the toxicological findings among women subjected to sexual assault, and to compare background characteristics, assault characteristics and occurrence of injuries and spermatozoa between women testing positive and negative for alcohol, respectively.

**Methods:** We conducted a retrospective, descriptive study of female patients ≥ 12 years of age whose urine and/or blood were analyzed for xenobiotics at the Sexual Assault Center at St. Olavs University Hospital, Trondheim, Norway, between July 1, 2003 and December 31, 2010.

**Results:** Among 264 patients, 57 (22%) suspected being drugged and 172 (65%) reported a high voluntary intake of alcohol (≥ 5 units). Benzodiazepines and/or benzodiazepine-like drugs were found in 31 patients (including two positive for flunitrazepam), of whom 22 (one for flunitrazepam) reported a voluntary intake. Cannabinoids were found in 13, opioids in 9 and central stimulants in 14 patients. No women tested positive for gamma-hydroxybutyrate (GHB). Among 120 patients tested for the presence of alcohol in urine and/or blood within 12 hours after the assault, 102 tested positive. Among these median blood alcohol concentration (BAC) was 1.20 g/L (permille). Patients who tested positive for alcohol less often reported any vulnerability factor like disability or mental health problem (p=0.012), and more often reported a high voluntary intake of alcohol (≥ 5 units) (p=0.0001), Norwegian/Western origin (p=0.045), a public place of assault (p=0.015), a stranger assailant (p=0.011), more than one assailant (p=0.048), and a time of assault between midnight and 7 a.m. (p=0.0001). There were no differences between the alcohol positive and negative women with regard to penetrative assault, physical violence, extent of anogenital/extragenital injuries or sperm present in cervical smear.

**Conclusions:** We found in only one woman a typical date rape drug (flunitrazepam) not accounted for by voluntary intake, and were not able to demonstrate any extensive use of such drugs. Women testing positive for alcohol seem to be subjected to certain types of sexual assault (more than one and stranger assailants, public place of assault, at night) that are very frightening. It is important that women are informed about this alcohol-related vulnerability and risk.

**ABSTRACT 52**

**Poster position PoGy 27**

**No evidence that assisted reproduction itself increases the risk of thrombosis: A Danish National cohort study**

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**Background:** Case reports have reported venous and arterial thrombosis in women undergoing assisted reproduction. No large systematic studies on the risk of thrombosis have been published.

**Aim:** To investigate the risk of venous and arterial thrombosis in women undergoing assisted reproduction.

**Methods:** A national register-based cohort study. Data were obtained from The National Patient Registry and the In Vitro Fertilization Registry. Thrombosis occurring within the first 6 and 12 months after assisted reproduction was considered potentially related to the treatment. Thrombosis during pregnancy was excluded. The incidence rates of venous and arterial thrombosis were compared to previously published estimates of the risk of thrombosis among young Danish women.

**Results:** We analyzed 30,884 Danish women undergoing 75,141 treatments from 1994 to 2005. The mean age of the women at first treatment was 32.3 years. The incidence rate ratio, with 95% confidence interval, of venous thrombosis within 6 months was 0.95 (0.38–1.95). The incidence rate ratio of arterial thrombosis within 6 months was 0.36 (0.04–1.30).

**Conclusion:** Our study showed no evidence that assisted reproduction itself increases the risk of thrombosis.
**ABSTRACT 53**

**Poster position PoOb 31**

**Induction of labor with single- versus double-balloon catheter - a randomized controlled trial**

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**Background:** Balloon catheter for cervical ripening in labor has been proven to be safe and effective, and with the advantage of decreased risk of uterine hyperstimulation. There is, however, limited evidence whether these mechanical devices differ in their efficacy. We therefore aimed to compare the efficacy of single- and double-balloon catheters for the induction of labor among women with an unripe cervix.

**Methods:** Randomized controlled trial (ClinicalTrials. Gov: NCT01091285). Study period March 2010 - January 2011. Inclusion criteria: Singleton pregnancy, gestational age 37 weeks, cervical dilatation <2 cm. Randomisation: Single- (Foley catheter) or double-balloon catheter (Cervical Ripening Balloon Cook Medical Inc. ). Primary outcome: Proportion of women with a ripe cervix (cervical dilatation 3cm) or start of active labor at the time of catheter removal. A 20% difference in the primary outcome between the groups was considered clinically significant and used for the power analysis.

**Results:** A total of 180 participants were recruited from 324 eligible women. Primary outcome: Induction of labor resulted in a ripe cervix after catheter removal or active start of labor in 60/90 (67%) and 51/88 (58%) in the single- and double-balloon groups respectively (p=0.23). Secondary outcomes: The time interval from the start of induction until delivery was 30.6 h vs. 33.1 h (p= 0.38). The proportion of caesarean (20% vs. 22% p= 0.85 ) and vaginal operative deliveries (22% vs. 27% p= 0.63 ) and the use of oxytocin augmentation during delivery (58% vs. 64% p= 0.54 ) did not differ in the single- and double-balloon groups. Catheter placement failed in 20 cases (N=7 single-balloon, N=13 double-balloon). Exclusion of these cases had no affect on the primary outcome.

**Conclusion:** Single- and double-balloon catheters are equally efficacious for the induction of labor.

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**Pain recurrence after shaving of rectovaginal endometriosis**

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**Background:** Surgical treatment of rectovaginal endometriosis varies from shaving of the nodule off the rectal wall without perforation, over discoid excision to routine rectal resection. Of these methods, shaving involves the lowest rate of serious complications but leaves endometriosis tissue on the bowel with risk of recurrence. This could motivate a change into more radical surgery. In the present study we therefore assessed recurrence of pain after shaving of rectovaginal endometriosis performed 2001–2009.

**Methods:** Retrospective follow-up study. Questionnaires were sent to 212 women of whom 174 women (82%) responded. Outcomes were correlated to the involvement of the anterior rectal wall and postoperative hormonal treatment.

**Results:** Recurrence (pain unchanged or worse) of menstrual pain was found in 26 %, intermenstrual pain in 29 %, dyspareunia in 42 % and dyschezia in 41 %. Postoperative OCs and gestagen IUD showed a trend towards a protective effect against menstrual pain (p=0.06). There was found no significant association between recurrence of pain and anterior rectal wall involvement.

**Conclusion:** Shaving of rectovaginal endometriosis shows a high risk of postoperative pain recurrence, especially for dyspareunia and dyschezia. Routine postoperative hormonal treatment seems of value. Research into new surgical methods is motivated.
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Health-related quality of life and perception of anxiety in women with a human papillomavirus infection- an observational study

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Objective: To evaluate the Health-Related quality of Life (HRQoL) in patients with human papillomavirus infection (HPV)

Design: Observational study with prospective and retrospective cohorts

Setting: Department of Gynaecology and Obstetrics, Helsinki University Hospital, Finland

Population: Prospective arm: 240 women referred to colposcopy because of a suspected papillomavirus-related condition. Retrospective arm: 359 patients having been treated for cervical dysplasia earlier.

Methods: In the prospective arm the women filled in the 15D HRQoL and the State Anxiety Inventory (STAI) questionnaires and were followed-up for 12 months. In the retrospective arm HRQoL was measured 8 years after the treatment.

Main outcome measures: HRQoL measured by the 15D-instrument and compared to that of the general population.

Results: In the prospective part of the study, the mean 15D score of the patients did not differ from that of the age-standardized general population. On the dimensions of sleeping, distress and sexual activity the patients scored lower than the age-standardized general population (p<0.001). Based on STAI, the patients with higher levels of anxiety at the baseline had lower HRQoL during the whole 12-month observation period (p<0.001). The overall HRQoL score of the patients treated for cervical dysplasia 8 years earlier did not differ from those of the general population.

Conclusions: HPV infection was associated with anxiety and slightly impaired psychosocial components of HRQoL but did not reduce the overall HRQoL. High anxiety levels at baseline were associated with impaired HRQoL. Previous treatment for cervical dysplasia was not associated with impaired HRQoL.

Keywords: HRQoL, HPV, condyloma, ca in situ, cervical cancer, cervical dysplasia

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Classification of Stillbirths by Cause of Death and Risk Factor Analysis - a Case-control Study

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Background: Etiological classification of stillbirths is needed for preventive measures and counseling. National and international comparison is also facilitated by uniform classification systems. However, assigning a single cause of death can be challenging.

OBJECTIVES: To classify stillbirths applying the Causes of Death and Associated Conditions (CODAC) classification system and to investigate risk factors by cause.

Methods: Stillbirths were classified according to CODAC based on relevant information from medical records and validated placenta histology. In a case-control design we assessed sociodemographic, clinical and thrombophilic risk factors by cause of death in 377 women with stillbirths after 22 gestational weeks, and 1 215 controls with live births at two University hospitals in Oslo, Norway. All analyses were done in SPSS.
Results: A total of 190 (50.4%) women had placental and 73 (19.4%) unknown causes of stillbirth. In addition 68 (18%) cases with a non-placental or an unknown cause had placental associated conditions. Smoking and small for gestational age (SGA) were significant risk factors in all causal groups, while twin pregnancy, hypertension and diabetes were risk factors only for placental and unknown causes of stillbirth. Prothrombogene mutation (F2 rs179963 polymorphism) and combined thrombophilia were significant risk factors for stillbirth of placental causes and antiphospholipid antibodies for stillbirth of other causes.

Conclusions: Over half of all stillbirths (68%) were caused by or associated with placental pathology. Risk factors differed somewhat according to cause, apart from smoking and SGA that were significant risk factors across all causal groups.

Methods: Data were extracted from the Medical Birth Registry of Norway. The study population comprised 427 160 low-risk women (67% of the Norwegian laboring population) without registered medical conditions, with a normal pregnancy of singletons of 37 weeks or more, and a planned vaginal delivery from 1st January 1999 to 31st December 2009. The association between labor factors and maternal age was analyzed by frequency analysis, cross tabulations and logistic regression. Nullipara and multipara were analyzed separately. Significance level of p = 0.05. We here present the odds ratio of labor complications in women aged 40 years and above compared to 20–24 years (reference).

Outcome: Labor induction, protracted labor, operative delivery in labor, perineal rupture, shoulder dystocia, severe hemorrhage (>1500 ml) and placenta retention.

Preliminary Results: Almost 99% of nullipara and 95% of multipara low-risk women had a planned vaginal delivery. Eleven percent of nullipara with planned vaginal delivery was induced, increasing from 9% of women aged 20–24 years to 24% in 40 years or above (ORcrude 3.2, 95% CI: 2.8–3.6). Protracted labor increased from 10% to 23% across the age groups (ORcrude 2.7, 95% CI: 2.4–3.1). Fourteen percent experienced vacuum extraction (percentage difference of 11% across the age groups, ORcrude 2.3, 95% CI: 2.0–2.6), 2.5% forceps (percentage difference 2, ORcrude 2.0, 95% CI: 1.5–2.7), and 9.4% emergency cesarean section (percentage difference 18, ORcrude 4.5, 95% CI: 3.9–5.1). One percent had post partum hemorrhage more than 1500 ml, the prevalence increasing from 0.9% to 2.0% (ORcrude 2.1, 95% CI 1.4–3.2). Nullipara experienced placenta retention with dilatation and curettage in 0.6% and manually removal of placenta in 0.2%, with a small but significant increase with maternal age. The prevalence of shoulder dystocia (0.9%) and perineal rupture grade 3 and 4 (5.5%) did not increase significantly with age. In multipara, the prevalence of the labor complications was lower and the difference in prevalence across age groups smaller.

Conclusion: In a low-risk population of women with planned vaginal delivery labor complications increased with maternal age. The greatest age effect was found for emergency cesarean section, induction and protracted labor, particularly in primipara.
A Longitudinal Survey of Childbirth-related Fear and Associated Factors

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Objective: The aim of this study was to investigate the prevalence of childbirth-related fear from pregnancy to one year after childbirth, and to identify factors associated with being ‘cured’ of childbirth-related fear.

Design: A longitudinal regional survey.

Setting: Three hospitals in a northern part of Sweden.

Participants: 697 women who completed four questionnaires.

Methods: Data were collected by questionnaires, in mid and late pregnancy and at two months and one year after birth. Childbirth related fear was measured three times.

Results: There was a statistically significant increase in childbirth fear, from 12.4% in mid-pregnancy to 15.1% one year after childbirth (p<0.001). Women who were ‘cured’ of childbirth fear reported a better birth experience and would prefer a vaginal birth in a subsequent pregnancy. These women were also more likely to experience a feeling of control during birth and were more satisfied with information about the progress of labor, but there was no difference in prenatal counseling or having an elective Cesarean, between the groups.

Conclusion: Women with prenatal fear of childbirth may be ‘cured’ of or recovered from this fear by having a better birth experience. If women feel in control of their bodies and are well-informed about the progress of labor, the chances of being ‘cured’ will increase. Prenatal counseling or having an elective caesarean birth does not seem to be a solution for relieving childbirth fear.

Pregnancy outcome following chorion villus sampling and amniocentesis in Iceland 1998–2007

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Background: The outcome of pregnancies following an invasive diagnostic procedure, either amniocentesis or chorion villus sampling (CVS), is reported.

Design: A retrospective study on the incidence of fetal loss following amniocentesis and CVS at the Fetal Diagnosis Unit at Landspitali University Hospital in Iceland during a ten year period was performed. From 1.1.1998 to 31.12.2007, 2357 invasive procedures were performed. The outcome of these pregnancies was obtained from the Icelandic Birth Registry. In cases where no birth was registered a search through the patient registry at Landspitali University Hospital and other hospitals in the country was performed. If no data were found a search was performed through the Statistics Iceland bureau to trace women who might have moved out of the country. Outcome was missing for 34 patients, all from the US Naval Base and they were excluded from the study. A complete follow up was available for all other pregnancies.

Results: The total number of procedures was 2323. The fetal loss rate before 22 weeks following an invasive procedure was 0.9% (21/2246) for singleton and 1.3% (1/78) for twin pregnancies. No further assessment of fetal loss in twin pregnancies was performed due to the small sample size. In singleton pregnancies the fetal loss rate after an amniocentesis was 0.8% (15/1775) and after a CVS 1.3% (7/548). The difference was not statistically significant. In 2003 screening for fetal aneuploidy with nuchal translucency and biochemical markers was introduced and offered to all. Subsequently the outcome data were analysed in two periods, before (period I; 1998–2002) and after (period II; 2003–2007) screening was introduced. A large decrease was seen in the use of amniocentesis (1499 vs. 276) and an increase in the number of CVS (182 vs 367). The rate of fetal loss was also assessed separately during these two time periods. The rate of fetal loss after an amniocentesis was 0.9% and 0.7% respectively and the fetal loss rate after CVS was 2.2% and 0.8% respectively. These differences did
not reach statistical significance. During period I invasive procedures were performed by four operators but by only two operators during period II. Indications for the invasive procedures during the two time periods changed from being mainly based on advanced maternal age during period I to being largely based on a positive screening test during period II.

Conclusions: The study shows complete follow-up after invasive diagnostic procedures at the Fetal Diagnosis Unit at Landspitali University Hospital during a 10 year period. The fetal loss rates are comparable to rates reported from other fetal diagnostic centers. There was a non-significant difference in fetal loss rate when amniocenteses were compared to CVS and also between time periods. The trend towards a lower rate of fetal loss during period II may be related to fewer operators and/or a learning curve during introduction of the CVS procedure.

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Severe postpartum hemorrhage: does early or delayed transfusion influence the risk of recurrence?

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Objective: Postpartum hemorrhage is associated with increased risk of recurrence. Early transfusion usually reflects rapid excessive blood loss, whereas delayed transfusion may reflect limited and/or prolonged bleeding. Etiological factors are only partly identical. We investigated if early transfusion of red blood cells (within the first 24 hours postpartum) was associated with increased risk of recurrent PPH compared to delayed transfusion (24 hours - 6 weeks postpartum).

Methods: We used the Danish Medical Birth Registry and the Danish Transfusion Database, and included all women with a first and second delivery in the period January 1st 2001 – September the 30rd 2009 – a total of 96,545 women. The material was divided into nine groups according to mode of delivery in the first and second pregnancy (vaginal, cesarean before, and cesarean during labor). The risk of blood transfusion at second delivery was evaluated using univariate and multiple logistic regression adjusting for maternal and fetal characteristics of second pregnancy and second delivery.

Results: A total of 2076 primipara (2.2%) had blood transfusion; 1,108 (53.3%) had early and 968 (46.6%) had delayed transfusion. Recurrent blood transfusion occurred in 158 women (0.2%). Previous blood transfusion was a significant risk factor for recurrent blood transfusion in eight of nine combinations of first and second mode of delivery (p<0.05). Early transfusion was not associated with a higher risk of recurrence than delayed transfusion (Figure 1).

Conclusion: Previous blood transfusion is a risk factor for recurrent transfusion at a second delivery regardless of mode of delivery. Early and delayed transfusions are associated with similar recurrence rates.

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Twin-to-twin delivery time interval: does chorionicity influence the risk of acidosis in the second twin?

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Objective: Increasing twin-to-twin delivery time interval is associated with increased risk of acidosis in the second twin. We investigated the impact of delivery interval on umbilical arterial pH in monochorionic diamniotic compared to dichorionic twin pairs.

Methods: We used the Obstetric Database (delivery department database at Hvidovre, Frederiksberg and Rigshospitalet), and included all vaginally delivered twins (GA>35+6) in the period January 1, 2001 -
December the 31, 2009. Monochorionic monoamniotic twins were excluded. The cohort consisted of 554 twin-pairs of which 55 were monochorionic, 478 were dichorionic and 21 were of unknown chorionicity. Four dichorionic second twins were excluded due to fetal demise. The data were evaluated using linear regression models, and all statistical analyses were performed in SPSS version 20.

Results: Acidemia (pH ≤7.20) was found in 13 (28.3%) monochorionic and 149 (34.8%) dichorionic second twins. The mean delivery interval was 12.7 minutes (SD 8.6) for monochorionic and 18.6 minutes (SD 14.9) for dichorionic second twins. The umbilical arterial pH of the second twin decreased with increasing twin-to-twin delivery interval. The decrease was 0.004 U/minute for monochorionic compared to 0.001 U/minute for dichorionic second twins (p=0.008 and p=0.058 respectively). A pH level of 7.20 was in average reached after 24 minutes for monochorionic second twins and after 50 minutes for dichorionic second twins. The risk of severe acidosis (pH ≤7.00) was significantly increased in monochorionic compared to dichorionic second twins (p<0.000, Chi-square test).

Conclusion: Increasing twin-to-twin delivery time interval is associated with increased risk of acidosis in the second twin. Although not statistically significant (p=0.06), the decrease seems to be 4 times greater in monochorionic diamniotic compared to dichorionic second twins.

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The incidence of genital prolapse among women referred to the outpatient clinic within the first year after vaginal delivery

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Background and objective: There is a strong epidemiological evidence linking vaginal childbirth and the development of postpartum genital prolapse. The present study examines the incidence of genital prolapse among women who were referred to the outpatient clinic with prolapse specific symptoms within the first year after vaginal delivery.
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Cesarean section or vaginal delivery for twin births at term
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Objective: To assess morbidity and mortality in twin pregnancy deliveries, according to chorionicity and mode of delivery.


Population: 1 175 twin pregnancies with two live fetuses at 36+0 weeks of gestation.

Methods: Pregnancy outcomes assessed according to chorionicity and mode of delivery. Main Outcome Measures: Poor outcome defined as five-min-Apgar score<7, umbilical artery pH<7.10, admission to neonatal unit >3 days or death.

Results: Dichorionic (DC) twins, delivered after 36 gestational weeks, with intended vaginal delivery (n=689) compared to DC twins with planned cesarean section (n=371) had an increased risk of poor outcome (OR 1.47, p= 0.037) after adjustment for BMI, parity and weight discordance. There was no increased risk for poor outcome in MC twins with intended vaginal delivery (n=63) compared to planned cesarean section (OR 0.87; 95% confidence interval (CI) 0.26–2.96). Nulliparity increased the risk of poor outcome in DC (OR 1.5; p=0.03) and in MC twins (OR 4.01; p=0.02), as well as birthweight discordance > 300 gram (DC (OR 1.50; p=0.02) and MC (OR 6.02; p=0.002)). For DC twins we found a significantly higher risk of poor outcome of the second born twin, compared to the first (OR 1.64; p=0.001).

Conclusion: DC twins born after 36 weeks of gestation had a higher risk of poor outcome by intended vaginal delivery than by planned cesarean section. For MC twins, statistical differences in outcome by mode of delivery, could not be reached.

Keywords: twin delivery, chorionicity, perinatal outcome, cesarean section, multiple pregnancies, labour and delivery.

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Pregnancy and birth among women with intellectual disability in Sweden - experiences and outcomes
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Background: To describe experiences of pregnancy and birth in women with intellectual disability (ID) in Sweden, and to investigate pregnancy and birth outcomes of women with ID compared to women without ID or any other psychiatric diagnosis.

Methods: A Swedish population-based cohort of women with ID (n=326) and a cohort of women without ID or any other psychiatric diagnoses (n=340624) who gave birth between 1999–2007. Register data were obtained from the National Patient Register linked to the Swedish Medical Birth Register. Furthermore, 10 women with ID who gave birth in 2004–2010 were interviewed.

Results: More than one-quarter (27.9%) of the women with ID smoked at registration at antenatal health services, compared to 8% of women without ID. They used less nitrous oxide as pain relief in delivery, had more preterm births, and delivered more often with cesarean section. The women struggled to attain motherhood and supportive care facilitated this. The women were overall satisfied with the care during
pregnancy and birth and felt confident with the midwives. Some women were however dissatisfied and hurt when they felt disrespected.

Conclusions: Women with ID should be considered a risk group in pregnancy and childbirth since they have more health risk factors in pregnancy and more CS and preterm births than women without ID. Caregivers may find it difficult to respond to the needs of women with ID when they struggle to become mothers. Respectful encounters and better tailored pre- and intrapartum care and support appears warranted.

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A prospective observational study of dysfunctional labor at Muhimbili national hospital, Dar Es Salaam, Tanzania

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Background: Every year 210 million women become pregnant and about 350000 of them die out of delivery related complications. Ten percent of these deaths are caused by dystocic labor. Previous studies have demonstrated that the concentration of lactate in amniotic fluid (AF) increases as a result of insufficient oxygenation of the myometrial tissue due to irregular contractions. Previous studies in Sweden demonstrated increase in level of lactate in AF in dysocic labors. The aim of this study was to determine the concentration of lactate in AF in dystocic labors among women delivering at Muhimbili National Hospital.

Material and Methods: This prospective cross sectional study was performed at Muhimbili National Hospital, which is the largest referral and university teaching hospital in Tanzania. All women with gestational age of ≥ 34 weeks and cephalic presentations admitted in the labor ward for delivery during study time were asked to participate. The midwife collected the amniotic fluid from the vaginal pool during the first vaginal examination if the membranes were ruptured. Another amount of amniotic fluid was collected at delivery. Lactate in AF was analyzed in a blinded way in a portable lactate measuring device, and the results were not accessible until the baby was delivered and the outcome fed into the device. The partograms used during labor were assessed to determine the presence of labor dystocia.

Results: This is a subanalysis of the first 225 out of 900 women included in the study. The mean time of delivery was 10.3 hours (0.1–51.6). 30 (13.3%) women were delivered by caesarean section and out of these 18 (60%) had labor dystocia. All of the caesareans were performed before second stage of labor. Augmentation of labour with oxytocin was made in 70 (31%) deliveries, out of these 17 (24%) were dystocic.

Among the 225 women, the mean value of lactate in AF at first and last sampling occasions were 8.1 mmol/l (5.1–20.0) and 7.9 mmol/l (5.6–20.0) respectively. An extended time of delivery of >12 hours was found in 71(32%). In this group a significant higher mean value of lactate in AF (7.3 vs. 8.1 mmol/l p<0.05) was found at last sampling occasion before delivery.

Conclusion: In this group of healthy Tanzanian women delivered at Muhimbili National Hospital, the group with an extended delivery time had a significant higher value of lactate in AF compared to those with a shorter time of labor.

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Is single port laparoscopy for benign adnexal disease less painful than conventional laparoscopy? : A single centre Randomised Controlled Trial

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Objective: To determine whether laparo-endoscopic single-site surgery results in less postoperative pain and a better cosmetic surgical scar when compared to conventional laparoscopy.
Design: A prospective, randomised controlled trial.

Setting: A County Hospital in Norway.

Population and sample: Women with benign adnexal disease or a hereditary cancer risk scheduled for laparoscopic adnexal surgery.

Methods: 40 women were randomised to either laparo-endoscopic single-site surgery or conventional laparoscopy. The primary outcome measure was post-operative pain 24 hours after surgery.

Results: There was no difference in pain at 24 hours post-operatively, with a mean score of 3.0 (SD 2.1) in the laparo-endoscopic single-site surgery group and 2.5 (SD 1.5) in the conventional laparoscopy group (p=0.35). Significantly more shoulder tip pain was reported by women undergoing laparo-endoscopic single-site surgery compared with those having conventional surgery at 6 (p=0.01) and 24 hours (p=0.03) postoperatively. All women in the laparo-endoscopic single-site surgery group and 19 out of 20 women in the conventional laparoscopy group reported to be very satisfied or extremely satisfied with the cosmetic result two months after the operation, with no significant difference in the Manchester scar scale score between the two groups (p=0.46).

Conclusions: Although similar levels of postoperative pain are experienced by women having laparo-endoscopic single site surgery and conventional laparoscopic surgery, women having laparo-endoscopic single site surgery report significantly more shoulder tip pain compared to those having conventional laparoscopic surgery. This may relate to a significantly longer operation time in the laparo-endoscopic single-site surgery group.

Keywords: laparo-endoscopic single-site surgery, single port laparoscopy, postoperative pain, cosmetic result, adnexal disease.

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Intervention for postpartum infections following caesarean section

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The purpose of this study is to examine the effect on wound healing using Negative Pressure Wound Therapy (NPWT) compared with conventional wound treatment in women, who experience spontaneous dehiscence or reoperation for postoperative infection after caesarean section (CS). In addition, the study seeks to elucidate the health economic cost and consequences of this type of infection and treatment.

Background: Obesity is an increasing problem in the health care system. Today more than 12% of all pregnant women in Denmark are obese (BMI >30). There is a significant association between obesity in pregnant women and the risk of CS. Obesity is associated with an increased risk of postoperative complications such as wound infection, spontaneously dehiscence or reoperation due to infection and prolonged wound healing. Postoperative complications lead to higher costs in the health care sector, including time of health professionals, prolonged hospitalization, medications, blood samples and -cultures, reoperations and visits to the general practitioner. Complications may also lead to productivity losses and reduced quality of life.

At Odense University Hospital (OUH), Denmark, the conventional treatment of post-CS infection requires hospital re-admission and re-operation for opening and debridement of the infected wounds under regional- or general anesthesia. The wound is normally re-sutured on the fourth day. NPWT is an alternative method of conservative wound management, which uses negative pressure to promote wound healing in both chronic and acute wounds. The rationale for using NPWT is that it mechanically stimulates the formation of new tissue and removes wound fluid and infectious material.
Methods: A randomized controlled trial with concurrent economic evaluation. In collaboration with the department of plastic surgery at OUH, this study will be performed at two large obstetrical units at OUH and Hvidovre Hospital with more than 10000 deliveries and 2500 CS’s annually. Data will be collected prospectively from 1) self-administered questionnaires 2) registration forms registering used wound dressings. 3) medical records. We expected to include approximately 50 women, of whom two-thirds will be randomized to NPWT.

Preliminary Results: Four women were included in a pilot project at the obstetrical ward at OUH. Three women were re-sutured as scheduled on the fourth day after the reoperation (two with NPWT and one having the conventional treatment). One woman (NPWT) was re-operated several times and her wound healed subsequently from the inside, which lasted approximately three months. The poor wound healing probably resulting from extreme obesity (BMI >47). An economic calculation has shown that it requires four changes of wound dressing with conventional wound treatment for one change with NPWT to be cost effective. If the change of wound dressing is performed evening or night, the cost increases in the control group due to higher hourly wages.

Objectives: Hereditary nonpolyposic colorectal cancer (HNPCC) is characterized by an early onset of colorectal cancer and occurrence of extracolonic cancers, of which endometrial cancer (EC) is the most common one. Carbonic anhydrase (CA) II, CAIX and CAXII are expressed in various neoplasias and have been linked to tumorigenesis. In this study we analyzed the expression of CAII, CAIX and CA XII in different endometrial hyperplasias and in EC of HNPCC mutation carriers, and compared the expression pattern between HNPCC-assosiated and sporadic EC.

Material and Methods: Our material included 8 simplex hyperplasia, 9 complex hyperplasia, 19 complex hyperplasia with atypia and 10 endometrial carcinoma of HNPCC patients. There were also 30 sporadic endometrial carcinoma samples. All the specimens were immunohistochemically stained to study the levels of CAII, CAIX and CAXII.

Results: All CAs were up-regulated in EC samples, as compared to simplex hyperplasias. CAIX expression was up-regulated also in complex and atypical hyperplasias and even higher in HNPCC-associated ECs than in sporadic ECs. CAII and CAXII upregulation was evident only in atypical hyperplasias besides EC and CAII upregulation was significantly marked in the HNPCC-associated ECs than in sporadic ECs.

Conclusion: The results indicated high expression of CAIX in HNPCC-associated EC. CAIX could serve as a histopathological biomarker for HNPCC patients EC and be a potential therapeutic target. CAII could be an indicator of the malignant transformation of endometrium in HNPCC patients, as its upregulation seemed to differentiate simplex and complex hyperplasias from atypical carcinomas.
Nordic Obstetric Surveillance Study (NOSS) - Pilot study on severe obstetric complications from Finland and Denmark

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Objective: We examined / compared prevalence and risk factors for severe obstetric complications in Finland and in Denmark.

Design: Prospective data collection. Setting. In this pilot study cases with severe obstetric complication were collected prospectively from clinicians and from the Medical Birth Registers and Hospital Discharge Registers by using ICD-10 codes on diagnoses and NCSP codes on surgical procedures.

Sample and methods: Placenta accreta/ percreta, uterine ruptures and postpartum hysterectomies were collected from Finland and Denmark during 01.04.2009 to 31.08.2011.

Main outcome measures: Rates of placental accreta/percreta, uterine rupture, and postpartum hysterectomy.

Results: The total number of cases were 125 in Finland and 230 in Denmark. Additionally 92/80 cases were identified in the Registers. Primary causes for complications were 42/121 placenta accreta/percreta, (additionally 5/36 cases in Registers), 61/69 uterine ruptures (additionally 74/38 cases in Registers), and 22/40 postpartum hysterectomies mainly for atonic bleeding (additionally 13/6 cases in Registers). Some patients with placenta accreta/percreta or uterine rupture also had a hysterectomy and therefore the total number of hysterectomies was 62 in Finland and 54 in Denmark. We also found some miscoded cases in Registers without severe obstetric complication.

Conclusions: Since these severe obstetric complications are rare, it is essential to collaborate with other countries to obtain enough data for analyses. A combination of prospective data collection from clinicians and information from the Medical Birth Registers provide an excellent possibility for Nordic collaboration on rare serious events in pregnancy.

Risk factors of recurrent anal sphincter ruptures: a population-based cohort study

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Objective: To determine incidence and risk factors of recurrent anal sphincter rupture (ASR).

Design: Population-based retrospective cohort study.

Setting: The National Medical Birth Registry, Denmark


Methods: Univariate analysis and multivariate logistic regression were used to determine risk factors of recurrent ASR.

Main Outcome Measures: The incidence of recurrent ASR, odds ratios (OR) for possible risk factors of recurrent ASR: age, BMI, grade of ASR, birth weight, head circumference, gestational age, presentation, induction of labor, oxytocin augmentation, epidural, episiotomy, vacuum extraction, forceps, shoulder dystocia, delivery interval and year of second delivery.

Results: Out of 159,446 women, 7,336 (4.6%) experienced an ASR at first delivery and 521 (7.1%) had a recurrent ASR (OR 5.91). Risk factors of recurrent ASR in the multivariate analysis were: birth weight (adjusted OR (aOR) 2.96 per increasing kg, 95%CI 2.33–3.76), vacuum extraction (aOR 2.96, 95%CI 2.03–4.31), shoulder dystocia (aOR 1.97, 95%CI 1.10–3.53), delivery interval (aOR 1.08 by year, 95%CI 1.02–1.15), year of second delivery (aOR 1.06, 95%CI 1.03–1.10) and prior fourth degree ASR (aOR...
1.72, 95%CI 1.28–2.29), whereas head circumference was a protective factor (aOR 0.91 per increasing cm, 95%CI 0.84–0.98).

**Conclusion:** The incidence of recurrent ASR was 7.1%. Risk factors of recurrent ASR were excessive birth weight, vacuum extraction, shoulder dystocia, delivery interval, year of second delivery and prior fourth degree ASR. Larger head circumference reduced the risk of recurrent ASR.

### ABSTRACT 71

**Poster position PoGy 4**

**Ovarian Granulosa cell tumor and Lichen Planus**

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The etiology of Lichen Planus (LP) is unknown. LP is most likely an immunologically mediated reaction (1). This case will describe a patient with known Lichen Planus Erosiva which disappeared after treatment for an ovarian Granulosa Cell Tumor (GCT).

A 63 year old woman where hospitalized because of fever and lower abdominal pain.

She had a diagnosed Lichen Planus Erosiva in her vagina by biopsy three year before this hospitalization. The LP was treated with topical hydrocorticoid, but with poor effect. She described a burning vagina and severe dyspareunia. She doesn’t use any else medicine.

A pelvis examination and ultrasound of genitalia interna was performed. Her uterine endometrium was enlarged, 15 mm and an endometrial biopsy was taken. The histology of the biopsy was endometrial hyperplasia. The ovaries were normal in size shown by ultrasonography.

Preoperative CA-125 was enlarged to 47.

An operative treatment with laparoscopy vaginal assisted hysterectomy and bilateral salpingoophorectomy was chosen.

Postoperative histology had shown a GCT at the right ovarian FIGO ST. 1A, and focal complex hyperplasia of the uterine endometrium.

Four month after the operation, the patient was controlled in the gynecological out clinic. There were no signs of the GCT. The CA-125 was decreased to 12.

The patient told that her burning vagina had disappeared and two elevated element at her right leg had also disappeared.

There were no sign at GCT or the LP in vagina one year after the operation and the patient had normalizes her sexual life.

**Discussion:** The etiology of LP is unknown, although the evidence strongly suggests that it is a disorder of cell-mediated immunity in which an exogenous, antigenic stimulus such as a drug, chemical or super antigen induces cell-mediated immune response in the epithelium, with infiltration of T cells in a genetically predisposed individual. Also a various drugs and hepatitis C virus infection are known to flare LP. The majority of patient with LP will spontaneous remiss after one year, as spontaneous cure can be seen after (1,2)

The interval between administration of the offending medication and the development of the lichenoid drug eruptions is usually a few months, although it may range from 10 days to several years.(3)

Other skin diseases such as dermatomyositis are known to have an association with ovarian cancer (4). There is no evidence in the literature that there are a connection between LP and ovarian cancer. But this case suggests there could be a connection while the LP disappears after removal of the ovarian and the uterus.

Ursodeoxycholic acid in the treatment of intrahepatic cholestasis of pregnancy

Background: To examine the efficacy and safety of ursodeoxycholic acid (UDCA) in the treatment of intrahepatic cholestasis of pregnancy (ICP).

Methods: There were 307 women with ICP in Turku University Central Hospital between 2000 and 2005. UDCA was used in 208 pregnancies. The diagnosis was made by maternal pruritus and elevation of total fasting bile acid (FBA) (>6µmol/l) or serum alanine aminotransferases (ALT) (>45 U/l). A study questionnaire data on maternal healthiness and pregnancy was collected. Hepatic, biliary and metabolic laboratory test values and obstetric and neonatal outcome was evaluated. Data of the patients who used UDCA was analysed separately and compared with the data from patients without UDCA.

Results: Age, parity, smoking, body mass index and ICP heredity were similar between the groups. The mean gestational age at the diagnosis of ICP was 34.8 (median 36.0, SD 3.5), 33.3 in the UDCA group (median 34.0, SD 3.1) and 37.8 in the group without UDCA (median 38.0, SD 1.5). UDCA-treated patients had ICP diagnosed 5 weeks earlier than mothers without medication (p<0.05). In most cases without UDCA, the onset of ICP was in the last weeks of pregnancy and these mothers didn’t require treatment, either because the symptoms were mild or the pregnancy was terminated.

UDCA was started for 208 patients and the mean dose was 450 mg/day (range 150–900). The mean gestational age at the first control visit was 34.7 (median 35.0, SD 2.9). Gallstones were detected in 4% of UDCA-treated patients and in 1% in the group without medication (p<0.05). In most cases without UDCA, the onset of ICP was in the last weeks of pregnancy and these mothers didn’t require treatment, either because the symptoms were mild or the pregnancy was terminated.

At the diagnosis levels of FBA and ALT were higher in UDCA-treated patients (p<0.05). At the time of diagnosis FBA level was 19.2 µmol/l (range 1–235) in the whole study population, 20.5 µmol/l (range 1–190) in the UDCA group and 16.7 µmol/l (range 1–235) in the group without UDCA. Concentration of ALT was 152.8 U/l (range 6–1021) in the whole study population, 179.2 U/l (range 6–1021) in the UDCA group and 96.4 U/l (range 8–540) in the group without UDCA.

UDCA-treated mothers delivered on the mean of 37 (range 32–40, median 38.0, SD 1.5) gestational week vs. mothers without UDCA on the mean of 38 (range 35–42, median 39.0, SD 1.2) gestational week (p<0.05). There were more preterm deliveries (<37 weeks) and inductions of labour in the group using UDCA due to severity of ICP. The caesarean section rate in our hospital during the study period varied between 13.9–17.4 % and in the study cohort the caesarean section rate was 15%. The vacuum extraction rate was 5.8–7.3 % in the hospital and 5.5% in the study population. The perinatal outcome was good and there were no perinatal deaths. The rate of admissions to a neonatal unit was higher for children in the UDCA group (30% vs.11%), mostly due to preterm labour.

Conclusions: UDCA is well tolerated by pregnant women. No fetal or neonatal side effects could be detected.

Should Chlamydia screening be offered to women with miscarriages?

Background and Objective: All women in Denmark undergoing an induced abortion are screened and treated for Chlamydia Trachomatis preoperatively. Women needing the same intervention due to an incomplete spontaneous abortion or missed abortion (miscarriage) are not offered the same screening even though the procedure and surgery is exactly the same.

The purpose of the present paper is to review the current available literature on the topic, to clarify whether all women with miscarriages should undergo screening and treatment for Chlamydia.
Methods: Literature review. Searches on available literatures were conducted through PubMed, Embase and Cochrane-database. Keywords used single, combined and as MesH terms were; Chlamydia Trachomatis, Chlamydia infection, spontaneous abortion, missed abortion and miscarriage. Limitations for texts in English, Danish, Norwegian or Swedish, women only, age 13 to 44 years, and publication period 01.01.1990–01.05.2011.

Results: Only five relevant articles covering 496 patients were found in the literature. The incidence of Chlamydia in women with miscarriages varies from 1–100% in these articles. There were big variations concerning, control groups, design of the studies and methods for detection of Chlamydia in these studies. Three of these showed that women with miscarriages had a higher rate of Chlamydia infection. The two other articles found no difference in Chlamydia infection among pregnant woman with or without miscarriages.

Conclusion: This literature review provides no clear picture of the need or benefits of screening for Chlamydia in women with missed abortion. Thus, an evidence based answer for the question raised in this paper is still unclear. There is a great need for more and larger studies on this topic to conclude whether Chlamydia screening should be offered to women with miscarriages or not.

ABSTRACT 74
Poster position PoGy 15

Uterine perforation by an IUD/IUS - clinical course and treatment
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Background: Uterine perforation is a rare complication of intrauterine device (IUD) use. Life-threatening visceral complications, mainly involving the bowel have been reported. Serious complications with modern devices are, however, rare. Many women with perforations are either asymptomatic or experience only mild symptoms of abnormal bleeding, mild abdominal pain or an unintended pregnancy. The value of traditional surgical removal of the perforated device has been questioned. The purpose of this study was to review the clinical course and treatment of patients experiencing uterine perforation with modern copper-releasing IUDs (Cu-IUDs) and with the levonorgestrel-releasing intrauterine system (LNG-IUS).

Methods: Patients (n=75) treated at clinics in the Helsinki and Uusimaa area between 1996 and 2009, with diagnostic and surgical treatment codes indicating uterine perforation by an IUD/IUS were identified from the Finnish National Hospital Register. Patient charts were reviewed and women with Cu-IUDs (n=21) and the LNG-IUS (n=54) were analysed both as one group and as separate groups as regards symptoms, methods of detection, treatment and findings in surgery.

Results: Twenty-two patients (29%) were asymptomatic and treated only because of missing IUD threads. The remaining 53 (71%) had mostly mild symptoms of abnormal bleeding or abdominal pain or both, often combined with the mention of missing threads. Failure to remove the IUD/IUS by pulling visible threads was the reason for referral in 7 patients (9%), while 11 (15%) experienced an unintended pregnancy. Misplaced IUDs/IUSs were localized by a combination of vaginal ultrasonography and x-ray, or hysteroscopy, or curettage. Partial perforation or intrauterine embedding was diagnosed in 7 patients (9%) during hysteroscopy. The remaining 68 (91%) patients had an intra-abdominally misplaced device and were treated by laparoscopy. Of the 68 intra-abdominal devices, 44 (65%) were found in the omentum and the rest (n=24, 35%), were located close to the uterus. Adhesions in laparoscopy were found in 21 patients (30%). Pregnancy (33% vs. 7%, P=0.004) and intra-abdominal adhesions (58% vs. 20%, P=0.002) were significantly more common in the Cu-IUD group. Mild infections (n=7), mild bleeding (n=3) or uncomplicated bowel perforation (n=2) was found in 12 patients (16%).

Conclusions: Clinical course of IUD/IUS perforation is mainly mild with approximately one third of patients experiencing no symptoms and two thirds mild symptoms only. The different mechanism of action may explain the differences in pregnancy rates and adhesions between women using the LNG-IUS and a Cu-IUD. As surgical findings are mainly minimal,
asymptomatic patients with no plans for pregnancy may need no treatment at all. An alternate form of contraception is, however, important to remember as pregnancies do occur, especially in cases of misplaced Cu-IUDs.

### ABSTRACT 75

**Poster position PoGy 56**

**Preoperative staging of ovarian cancer in regards to selection of treatment**

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**Background:** All patients with ovarian cancer routinely have an MRI-scan performed preoperatively with reference to staging. However, the peroperative findings are not always consi-stent with the preoperative staging, as the cancer may for instance have spread further than first assumed, for which reason the patient would have had greater benefit from being placed directly in adjuvant chemotherapy before surgery. The relevant chemotherapy could therefore be delayed up to eight weeks, as the patient needs to fully recover after the operative procedure.

**Materials and Methods:** We presume that there are areas of the abdomen that prove more difficult to MR scan that other. Should this be the case we’ll attempt to perform a 3D ultrasound of the implicated areas, to see if we hereby are able to more thoroughly stage the extend of the disease preoperatively. The abdomen will descriptively be divided into 9 quadrants and the MRI findings will be registered in the respective quadrants. We will review the patients going back one year and in doing this we will compare the previous MR scans with the operative findings.

Next we will examine the patients admitted with ovarian cancer after December 1th 2011 using 3D ultrasound on the quadrants of the abdomen that proved to be problematic to diagnose radiologically.

**Results:** so far the statistics have not yet been analysed, but the created database registering the patients of 2010/2011 show great inconsistency between the MRI descriptions and the operative descriptions!

**Conclusion:** The project is still ongoing, but there is clearly a need for more explicit guidelines both for operative and MRI description techniques.

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### ABSTRACT 76

**Poster position PoOb 95**

**Alcohol in pregnancy: Attitudes, knowledge and information practice among midwives and general practitioners in Denmark 2000–2009**

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**Background:** Most pregnant women in Denmark say they have not talked to their midwife about alcohol in pregnancy, and they have mostly been advised that some alcohol intake is all right. From 1999–2007, the Danish National Board of Health advised pregnant women that some alcohol intake was acceptable. Since 2007, the recommendation has been alcohol abstinence. The aim of this study was to describe the attitudes toward, knowledge about and information practice concerning alcohol drinking in pregnancy among midwives and general practitioners (GPs) in Denmark in 2000 and 2009, and how their answers related to the two different official recommendations at the time.

**Methods:** In 2000, we invited all midwives in the antenatal care centre at Aarhus University Hospital and a representative sample of GPs in the catchment area of the antenatal care centre in Aarhus. 94% of midwives and 65% of GPs were interviewed about their attitudes toward, beliefs and knowledge about alcohol during pregnancy. They were interviewed about their attitudes, beliefs, knowledge and information practice in relation to alcohol in pregnancy. Questions were also asked about information on alcohol provided to pregnant women. Identical questions were asked to all midwives (100% participation) and half of GPs in 2009.

**Results:** In 2000, most midwives (69%) and GPs (71%) considered some alcohol intake in pregnancy acceptable, mostly on a weekly level, and only respectively 28% and 21% advised abstinence. Binge drinking, on the other hand, was considered harmful by most. There was considerable inter-person variation in the participants’ attitudes and what they recommended to pregnant women. In 2009, significantly more midwives (48%) and GPs (51%) considered
abstinence to be best, and significantly more midwives (46%) and GPs (53%) gave this advice to pregnant women. Participants had received information on alcohol mostly in a professional context. Their knowledge about the official recommendations about alcohol was good, but many did not inform about the official recommendation.

Conclusions: The attitudes toward, beliefs and knowledge about drinking in pregnancy among midwives have changed along with a change in official policy. The change was mostly independent of personal characteristics of the midwives and GPs, including age, gender and place of work.

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Poster position PoOb 96

The effect of alcohol binge drinking in early pregnancy on child general intelligence

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Objective: To examine the effects of binge alcohol consumption during early pregnancy, including number of binge episodes and timing of binge drinking, on child general intelligence at age five.

Design Follow-up study: Setting and population 1,617 women and their children sampled from the Danish National Birth Cohort.

Methods: Participants were sampled on the basis of maternal alcohol consumption during pregnancy. At five years of age, the children were tested with 6 subtests from the Wechsler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R). Parental education, maternal IQ, prenatal maternal smoking, the child’s age at testing, sex of child, and tester were considered core confounders, while the full model also controlled for prenatal maternal average alcohol intake, maternal age, maternal pre-pregnancy BMI, parity, home environment, postnatal parental smoking, health status, and indicators for hearing and vision impairment.

Main outcome measures WPPSI-R.

Results: There were no systematic or significant differences in general intelligence between children of mothers reporting binge drinking and children of mothers with no binge episodes, except that binge drinking in gestational weeks 1–2 significantly reduced the risk of low full scale IQ (OR=0.54 (95% CI: 0.31–0.96)) when adjusted for core confounders. The results were otherwise not statistically significantly related to number of binge episodes (maximum twelve) and timing of binge drinking.

Conclusions: We found no systematic association between binge drinking during early pregnancy and child intelligence. However, binge drinking reduced the risk of low full scale IQ in gestational weeks 1–2. This finding may be explained by residual confounding.

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Does Binge Drinking During Early Pregnancy Increase the Risk of Psychomotor Deficits?

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Objective: To examine the effects of binge alcohol consumption during early pregnancy, including number of binge episodes and timing of binge drinking, on child motor function at age five.

Methods: A prospective follow-up study of 678 women and their children sampled from the Danish National Birth Cohort based on maternal alcohol consumption during pregnancy. At five years of age, the children were tested with the Movement Assess-
ment Battery for Children (MABC). Parental education, maternal IQ, prenatal maternal smoking, the child’s age at testing, gender of child, and tester were considered core confounders, while the full model also controlled for prenatal maternal average alcohol intake, age, maternal pre-pregnancy BMI, parity, home environment, postnatal parental smoking, health status, participation in organized sport, and indicators for hearing and vision impairment.

Results: There were no systematic or significant differences in motor function between children of mothers reporting isolated episodes of binge drinking and children of mothers with no binge episodes. No association was observed with respect to the number of binge episodes (maximum of twelve) and timing of binge drinking.

Conclusion: In this study, we found no systematic association between isolated episodes of binge drinking during early pregnancy and child motor function at age five.

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Poster position PoOb 11

Intrapartum use of ST analysis of the fetal ECG (STAN) in fetal growth restriction

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Background: Fetal growth restriction is associated with cardiac dysfunction and myocardial cell damage. We hypothesized that placental insufficiency may affect the intrapartum electrocardiographic performance of the fetus and neonatal outcome.

Methods: Clinical study including singleton pregnancies with gestational age > 36 weeks planned for vaginal delivery and monitored with ST analysis of the fetal ECG, in addition to CTG. Neonates with a birthweight <5th centile were defined as growth-restricted (FGR), divided into subgroups with normal and abnormal (<5th centile) cerebral placental ratio (CPR) and compared with a reference population of appropriately grown fetuses (birthweight 10th-90th centile). Both the occurrence (yes/no) and the number of a specific ST event per hour of recording (density) were analysed.

Results: A total of 455/5997 (7.6%) high-risk deliveries monitored with ST analysis were growth-restricted. CPR prior to delivery was available in 119/225 (53%) prenatally diagnosed cases of FGR. The pattern of intrapartum ST interval changes in FGR fetuses with and without abnormal CPR was not different from normally grown fetuses. There was a trend towards increased occurrence and density of episodic T/QRS rise and bifasic ST in FGR with abnormal CPR. In FGR fetuses ST depression was associated with a higher risk of transfer to the Neonatal Intensive Care Unit (NICU) (OR 6.6, 95% CI 2.53–17.30), compared to appropriately grown fetuses (OR 1.63, 95% CI 1.11–2.39). There was no association between intrapartum ST depression and cord artery acidosis (pH < 7.15) or 5 min Apgar score < 7. In FGR fetuses with abnormal CPR, occurrence of any type of ST event was associated with a higher risk of transfer to NICU (OR 8.5, 95%CI 3.6–20.0), compared to the reference population with present ST event(s) (OR 1.5, 95% CI 1.15–1.9). There were no cases of intrapartum or neonatal death, metabolic acidosis or moderate/severe neonatal encephalopathy in the study group with FGR.

Conclusion: Placental insufficiency had no significant effect on the ST interval of the fetal ECG during labor. Occurrence of ST events during labor, in particular ST depression, was a risk factor of neonatal morbidity. These findings may warrant a further refinement of ECG analysis as a monitoring tool in FGR when combined with prenatal blood flow assessment.

ABSTRACT 80
Poster position PoOb 34

Rotation with Kiellands forceps – a safe alternative for delivery in trained hands

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Background: Malrotation of the fetal head at delivery is a risk factor for failure of vacuum extraction and anal sphincter injury. Kiellands rotational forceps might be an alternative procedure for delivery. We hypothesised that adequate training will result in low frequencies of maternal and neonatal morbidity.
Methods: Prospective observational study of all deliveries where Kielland’s forceps was used. Study period: 01.01.2005–31.12.2011. The practical skills of forceps rotation were transferred from one senior obstetrician to a limited number of consultants by systematic training on the phantom and hands-on assistance at the delivery room.

Results: During the study period a total of 33858 deliveries occurred. 126 rotational forceps procedures were performed accounting for 6% of all forceps deliveries. The majority of the study population were nullipara (79%), 33/126 (26%) had induced labor and 115/126 (91%) had pain relief by epidural anesthesia. The indication for intervention was failure of progress in 75 (59%) and suspected fetal distress in 39 (31%) cases. The position of the fetal head was median at level +1 in relation to spine (range 0 to +3). All procedures were performed in regional or general anesthesia. Rotation was successful in 112/126 (89%). Of the remaining 14 cases, five were delivered by non-rotational forceps (occiput posterior persistens), five by vacuum extraction and four had a caesarean section. A total of 7/126 (6%) had a 5-min Apgar score <7. There were no cases of perinatal death or neonatal seizures. There were no fourth degree anal sphincter injuries. The proportion of third degree sphincter injury decreased from 18% to 5% during the observation period. A total of 25 (19%) had high vaginal tears.

Conclusion: Rotational forceps is an effective method for the correction of fetal malrotation and can be used in trained hands without significant increased risk.

ABSTRACT 81
Poster position PoOb 10

Management of fetal growth restriction at >36 weeks of gestation - what can be achieved by careful fetal monitoring?

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Background: Fetuses with diagnosed growth restriction are increasingly delivered by caesarean section. We hypothesised that an attempt of vaginal delivery is feasible and aimed to evaluate the maternal and neonatal outcome in fetal growth restriction (FGR) according to prenatal blood flow measurements.

Methods: Retrospective observational study on singleton pregnancies with gestational age ≥36+0 weeks and a birthweight ≤5th centile during a five year period (2004–2008) at Haukeland University Hospital. The blood flow pulsatility index (PI) was measured in a free loop of the umbilical artery (UA) and in the middle cerebral artery (MCA). The cerebral placental ratio (CPR) was calculated dividing the MCA-PI by the UA-PI. An UA-PI > 95th, MCA-PI ≤ 5th and CPR<5th centiles were defined as abnormal. Only the last blood flow measurement before delivery was included into the analysis. Neonates with a birthweight between the 10th and 90th centile constituted the reference population (N=17861).

Results: Out of 1157 growth restricted neonates, 370 (32%) were identified prenatally. In this group 281/370 (77%) had a vaginal delivery, while 18 (5%) and 71 (19%) were delivered by elective and emergency caesarean section, respectively. The perinatal mortality in cases with prenatally diagnosed FGR was 7/370 (1.9%) including 4 cases with lethal malformations or chromosomal aberrations and 3 cases of antepartum stillbirth. Cord artery metabolic acidosis occurred in 3/211 (1.4%). There were no cases of moderate or severe neonatal encephalopathy. Blood flow was abnormal in 49/324 (15%) and 62/228 (27%) of the available UA- and MCA-PI measurements, respectively. An abnormal CPR was calculated in 87/225 (39%). A total of 36/87 (41%) of FGR fetuses with abnormal CPR had a caesarean delivery compared to 30/138 (22%) with normal CPR and 8% in the reference population. There was a positive linear relationship between CPR z scores and cord oxygen partial pressure of the UA and vein at delivery and a negative relationship between CPR z scores and CO2 partial pressure of the umbilical vein. An abnormal CPR was associated with increased risk of emergency caesarean section (OR 8.1 95%CI 5.2–12.7) and transfer to the neonatal intensive care unit (OR 6.7, 95% CI 3.9–11.5), but neither cord artery acidosis (pH<7.15) (OR 0.7, 95% CI 0.3–1.7) nor 5 min Apgar score<7 (OR 1.4, 95% CI 0.2–9.7).

Conclusion: Provided careful fetal monitoring vaginal delivery could be achieved in the majority of cases without risk of severe neonatal morbidity. Prenatal diagnosis of FGR at >36 weeks of gestation allowed...
for further risk-assessment by Doppler ultrasound. Fetal circulatory compromise was reflected by cord hypoxemia at delivery.

ABSTRACT 82

Poster position PoGy 44

New data from an audit of Danish cervical cancer cases
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Introduction: In recent recommendations from the Danish National Board of Health, all new cases of cervical cancer should be subjected to audit procedures. This was already implemented by the Regional Steering Committee for Cervical Cancer Screening in Greater Copenhagen in the year 2008. Results of the audit from the years 2008–2009 have been described earlier. This study will present new data from the years 2010–2011 to highlight trends in cervical cancer in Denmark.

The aim of this study was to describe the screening histories of all diagnosed cervical cancer cases in the years 2008–2011 in a Danish population. The researchers hoped to be able to identify possible points of improvements of the cervical cancer screening program and identify possible changes in Danish cervical cancer trends.

Material and Methods: Two screening centers in Greater Copenhagen, the Department of Pathology at Hvidovre Hospital and the department of Pathology at Hillerød Hospital, participated in the study. All cases of cervical cancer diagnosed in these two centers in the period of 2008–2011 were included. The screening coverage in the area is approximately 75% and the study departments receive approximately 100,000 cytological samples each year. The study area includes a population of 960,000 inhabitants and about 323,000 women between 23 and 65 years of age, which is the recommended screening-period in Denmark.

The audit protocol included re-evaluation of all normal cytological/histological cervical samples within 5.5 years of cancer detection. The screening history of the cancer cases were described as: Regular screening history, False negative cytology, False negative histology, Deficient history and Audit not possible.

Results: The results of the study are not available as of yet, but will be presented at the NFOG congress 2012.

ABSTRACT 83

Poster position PoOb 73

Should pregnancy after gastric bypass be postponed until one year post surgery?
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Introduction: Current recommendations suggest postponing pregnancy by at least one year after gastric bypass. During the first year after surgery the women are in a catabolic phase with a rapid weight loss. With this study we tested the hypothesis that the risk of adverse pregnancy and neonatal outcome are increased in women who conceive during the first postoperative year.

Objective: To compare two groups of women with pregnancies after gastric bypass. The first group included women who conceived within the first postoperative year and the second group included women who conceived after the first postoperative year. Endpoints were adverse pregnancy and neonatal outcome.

Methods: A nationwide register-based study covering all Danish deliveries during 2004–2010 in women with prior gastric bypass. Data was extracted from the Danish National Patient Registry and The Medical Birth Register in Denmark. Continuous variables were analyzed by Student’s t-test and categorical variables by chi2-test or Fisher’s exact test.

Results: We identified 286 women with prior gastric bypass who had given birth to a singleton during the inclusion period. We only included the first postoperative birth. 158 women conceived within the first year and 128 after the first year. There was no statistical significant difference (p > 0.05) between the two groups regarding birth weight, gestational age, Apgar score (5 min.), neither in the number of days in neonatal care unit nor in the duration of maternal admission. We found no difference in the risk of labor induction, cesarean section, preeclampsia, postpartum hemorrhage (>500ml), preterm birth (before 37 weeks) or birth weight below 2500 g between the two groups.
Conclusion: We found no evidence to support the recommendation of delaying pregnancy until one year after bariatric surgery.

ABSTRACT 84
Poster position PoOb 39

Cesarean delivery: the role of emergency, decision to delivery interval and phase of labor on low Apgar score

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Background: To analyze low Apgar score related to grade of emergency, decision-to-delivery interval (DDI), phase of labor and main indication category for cesarean delivery (CD).

Methods: Eligible for analysis was 2029 mothers with singleton pregnancy in cesarean delivery. Four groups were defined: planned CD (gr. 1), emergency CD not in labor (gr. 2), emergency CD with cervical dilatation 3–8 cm (gr. 3), and emergency CD with full dilatation (9–10 cm) (gr. 4). Grade of emergency surgery (catastrophic; as fast as possible, urgent: with some delay), DDI, stage of labor and indication for CD were included in the analyses. Endpoint was Apgar score < 7 at 5 minutes.

Results: Overall, the prevalence of 5-min. Apgar score < 7 was 3.1% (63/2029), ranging from 0.7, 6.1, 3.4 and 5.3% in planned, prelabor, 1st and 2nd stage of labor, respectively. Significant higher rates of low Apgar score (< 7) were seen in prelabor stage for the shortest DDI intervals in both catastrophic (DDI < 12 min.) and urgent (DDI < 30 min.) surgery. There were minor differences in mean DDI across phases of labor for catastrophic surgery whereas the mean DDI decreased significantly in urgent surgery from decisions taken in prelabor compared to decisions in 1st and 2nd stage of labor.

In catastrophic surgery, except for prelabor group, there were minor differences seen in Apgar score by DDI and phase of labor at decision. In urgent surgery, low Apgar prevalence (< 7) decreased from 7.8%, to 2.7% and 1.5% by increasing DDI (from 3–29, 30–59 and 60–420 min.) independent of stage of labor at decision.

The prevalence of low Apgar score (< 7) decreased by increasing DDI for "fetal distress" in urgent surgeries. No pattern was seen in other indication categories across emergency status/phase of labor, mainly due to the small numbers of newborns with low Apgar score.

Conclusions: Except for significant higher rates of low Apgar score (< 7) in prelabor stage for the shortest DDI intervals in both catastrophic (DDI < 12 min.) and urgent (DDI < 30 min.) surgery, we found no significant pattern of low Apgar scores across strata of main indication category, decision-to-delivery interval and phases of labor at which time decision for CD were made. Our surveillance methods for monitoring fetal stress at time for delivery have low predictive value.

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Poster position PoOb 57

The embolization of uterine arteries for massive postpartum hemorrhage at Tampere University Hospital 2003–2009

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Background: Massive postpartum hemorrhage (PPH) is a major cause of maternal mortality and morbidity worldwide. The embolization of uterine arteries has become an accepted intervention for the treatment of massive PPH. The aim of this study was to evaluate the use of embolization for PPH in all treated parturients at Tampere University Hospital, Finland from 2003 through 2009.

Material and Methods: There were 34, 420 deliveries at our hospital during the study period 2003–2009. Embolization of uterine arteries was performed on 73 women for massive PPH. Patient data was collected retrospectively from the delivery reports and patient registry of the hospital.
Results: A total of 0.2 % of all women who delivered at our hospital ended up to an embolization procedure, and 3 % of the women with PPH (>1000mL) were embolized. A complete hemodynamic stability was achieved in 93 % (68/73) of the cases after embolization. Reasons for failures included uterine rupture or atony, partial retention of the placenta or adherent placenta. There was no maternal mortality. Fifty-six percent delivered with cesarean section, 30 % vaginally and 14 % with the aid of vacuum extraction. In forty-three percent of the cases labor was induced. The majority (55%) of the patients were primiparas, and 75 % of the pregnancies were fullterm. The major causes of PPH were uterine atony (40 %) and adherent placenta (25 %). The median volume of blood loss was 4,700 mL. The incidence of massive PPH (> 1500 mL) was 2.7 % among all deliveries at our institute, and there was a statistically significant increase (p<0.001) in the incidence of PPH during the study period. The possible risk factors for PPH were higher maternal age (> 30 years), cesarean section and multiple pregnancy.

Conclusions: The embolization of uterine arteries can be considered an effective and safe treatment for massive PPH. The use of this treatment has increased during the study period. We were not able to clearly identify patients at risk for a massive PPH before delivery.

ABSTRACT 86

Poster position PoOb 26

From risk algorithm to national quality register
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Most of the quality registers are created using the traditional methods. Different groups of specialists identify relevant data points for collection and create some sort of organization to deal with the logistics. Most often the data is entered manually, but sometimes there is some sort of automatic transfer from patient record systems. Data analysis is performed intermittently and results are delivered to the users at predefined time intervals. In the clinical practice with the many different patient groups doctors are faced with the overwhelming number of the different registers. The critics argue that all these registers consume too much resources, data is not secure, and even that clinical research is undermined. At the same time new register are introduced continuously. This leads to the situation that some of the doctors question the value of the registers. This situation is quite worrying, because the integration to the clinical practice is the very important prerequisite for the good quality registers.

The medical profession needs to think if registers could get different roles in the clinical practice. It might be that using modern data transfer techniques we could hand over information for immediate use in the clinical practice? In this poster we will describe how the simple 1st trimester risk estimation program has developed into the national quality register for fetal diagnostics. The system includes on-line lab data import, advanced mathematical modeling and immediate result presentation to the user and the patient. Ultrasound operators from the different units have access to their individual performance quality assessment and the results for at the unit or country level. User interface has been developed together with the end users and is very user friendly. Even patients even have their own interface to answer questioners about the outcome of the pregnancy.

ABSTRACT 87

Poster position PoOb 86

The effect of introducing regular exercise during pregnancy and postpartum in physically inactive women
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Background and Objective: Although the present guidelines from the Danish National Board of Health recommend 30 minutes of daily exercise during pregnancy, the majority of pregnant women are still inactive. We evaluated the feasibility and preliminary efficacy of regular exercise during pregnancy and postpartum in Danish women with a physical inactive life before pregnancy. Our aim was to elucidate the efficacy of an exercise and motivational program to improve the physical activity in previously sedentary pregnant women.
**Methods and design:** Prospective controlled trial. Pregnant women at 12th gestational week were asked to complete a questionnaire to describe their baseline physical activity before pregnancy. Those who fulfilled the criteria of being inactive were included into the study.

The intervention group was invited to participate in an exercise program consisting of low impact gymnastics, strength exercises supervised by a physiotherapist 1 hour weekly in pregnancy after 18 weeks of gestation and 2 hours weekly after birth. Furthermore, participants were encouraged to be physically active on their own to increase their daily activity by 3000 steps measured by using a pedometer. The intervention group attended a theoretical lesson on the impact of physical activity once a week in 5 months after birth in order to promote mental motivation to do more physical activity. The control group was informed according to normal procedures on the importance of being active.

Both groups completed 2 questionnaires about levels of physical activity and physical health at 38 weeks of gestation and 5 months after birth.

**Results:** A total of 1590 pregnant women were invited to complete a questionnaire to determine their physical activity before pregnancy, of those 794 (49%) completed the questionnaire at 12 weeks of gestation. Only 207 (26%) women had a sedentary life before pregnancy and 154 of those were included into the study.

There was a significant increase in physical activity, (> 2½ hour pr week) among 31% of the participants in the intervention group versus 6% in the control group at 38 weeks of gestation.

Pain related to lower back during pregnancy was significantly reduced in the intervention group at 38 weeks of gestation (57%) versus the control group (76%).

Significantly fewer women from the intervention group needed sick leave than those in the control group (34% vs. 66%).

Weight loss 5 month after birth was significantly increased in intervention group (55%) compared to control group (34%).

**Conclusion:** Our preliminary results suggest that a combination of physical training and mental motivation is successful regarding increase of physical activity in pregnant women thereby reducing both lower back pain and sick leave and increasing post partum weight loss. Our findings support the recommendations of the Danish National Board of Health i.e 30 minutes of daily physical activity in healthy pregnant women.
Methods: A retrospective case-control study was undertaken at the largest obstetrical unit in Norway, with 6-7000 deliveries annually. After implementation of a perineal support program, we studied OASR during two time-periods; 2003-05 and 2008-10. The study population comprised of vaginal deliveries only, 907 cases and 30802 controls. Cases were validated by carefully reading the individual medical charts of each OASR patient. Risk factors for OASR during the two time-periods were compared by assessing the incidence and adjusted OR for different categories of risk factors.

Results: Over-all incidence of OASR was reduced from 4.0% in the first time period to 1.9% in the second time period, with similar reductions consistently across all categories of major risk factors. The reduction in risk pattern was similar for both primi- and multiparous women, and in spontaneous and instrumental deliveries. The majority of the OASRs were found among low risk women.

Conclusion: A 50% reduction of OASR appears simultaneously with the implementation of a perineal protection program in our department and this effect is maintained over the following years. The reduction in prevalence is of the same magnitude in low- and high-risk patients. Selective focus on high risk patients in attempts to reduce incidence of OASR is of limited value, as the prevalence of high-risk patients is low. All efforts should be targeted to offer perineal protection during delivery to all delivering women, as the majority of OASRs are found among low risk women.

Intra abdominal haemorrhage after vaginal delivery - a case and summary of reported cases

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Background: Spontaneous intraperitoneal bleeding is a rare but potentially life threatening condition after vaginal delivery. The severity is often missed due to sparse clinical signs postpartum. In addition quite a large time span can be seen from delivery to symptoms. The aim of this paper is to draw attention to etiology and diagnosis of this condition.

Case summary: A 35-year-old primiparous at term gave birth by vacuum extraction due to fetal distress. One hour postpartum she developed signs of hypovolemia. Vaginal bleeding was acceptable (300 ml) and after intravenous infusion of crystalloids and colloids her blood pressure was stable.

Two hours post partum she complained of pain in her right shoulder and increasing abdominal pain. A CT scan revealed ongoing bleeding anteriorly to the uterus and massive intraabdominal haemorrhage. An emergency laparotomy was performed with drainage of approximately 3 litres of blood from the abdominal cavity. We found a bleeding arteria in Retzius’ space and haematoma in both parametriae of unknown underlying origin. No coagulopathy was detected.

Recovery was uneventful and she was discharged from hospital after 5 days without any complications.

The incident triggered us to search the literature.

Method: a case report and literature review. A search of available literature was conducted through Pub Med and internet search. Search words: intra abdominal spontaneous haemorrhage, intraperitoneal bleeding, haemoperitoneum after vaginal delivery, and postpartum retroperitoneal haematoma.

Results: Pregnancy and childbirth has been reported to favour episodes of spontaneous intra abdominal bleeding. We have reviewed approximately 30 postpartum case reports in the literature from 1904 till today. Although various causes are described, rupture of splenic artery aneurysm seems to be the most common cause of intra abdominal haemorrhage after vaginal delivery.

Conclusion: Postpartum intraabdominal haemorrhage can occur hours to several days after normal vaginal delivery. CT is a valuable diagnostic tool prior to laparotomy in order to locate the source of bleeding.
**ABSTRACT 90**

Poster position PoOb 85

**Maternal diabetes leads to rat fetal placental excess growth and increased vascular resistance**

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**Objective:** To investigate fetal placental and peripheral circulatory responses to maternal pre-gestational diabetes in an experimental rat model.

**Study design:** Ten diabetic rat dams with 107 fetuses (control dams = 20, fetuses = 219) were preconceptually injected with STZ (35 mg/kg). Fetal ultrasonography was performed on gestational day (GD) 13—14, 16—17, and 19—21. After the last examination the dam was killed and placentas were gathered. HE-stained samples (diab = 50, control = 89) were used for morphometric analysis. Placental total RNA (diab = 13, control = 11) was isolated. mRNA concentrations were measured with quantitative RT-PCR using TaqMan chemistry on a 7300 Real-Time PCR System.

**Results:** Placentas of hyperglycemic dams had increased mean area, basal edema and decidual venal thrombosis rates. Maternal central artery wall thickness was decreased in the diabetic group. In the diabetic fetuses umbilical artery and descending aorta pulsatility indices (PI) were significantly increased at each study point. At GD 16—17 and 19—21 ductus venosus PI for veins was greater in diabetic than control fetuses. Placental mRNA levels of UCP2 and GLUT3 were increased and EGFR, PDGFRB, IGFBP6, P27KIP1, COX2, HPGD, and EGLN3 were decreased in the hyperglycemic group.

**Conclusion:** Maternal hyperglycemia leads to increased placental growth likely caused by increased energy supply. At near term the gene expression profiles of the diabetic placentas show metabolic, growth, and immunologic alterations.

We hypothesize that placental hypoxia, increased immunologic responses, and edema lead to increased thrombosis formation in the hyperglycemic placentas which in turn lead to increased impedance in the placental arterial circulation.

**ABSTRACT 91**

Poster position PoGy 19

**Hormonal contraception and hemorrhagic stroke: A National follow-up study 2001–2010**

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**Background:** Several new types of hormonal contraception have emerged since the latest studies on the influence of such products on the risk of hemorrhagic stroke were conducted. We aimed to provide an update including newer types of hormonal contraception.

**and methods.** A historical registry based cohort of non-pregnant Danish women 15—49 years old, free of previous cardiovascular disease or cancer, were followed from January 2001 through December 2010. Exposure data, clinical end points and potential confounders were retrieved from four National Registries and analyzed with Poisson regression.

**Results:** After exclusions 1,626,158 women contributed with 9,429,128 observation years, of these 3,532,742 years (37.5%) of current use of some kind of hormonal contraception. During the 11-year follow-up period 1,444 first ever hemorrhagic strokes were observed, 884 subarachnoid hemorrhages (SAH) and 560 intracerebral hemorrhages (ICH). With non-users as reference, current use of combined oral contraceptives with 30–40 µg ethinylestradiol conferred relative risks (RR) of SAH of 1.3 (95% CI 1.1–1.6) for ICH 1.2 (1.0–1.5). The corresponding results for 20 µg pills were 1.3 (0.9–1.7) and 1.0 (0.7–1.4), respectively. Progestogen only contraception did not confer any significantly increased risk, and the number of observations for patches and vaginal ring were too low to provide reliable estimates.

**Interpretation:** Combined pills with 30–40 µg estrogen increase the risk of SAH 25–29% and of ICH less, if at all. Progestogen only contraception does not confer an increased risk of hemorrhagic stroke.
How do we deal with, and inform about genetic ultrasound markers in Sweden?

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New and more sensitive ultrasound examinations as fetal diagnostic methods are being introduced. Diagnosis can be made more accurate and more abnormalities detected. In the same time, more and smaller abnormalities can be determined, which may not be linked to a certain diagnosis. An genetic ultrasound marker is an organic change detected on ultrasound, often spontaneous transient and of itself without pathological significance, but may be more common in fetuses with congenital abnormalities, especially chromosomal abnormality. Genetic ultrasound markers can be used as a risk assessment for chromosomal abnormalities by routine ultrasound but the correlation between soft markers and chromosomal aberrations differ between markers and the sensitivity, and significance is often unsure, which leads to major challenges in how to respond to the findings, especially when the prospective parents should be informed. A questionnaire was sent out to 50 women’s clinics and to private clinics which offer obstetrical ultrasound in Sweden during the spring 2011. The questionnaire was designed to investigate how the included clinics are handling information and findings of genetic soft markers. The results show that only 20% of the clinics give information about genetic ultrasound markers to the expecting parents prior to the investigation. In addition, there are differences in when and how to inform about possible findings. Thus, there is a large variation among Swedish women’s clinics in the handling of the ultrasound markers and in particular in the information provided to prospective parents prior to and following the ultrasound examination.

Obese pregnant women's experience of their encounter with health professionals. Motivational interviewing as a tool to help health professionals communicate with obese pregnant women

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Obesity is a significant cause of physical and mental health problems around the world. Today more than 30% of all pregnant women are obese. This increases the risk of poor pre-, peri- and postnatal outcomes. According to the literature all efforts to prevent and to treat the condition have so far been of limited success. It is increasingly acknowledged that one reason for this is the great complexity of the problem which is generated and perpetuated by a wide range of individual, cultural and social factors. Recent research has highlighted many concerns raised by overweight individuals regarding medical and public health approaches to obesity. Overweight people often face stigmatisation and discrimination; they may lack confidence and self-esteem. Furthermore, research has shown that whilst people who are overweight repeatedly turn to diets and exercise to address their weight, they find it extremely difficult meeting health professionals with whom they cannot have an honest conversation about their overweight. This may be caused by emotional problems. The aim of this project is to explore the lived experience of obese pregnant women as well as how motivational interviewing can help health professionals understand and communicate at a higher level when working with obese pregnant women. The research aims to generate knowledge about obese pregnant women’s experience and sense of being stigmatised before, under and after pregnancy. Furthermore it will generate knowledge about how motivational interviewing can help health professionals meet and communicate with these obese pregnant women in the daily clinic.

Objective: Participants will explore the use of motivational interviewing to promote communication with obese pregnant women.
**ABSTRACT 94**
Withdrawn

**ABSTRACT 95**
Poster position PoOb 40

Epidural and oxytocin augmentation as risk factors for operative deliveries for low-risk women in a large obstetric department

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**Background:** Epidural and oxytocin augmentation are commonly and increasingly used in labor, often in combination. This study aimed to investigate the rate of operative deliveries for laboring women considered to be low-risk at admission to hospital who received epidural and/or oxytocin augmentation. Methods. All 3709 women without risk factors at admittance in labor to the Department of Obstetrics at Bærum Hospital, Norway from May 2nd 2004 to September 30th were included. Main outcomes were operative deliveries by vacuum/forceps or cesarean for women who had epidural but no oxytocin augmentation, oxytocin augmentation but no epidural, epidural and oxytocin augmentation combined and neither epidural nor oxytocin augmentation. The results were adjusted for smoking habits, maternal age and birth weight. Results. Epidural only was received by 264 women, 416 women had oxytocin augmentation only and 1041 women had epidural and oxytocin augmentation combined. Women who had neither epidural nor oxytocin augmentation had a cesarean rate of 0.9 % and an operative vaginal delivery rate of 1.7 %. Compared to women with neither epidural nor oxytocin augmentation, women with epidural only had significantly increased risk for delivery by cesarean (OR 3.7; 95 % CI 1.6–8.7) and by vacuum/forceps (OR 3.4, 95 % CI 1.8–6.7). Women who had oxytocin only had OR 2.7 (95 % CI 1.2–6.3) for cesarean and OR 17.6 (95 % CI 11.4–27.2) for operative vaginal delivery, both significantly increased. Epidural and oxytocin augmentation combined increased the risk for operative deliveries further with OR 12.3 (95 % CI 7.2–21.0) for cesarean and OR 21.0 (95 % CI 14.2–31.1) for delivery by vacuum/forceps. Conclusion. Low-risk women who had epidural but no oxytocin augmentation had a 4 fold increased risk for cesarean and a 3 fold increased risk for operative vaginal delivery compared to low-risk women without epidural. Oxytocin augmentation alone or in combination with epidural increased the risk for cesarean 3–12 fold and for operative vaginal delivery 18–21 fold respectively, compared to low-risk women with neither oxytocin augmentation nor epidural. From this study we cannot conclude whether epidural or oxytocin augmentation are risk factors for operative delivery themselves or merely confounding variables.

**ABSTRACT 96**
Poster position PoGy 18


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**Background:** The influence of hormonal contraception on the risk of arterial complications is yet un-clarified. The purpose of this study was to assess risk of myocardial infarction associated with hormonal contraception with focus on chemical substances, dosages, and routes of administration.

**Methods:** A Danish National cohort study based on data from four National Registries followed women 15–49 years old during 15 years from 1995 till 2009. Pharmacy records captured exposure to hormonal contraceptives, and hospital and death registries recorded incident myocardial infarctions. Registries additionally provided information on potential confounders. Poisson regression analyses included oral contraceptives exposure as time-dependent covariates and provided multiple adjusted incidence rate ratios with 95% confidence intervals (CI).
Results: Among 1,626,158 women included in 14,251,063 person years there were 1,725 first ever myocardial infarctions of which 186 (10.8%) were recorded in the death registry.

Compared to non-users, and after adjustment for age, use of medication for predisposing disease, education and calendar year, use of combined oral contraceptives was associated with a significantly increased rate ratio of myocardial infarction of 1.91 (95% CI 1.70–2.14).

Among users of oral contraceptives with 20 µg, 30–40 µg and 50 µg ethinylestradiol the rate ratio of myocardial infarction was compared to non-users 1.40 (95% CI 1.07–1.81), 1.88 (95% CI 1.66–2.13) and 3.73 (95% CI 2.78–5.00, respectively.

Compared to non-use oral contraceptives with 30–40 µg ethinylestradiol were associated with the following rate ratios for various progestin types: Norethisterone 2.28 (95% CI 1.34–3.87), levonorgestrel 2.02 (95% CI 1.63–2.50), norgestimate 1.33 (95% CI 0.91–1.94), desogestrel 2.09 (95% CI 1.54–2.84), gestodene 1.94 (95% CI 1.62–2.33), and with drospirenone 1.65 (95% CI 1.03–2.63), respectively.

Oral contraceptives with 20 µg ethinylestradiol were compared to non-use associated with rate ratios in combination with desogestrel of 1.55 (95% CI 1.13–2.13) and of 1.20 (95% CI 0.77–1.85) in combination with gestodene.

Vaginal ring application with the active metabolite of desogestrel, i.e. etonogestrel was associated with non-significantly increased rate ratio of 2.08 (95% CI 0.67–6.48).

No increased risk was found with progestin only contraceptives.

No differential effects on risk of myocardial infarction with hormonal contraceptives were found with concomitant use of medication for predisposing disease or among different age groups.

Conclusion: Combined oral contraceptives confer an increased risk of myocardial infarction, which is reduced with decreasing dosage of ethinylestradiol, whereas the progestin type has less influence on the risk.

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**ABSTRACT 97**

Poster position PoGy 21

**Risk of stroke with postmenopausal hormone therapy. A National cohort study**

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**Background:** The Women Health Initiative double blinded randomized clinical studies on effects of postmenopausal hormone therapy, were stopped prematurely mainly due to stroke risk. The study included two oral therapies, estrogen alone or in continuous combination with progestin.

The purpose of the present study was to assess the risk of all stroke, ischemic and haemorrhagic, with hormone therapy, with focus on effects of regimen and route of administration.

**Methods:** In a national historical cohort from 1995-2010 all Danish women free of previous cardiovascular disease or cancer aged 51–70 were included by linkage of five National Registries. Information on hormone therapy exposure was captured from the National Prescription Registry and stroke was available from the National Patient Registry or the Cause of Death Registry. Additionally registries provided information on potential confounders, i.e. age, education, medication against arrhythmia, hypertension, diuretics, diabetes, high cholesterol and removal of both ovaries.

Poisson regression models provided multiple adjusted rate ratios (RR) with time-varying covariates.

**Results:** Of 1,063,131 included women 19,500 suffered stroke, 78% ischemic, 12% hemorrhagic and 10% subarachnoid haemorrhage. At some point during the study period 36% used hormone therapy. Current use of any hormones conferred a relative risk of stroke of 1.16(95% 1.12–1.22).
There was increased risk of all stroke with oral continuous and cyclic combined estrogen progestin therapy of 1.29 (1.21–1.37) and 1.11 (1.04–1.20), respectively compared to never users.

There was increased risk of all stroke with oral estrogen alone therapy of 1.18(1.10–1.26).

The elevated risk of all stroke associated with hormone therapy was based on increased risk of ischemic stroke, not hemorrhagic stroke.

Dermal application of unopposed estrogen or combined progestin estrogen was not associated with risk of all stroke, ischemic or hemorrhagic.

Vaginal application was associated with significantly decreased risk of all stroke: RR 0.64 (0.59–0.70), both ischemic and hemorrhagic.

**Conclusion:** In a large study in a national setting we found increased risk estimates associated with oral continuous combined regimens and estrogen alone hormone therapies comparable to findings from the randomised Women’s Health Initiative. Furthermore we found no risk associated dermal application and reduced risk associated with vaginal application.

**ABSTRACT 98**

**Poster position PoGy 33**

**Sexual function of partners to women with pelvic floor dysfunction**

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**Objective:** To assess if partners to women with pelvic floor dysfunction have impaired sexual function, compared with age matched controls. Hypothesis: prevalence of erectile dysfunction in these men is higher than in the general population.

**Design and Method:** Setting is a tertiary referral hospital in Trondheim, Norway. The outcomes reported are part of a prospective study, examining the effect of pelvic floor dysfunction and related surgery on sexuality of the couple and body image of women. We included women scheduled for surgery for urinary incontinence and vaginal prolapse and their potential partner. The women were sent 2 sets of self-administered questionnaires.

1. Erectile dysfunction (ED) was defined, if men confirmed to be never or only sometimes being able to maintain an erection sufficient to perform intercourse.

2. Men’s sexual function was assessed with the Brief Male Sexual Function Inventory, examining 4 domains, overall satisfaction and a total score. Lower scores represent worse sexual function. These scores were compared with an age matched sample of random Norwegian men (Mykletun A et al, 2005: BJU international; 97,316–23). Means were compared with student t-test.

3. For exploratory analysis, additional questions were added.

**Results:** Of 300 posted questionnaires, 111(32%) women were recruited, 78% of those had a partner of which 51 (58%) also returned completed questionnaires.

1. An overall prevalence of 16% of ED was found in the study population. This is consistent with 17% prevalence of ED for example in Denmark (Christensen B et al, 2011: Arch Sex Behav;40:121–32

2. The age stratified scores for the domains of male sexual function were not significantly lower in the sample, compared to a normative, male, Norwegian population, except for one domaine in a single age group consisting of only 5 partners.

3. Additional findings (no significant difference for planned incontinence or descens surgery):

   Garulitas was reported by 29% of partners, about half of those were bothered. A wide vagina was recognized and a bother to 26 % of partners. "Something coming down " was felt by 14% of partners during intercourse, most of whom were not bothered. Coital incontinence was described by 12% of the partners and all of them were bothered by that. Twelve percent of partners felt that the vagina was dry during intercourse, while 20% were bothered by that.

   Only partners of women scheduled for descens surgery (33%) noticed their partners having pain during intercourse.

**Conclusion:** This sample of partners to women scheduled for surgery for pelvic floor dysfunction did not have impaired sexual function or erectile
dysfunction compared to an average population of the same age. One third of partners to women scheduled for descens surgery reported their partners to have pain during intercourse. Considerable fewer men than women noticed coital incontinence (female data not published yet).

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Disrupted pregnancies? How doctors, sonographers and pregnant couples negotiate high risk for Down’s syndrome - a qualitative study

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Background: In Denmark, first-trimester screening for Down’s syndrome is widely perceived as a routine pregnancy examination. For app. 5% of all pregnant couples, this routine takes a disruptive or unexpected turn when screening results show ‘high-risk’. They are subsequently offered invasive diagnostic testing (CVS) which involves a miscarriage risk of 0.5–1%. The majority decides to take the CVS and for 90–95% of the couples, the CVS will show normal chromosomes (a false positive screening result).

Research shows that pregnant women are often not knowledgeable about the potential consequences of a high-risk screening result; the multi-faceted information and the complex choices they may face. However, we lack knowledge of how the high-risk pregnant couples experience and deal with this disruption. In order to fully understand this, we also need to include and investigate the daily practises of the doctors and the sonographers with whom the high-risk couples interact. The area of interest calls for an exploratory, qualitative approach.

Objective: A qualitative, anthropological investigation of how professionals and couples communicate, interact and make decisions following a high-risk screening result. Or, framing it in anthropological terms: How couples, doctors and sonographers negotiate the high-risk result?

Method & Materials: An anthropological research strategy is used. Materials include 4 months of anthropological fieldwork at an obstetric ultrasound clinic:

- Observing first trimester ultrasound examinations
- Observing high-risk couples in their subsequent diagnostic testing
- Participating in everyday life at the ultrasound clinic
- Materials also include semi-structured, in-dept interviews with high-risk pregnant couples, with doctors and with sonographers.

Preliminary results: Being categorized as high-risk calls into question the expected normal pregnancy and the imagined future parenthood. It generates anxiety, uncertainty and sadness. Doctors and sonographers work to frame the high-risk category and the CVS as a serious and uncertain situation, but also one of hope. Through their interaction they communicate and negotiate, tone down and elaborate on information in order to make the situation manageable for the couples. Couples use medical information and personal experience to negotiate and make sense of a process characterised by waiting and hoping.

Discussion: CVS results will show that 90–95% of the high-risk couples carry a foetus with normal chromosomes. How do these couples frame the disruption caused by the high risk category? Are they able to return to a ‘normal’ pregnancy or does the disruption cause subsequent worry? In the presentation, we will reflect on this important issue. We will discuss how the quality of the communication between professionals and high-risk couples may influence the couples’ abilities to negotiate the situation in a meaningful way.

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The associations between androgens, cervical length and gestational age in PCOS pregnancies

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Method & Materials: An anthropological research strategy is used. Materials include 4 months of anthropological fieldwork at an obstetric ultrasound clinic:

- Observing first trimester ultrasound examinations
- Observing high-risk couples in their subsequent diagnostic testing
- Participating in everyday life at the ultrasound clinic
- Materials also include semi-structured, in-dept interviews with high-risk pregnant couples, with doctors and with sonographers.

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Discussion: CVS results will show that 90–95% of the high-risk couples carry a foetus with normal chromosomes. How do these couples frame the disruption caused by the high risk category? Are they able to return to a ‘normal’ pregnancy or does the disruption cause subsequent worry? In the presentation, we will reflect on this important issue. We will discuss how the quality of the communication between professionals and high-risk couples may influence the couples’ abilities to negotiate the situation in a meaningful way.
Background: The prevalence of late miscarriage and preterm delivery is increased in PCOS women. Androgens have been implicated in cervix ripening, and therefore are possibly important in preterm delivery. In the present study we aimed to investigate 1) the impact of metformin on cervical length and 2) the correlation between androgen levels in pregnancy, cervical length and gestational age.

Methods: In all, 313 women with PCOS (in two RTCs) were randomized to metformin or placebo from first trimester of pregnancy to delivery. Cervix length was measured by vaginal ultrasound and DHEAS, androstenedione, testosterone and free testosterone index (FTI) were analysed at gestational week 19 and 32.

Results: There was no difference in cervical length between the metformin and placebo group at gestational week 19 and 32. At week 19, there were no correlations between cervical length and androgens. At week 32 cervical length correlated negatively to androstenedione ($p=0.05$) and DHEAS ($p<0.001$) in pregnancies with girls, but not with boys. Both cervical length ($p<0.001$), androstenedione ($p<0.03$), testosterone ($p<0.01$) and FTI ($p<0.01$) correlated negatively to gestational age, when adjusted for randomization, age, BMI, smoking, parity and cervical conisation. In analysis by gender, the negative correlations remained only in pregnancies with girls.

Conclusions: In the third trimester of PCOS pregnancies carrying girls, elevated androgen levels are associated with a shorter cervical length and gestational age.

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Longitudinal study of the uterine body and cavity with 3D-ultrasonography in the puerperium

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Objectives: To measure the volume of the uterus and the uterine cavity with three-dimensional (3D) ultrasound throughout the puerperium after uncomplicated deliveries.
Methods: An overall summary of vulva operations performed in Denmark in 1996–2009, and a case series from Kolding Hospital, Denmark (2011).

Results: In Denmark there has been an increase in vulva resections. In 1996, a total of 87 resections were performed, increasing to 273 in 2009.

Case series of 3 women:
1: At her sexual debut a 35 year old woman experienced mechanical problems because “something got stuck”. She had never had problems before, and thought her external genitalia were normal. A gynecological examination revealed that her left labium minus was hypertrophic, measuring 12 cm from the hymen. The right was normal. Labia resection was successfully performed.
2: A 15 year old girl was referred to the hospital because she wanted labia reduction. Her labia minora were found normal. The consultation revealed that the main problems were irritation and itching at night. She had dermatitis. Relevant treatment was initiated, and no surgery was performed.
3: A 45 year old woman wanted labia reduction because of irritation in introitus. Her labia were of normal size, but the skin and mucosa were dry. She was treated with hormone substitution, and the symptoms disappeared.

Conclusion: There is an increasing demand for vulva resection in Denmark. This may be due to an increased acceptance and knowledge of cosmetic surgery overall. This case series illustrates that not all referred women should have surgery. The referral diagnosis in all 3 cases was vulva hypertrophia, but only 1 woman had hypertrophy requiring surgery. The other 2 women had skin problems. For gynaecologists it can be a medical dilemma to decide if or not to offer surgery. We need to be restrictive when deciding to offer surgery and a gynecological examination should always be performed. A study is needed to describe the normal variation.

Predictive value of serum progesterone for spontaneous resolution of pregnancies of unknown location (PUL)

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Background: The incidence of pregnancies of unknown location (PUL) is about 10 % among women in early pregnancy, and 44–69% of PULs represent spontaneously resolved pregnancies. The aim of this study was to determine whether serum progesterone is a clinically useful marker for spontaneous resolution of PUL.

Methods: Prospective observational study. Serum progesterone was determined at the first visit and after 2 days. All patients were monitored with clinical assessment and by serum human chorionic gonadotropin (hCG) measurements until a final diagnosis of spontaneously resolved PUL, viable or nonviable intrauterine pregnancy or ectopic pregnancy, had been reached.

Results: 105 women classified with PUL were included. The final pregnancy outcomes were: 52 spontaneously resolved PUL (49.5%), 37 viable intrauterine pregnancies (35.2%), 8 non viable intrauterine pregnancies (7.6%), 7 ectopic pregnancies (6.7%) and one molar pregnancy (1.0%). Using s-progesterone with a cut-off <20 nmol/l to predict spontaneously resolved pregnancy resulted in a sensitivity, specificity, PPV, and NPV of 0.96, 0.94, 0.94, and 0.96 respectively. The area under the ROC curve (AUC) of progesterone for prediction of spontaneously resolved pregnancy among all PUL was 0.97.

Conclusion: S-progesterone <20 nmol/l seems to be a reliable predictor for uneventful expectant management of PUL.
The diagnostic value of the presence of pelvic fluid in the cul-de-sac in women with pregnancy of unknown location

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Background: Pregnancy of unknown localization (PUL) is defined by a positive pregnancy test without reliable signs of intra- or extra uterine pregnancy at initial transvaginal sonography (TVS). The incidence of PUL is about 10% of early pregnancy. The free fluid in the cul-de-sac has been observed in 63–70% of patients with ectopic pregnancy (EP). However, pelvic fluid can be observed in other conditions that mimic EP, such as ruptured ovariencyst, pelvic inflammatory disease and retrograde passage of blood with a bleeding intrauterine pregnancy. The aim of this study was to evaluate the diagnostic value of the presence of pelvic fluid in the cul-de-sac concerning location of the pregnancy in women with PUL.

Methods: Prospective observational study. All patients referred to the Department of Obstetrics and Gynecology, Regional Hospital of Randers in a period of 14 months, due to early pregnancy complications, underwent clinical examination and TVS, at first visit. Women, who classified as PUL, were included in the study (n=105). The patient’s age, gestational age, bleeding, abdominal pain, endometrial thickness, presence of free fluid in the cul-de-sac and adnexial mass, were registered. All patients were monitored with clinical assessment and by serum human chorionic gonadotropin measurements until a final diagnosis of spontaneously resolved PUL, viable or nonviable intrauterine pregnancy or ectopic pregnancy, had been reached.

Results: By using TVS, the presence of pelvic fluid in the cul-de-sac has been found in 15,4% in spontaneously resolved PUL (n=52), 18,9% in viable intrauterine pregnancies (n=37), 12,5% in non viable intrauterine pregnancies (n=8), and 28,5% in ectopic pregnancies (n=7). There was no significant difference in the presence of pelvic fluid in these patients with PUL (p= 0.81).

Conclusion: These results show that the presence of pelvic free fluid in de cul-de-sac is a nonspecific finding on the TVS in patients with PUL, and has not any diagnostic value for predicting the location of the pregnancy.

Post operative (6–12 months) results of incontinence surgery from one institution, using single incision Ajust technique

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Background: To assess the 6- 12 months follow-up results of urinary incontinence surgery performed by using Ajust at Gynaecological department of Akershus University Hospital.

Materials and methods: Two hundred and one women were included in this quality assurance study. Pre operative written informed consent was obtained from all participants. Women were operated for urinary incontinence using single incision sling procedure of type Ajust (from Bard) from January 2009 to May 2011. All participants completed a pre and post operative Norwegian urogynecological group (NUGG) symptoms questionnaire and underwent pre and post operative urodynamic examination including pad test, uroflowmetry and residual urine measurements. Women were operated by eleven different surgeons. All surgeons underwent systematic learning of procedure by assisting five operations and than doing five procedures under supervision. All women were operated at day care centre of surgical department. Participants were called in six to twelve months post operatively for follow up by independent urogynaecological nurse (urotherapeut). Data for complications and operation time duration were collected from electronic journals of operated women.

Results: 201 women with mean age 52.1 years (range 32–82), mean BMI 26.6 (range19.1 - 41.4) participated in study. Pre operative leakage on pad test was mean 76.8 gram (SD ±55.6), mean residual urine 12 gram (SD± 19.8), and maximal flow rate mean 26ml/sec (SD±9.5). Post operatively 125 women (62%) had 0 gram leakage on pad test, 16 women (8%) < 5 gram and 22 women (11%) had leakage > 5 gram. Post operative pad test data was missing in 38(19%) cases. Post operative residual urine measurements were 16 ml (SD ± 26) and maximal flow rate mean 20.5ml/sec (SD ±7.6). Mean operation time for the procedure was 12.45min (range 5–33). In 191 (95%) women no
complication occurred operatively, post operatively and during follow up time period. In 10 (4.9%) women complications were as follows, erosion 2(1%), urethral trauma 1, pos operative pain 2 (1%), marked deterioration of urge incontinence 1, repeated lower urinary tract infections1, dyparunia 1(Hisparunia), one women needed post operative adjustment of sling and one was treated for wound infection. One hundred and forty nine (77%) women were very satisfied with results, 29 women (15%) were satisfied to some degree, 6 (3.1%) women were neither satisfied nor unsatisfied while three women (1.5%) were unsatisfied to some degree and three were very unsatisfied.

Conclusions: Results of present study showed that incontinence surgery, using Ajust sling was time saving, effective and without considerable complications. Studies investigating the long term results of this procedure are needed.

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Inhibition of c-abl activity triggers apoptosis in cervical cancer cells exposed to low mitoxantrone concentration

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Chemotherapy and radiotherapy have significantly reduced the risk of death of patients having locally advanced cervical cancer. However in most advanced stages, less than 20 % of patients survive beyond 5 years. Thus, better treatments are needed. Imatinib is a drug developed to inhibit c-abl, a non-receptor tyrosine kinase playing a role in DNA damage response, cell division and apoptotic cell death. We studied the effect of a variety of chemotherapeutic drugs in combination with imatinib on cultured cervical cancer cells.

The combination of mitoxantrone and imatinib showed a marked synergistic effect on cervical cancer cells compared to all other tested chemotherapeutic agents. In short term cytotoxicity assays, 90 % of cervical cancer cells survived when only mitoxantrone was used compared to only 10 % of survived cells with the combination of mitoxantrone and imatinib. Imatinib itself did not cause any cell death. In clonogenic experiments, concentrations as low as 1 nM of mitoxantrone and 3 µM of imatinib caused a total cell death. Cervical cancer cell lines, carrying the p53 reporter plasmid, showed significant increase in p53 reporter activity when treated with the combination therapy. However, the cytotoxicity of mitoxantrone and imatinib was not p53 dependent, since there was no difference in cell survival between the cell lines with truncated dominant negative and wild type p53. The mechanism behind the co-operation with mitoxantrone and imatinib was further studied. Mitoxantrone is a topoisomerase II inhibitor. It is known to cause DNA damage and to interfere with DNA repair. It also inhibits both DNA replication and RNA synthesis and leads to apoptosis. The combination therapy with imatinib and mitoxantrone increased caspase activity suggesting enhanced apoptosis. Flow cytometric analyses revealed that mitoxantrone treated cells were arrested at G1/S phase, while adding imatinib released the G1/S check point allowing the cells with damaged DNA to enter S/G2 phase and subsequent lethality. The gene expression microarray analyses of cervical cancer cells, treated with mitoxantrone and imatinib, revealed profound and numerous changes in the regulation of genes involved in various cellular activities. Doxorubicin was used as reference for its topoisomerase II inhibition activity. For example, cellular functions such as response to DNA damage stimulus, DNA repair, cell cycle, DNA replication, and RNA splicing, were altered in all the treatments. Although DNA repair was a highly activated process in all the cytostatic treatments (p < 0.0002), differences in gene expression were found. Nucleotide excision repair (NER) was more activated in mitoxantrone and imatinib treated cells, while double strand break repair (DSB) was enhanced in doxorubicin treated cells. In conclusion, c-abl inhibition enhances specifically the cytotoxic effect of mitoxantrone in cervical cancer cells inhibiting the DNA repair and cell cycle check point functions.
Second trimester prenatal diagnosis of bladder exstrophy in two male fetuses

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Background: Bladder exstrophy is a rare condition (1:30,000 births) that should be suspected when the bladder cannot be visualized by sonography.

Results: Two cases were referred at 19+3 and 20+3 weeks due to non-visualization of the fetal bladders at the routine fetal ultrasound examination.

Non-visualization of the fetal bladders was verified. In addition, the insertion of the umbilical cords was low with a short distance between the penises and the insertion of the umbilical cords. The penises were small and epispadias were suspected. In one of the cases a wide diastasis of the symphysis was detected.

The kidneys were normal bilaterally and the amount of amniotic fluid was normal. Amniocentesis showed normal karyotypes-46XY. The findings were consistent with bladder exstrophy. Even though 3D ultrasound and MRI were performed in one of the cases it did not add any new information but supported the diagnosis.

After counselling the parents chose to continue their pregnancies and the growth and development of the fetuses were normal except for the bladder exstrophies.

Caesarean sections were performed at 36+5 and 38+2 weeks and the birth weights were 2910 and 3100 grams respectively. Surgery of the malformations began one to three days after birth.

Conclusion: The suspicion of fetal bladder exstrophy in these cases was raised due to non-visualization of the fetal bladder. Such a finding should alert the examiner to further investigate this potential diagnosis and to search for additional findings also in cases with normal kidneys and normal amount of amniotic fluid. These two cases highlight the importance of a thorough routine fetal examination.

Pregnancies after endometrial ablation. A National follow-up study

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Background: When the endometrium is removed in order to alleviate bleeding disturbances women are in general warned not to become pregnant, as pregnancy outcome is uncertain. The aim of the present study was to describe pregnancies after endometrial ablation.

Methods: All endometrial ablations coded in the National Registry of Patients during the period 1996-2007 were extracted. Women with a subsequent coding of a pregnancy were identified. Chart revision was performed to confirm the initial surgical removal of the endometrium. Pregnancy outcome were missed abortions, early or late (after week 12) spontaneous abortions, induced abortions, ectopic pregnancies or births.

Results: In Denmark during 1996 to 2007, 14,304 endometrial ablations were recorded. In total 127 were coded with a subsequent pregnancy diagnosis. Chart review confirmed 58 endometrial ablations prior to pregnancy, corresponding an incidence of 4/1000 pregnancies following endometrial ablation. The outcomes of the 58 pregnancies were 10 missed abortion, five early spontaneous abortions, one late spontaneous abortion, 26 induced abortions, three ectopic pregnancies and 12 deliveries.

Conclusion: Pregnancy following endometrial ablation is quite rare, however it occurs in one per 250, and full term pregnancies have been confirmed. This study stresses the need of effective contraceptive methods after endometrial ablation.
Obstetric care in primary health centres in rural Burkina Faso from a health worker perspective

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The Burkina Faso site of the PROMISE-EBF trial recorded very high rates of stillbirths and early neonatal deaths with no significant difference between home deliveries and facility-based deliveries. The aim of the present study was to identify obstacles to quality obstetrical and neonatal care in these primary health centres. The present study was conducted in 2011 in the Banfora region in the South West of Burkina Faso. The qualitative part used in-depth interviews and participatory observations which were combined with a questionnaire-based survey of 10 health centres providing obstetric care. In-depth interviews were conducted with 12 health workers providing obstetrical care in primary health centres and 3 medical doctors in the local health administration. Participatory observations of obstetric care, both day and night, were carried out in 4 primary health maternity units covering a total period of 3 months. The facility infrastructure was assessed in a questionnaire-based survey. A number of obstacles were identified in the health workers' ability to ensure quality obstetric care at the primary level, the first was lack of essential infrastructure such as access to water, source of light at night and basic equipment such as functional scissors, ambu-bags for ventilating the neonates and adapted sterilisation equipment. Second, in the case of an obstetric complication, referral was difficult mainly due to lack of transport, especially in rural areas. Third, lack of basic and continuous training, as well as an overwhelming workload affected health workers' motivation and thereby their performance. Health personnel's working conditions needs to be addressed in order to ensure quality obstetric care, a cornerstone to reduce both maternal and neonatal mortality in Sub-Saharan Africa and other resource-poor settings.

The Impact of Medical Termination of Pregnancy during First or Second Trimester on the Subsequent Pregnancy

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Background: A history of termination of pregnancy (TOP) especially multiple TOPs have been related to an increased risk of preterm delivery. However these studies do not differ the methods of TOP (medical or surgical) or the impact of increasing gestational age. Therefore this study compared the effect of one medical TOP (MTOP) during first and second trimester on the subsequent delivery.

Methods: The study included 3,849 primigravid women who underwent MTOP for non-foetal indication during 2000 to 2009 and whose subsequent pregnancy ended up in a delivery. The MTOPs were during the first and second trimester in 3,432 (89.2%) and 417 (10.8%) women, respectively. Odds ratios (ORs) for preterm delivery, low birth weight (LBW) and surgical evacuation in the subsequent pregnancy were evaluated. The ORs were adjusted for age, marital status, gender of the child, socioeconomic status, residence, surgical evacuation at MTOP, smoking or hypertension during pregnancy.

Results: When compared to first trimester MTOP second trimester MTOP did not increase the risk of preterm delivery (Adjusted OR for delivery before 37 weeks of gestation: 0.93; 95%CI 0.46 to 1.88, p=0.84) or very preterm delivery (Adj. OR for delivery before 28 weeks of gestation 1.41; 95%CI 0.09 to 23.09, p=0.81). Furthermore, there was no significant difference in the risk of LBW-infant (Adj. OR for birth weight less than 2500g: 0.92; 95%CI 0.49 to 1.71, p=0.79). One MTOP with surgical evacuation of the placenta did not increase the risk of surgical evacuation in the subsequent pregnancy (Adj. OR 1.2; 95%CI 0.56 to 2.49) p=0.66.
Conclusions: One MTOP during first or second trimester does not seem to increase the risks of preterm birth or LBW in the subsequent pregnancy.

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Residual Disease and Bleeding Complication Rates after LEEP for Treatment of Cervical Intraepithelial Dysplasia Depending on the Educational Level of the Surgeon

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**Background and objective:** Loop electrosurgical excision procedure (LEEP) is a basic procedure in the conisation performed on patients with high grade intraepithelial lesions (HSILs). The success of the procedure is like all other kinds of surgery linked to a learning curve for the surgeon. The aim of the study is to investigate whether residual disease and bleeding complication rates after LEEP depend on the educational level of the surgeon.

**Method:** This is a retrospective study of 191 women who in a two year period underwent LEEP of the uterine cervix. Preoperative grade of dysplasia, educational level of the surgeon (trainee or specialist), residual disease defined as cervical intraepithelial dysplasia at the lesion margin of the conisation specimens and postoperative contacts to hospital in a period of 4 weeks after surgery due to bleeding complication are registered.

Chi square test is used for comparison of the two groups.

**Results:** All of the LEEPs are performed by either a trainee (n=82, 43%) or a specialist (n=109, 57%). HSILs or carcinoma in situ is preoperatively found in 58 patients (71%) in the trainee group and in 84 patients (77%) in the specialist group.

Residual disease after LEEP is found in 20 (24.3%) of the patients in the trainee group versus 26 (23.8%) of the patients in the specialist group. There is no significant difference in residual disease rate between the two groups (p= 0.93).

14 (17%) of the patients in the trainee group have contact to the hospital in a period of 4 weeks after the surgery due to bleeding complication while this complication is observed in only 4 (3.7%) of the patients in the specialist group. The bleeding complication rate is significantly higher in the trainee group (p=0.002).

**Conclusion:** Our study shows that trainees and specialists are equally effective in the treatment of cervical intraepithelial dysplasia. However, surgeons in training have a larger number of postoperative bleeding complications compared to experienced surgeons. Therefore, we recommend that there should be more focus on the hemostatic technique used as part of the procedure especially in training of inexperienced surgeons.

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Clinical audits to reduce cesarean section rates in a general hospital in Tehran, Iran. Ambitious or obtainable goal?

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**Objective:** To investigate whether the introduction of clinical audits in local committee of a general hospital in Tehran, Iran, influences cesarean section (CS) rates.

**Methods:** Clinical audits were chosen to evaluate the quality of obstetric care in primary CS cases during eight months in 2005. Individual case review was chosen as the audit method. Clinical judgments were set by reviewers for three common indications of primary CS. Audit team provided written feedback to responsible obstetrician when it was difficult to reach a consensus about CS indication. In addition, the hospital director offered financial incentives to practitioners who matched clinical criteria and achieved the lowest percentage of CSs and honored one such doctor publicly.

A retrospective study was performed. The number and the mode of deliveries before intervention (May-December 2004) and after the institution of clinical audits (May-December 2005) were tabulated in audited hospital and analyzed by Chi-square test. Additionally, CS rates were measured in three other general hospitals during the same time for comparisons.
Results: A total of 3494 deliveries were recorded during the study periods in 2004 and 2005 at the audited hospital. Subsequent to the audit, the overall CS rate decreased from 40% to 33% ($p < 0.001$) and the primary CS rate from 29% to 21% ($p < 0.001$) which accounted 27% reduction of the risk of primary CS. In 2006, CS rates reverted to 42%.

None of the other three general hospitals indicated a decline in CS rates in 2005.

Conclusion: Our findings show a preventive association between the clinical audits and CS rates in a general hospital. The implementation of a clinical audit process can be an effective way to track care pathways and reduce unnecessary CS deliveries.

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Withdrawn

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Perinatal mortality rates in non-Western migrants in Norway as compared to their country of birth

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Background: We compared the perinatal mortality rate (PMR) in offspring of Pakistani, Vietnamese, Somali, Sri Lankan, Filipino, Iraqi, Thai and Afghan women in Norway with the PMR in their country of birth. We also assessed the risk of perinatal death in offspring of these migrant groups as compared to Norwegian women.

Methods: We used data from the Medical Birth Registry and the Central Person Registry in Norway. A total of 1102967 births in Norway during 1986–2005 to women born in Norway (1062744), Pakistan (11351), Vietnam (6169), Somalia (5410), Sri Lanka (4933), Philippines (4662), Iraq (3829), Thailand (3204) and Afghanistan (665) were included. The PMRs in the country of birth were obtained from WHO reports for the years 1995, 2000 and 2004. The PMRs in Norway were calculated by mother’s country of birth, and the risk of perinatal death according to country of birth was estimated as odds ratios (OR) using Norwegian women as the reference.

Results: PMR for all the included migrant groups in Norway was lower than the PMR in their country of birth. The largest difference was seen for Afghan women (97 per 1000 births in Afghanistan versus 24 per 1000 births in Afghan women in Norway), followed by Iraqi and Somali women. As compared with Norwegian women, the adjusted OR of perinatal death was increased for all migrant groups living in Norway, except for Vietnamese women. The highest OR was estimated for Afghan (OR 3.84 CI: 2.33–6.32), Somali (OR 1.88 CI: 1.48–2.38) and Pakistani (OR 1.87 CI: 1.59–2.19) women. Adjustment was made for maternal age, plurality, parity and year of birth.

Conclusion: The difference between the PMRs for the migrant groups of study in Norway and the PMRs in their country of birth is likely to be explained by access to proper antenatal and obstetric care. The excessive risk of perinatal death in migrants as compared to Norwegian women encourages further research.

ABSTRACT 115
Poster position PoOb 70

Risk of pregnancy complications is associated with menstrual pattern in women with PCOS

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Objective: To test the hypothesis that the severity of menstrual disorders is related to pregnancy complications in women with polycystic ovary syndrome (PCOS).

Methods: Retrospective cohort study. Our study population consisted of 435 women with 1: PCOS diagnosed according to the Rotterdam criteria, 2: fertility treatment resulting in a live singleton delivery during the time period 1997–2010. Information regarding menstrual pattern, presence of polycystic ovaries and
androgens were extracted from the patient files, and data on pregnancy complications and obstetric and neonatal outcome was extracted from the Danish Medical Birth Register. The women were stratified according to their menstrual pattern into three groups: amenorrhoic (N=55), oligomenorrhoic (N=363) and regular cycles (N=17). A Fishers exact test compared categorical outcome between the 3 groups.

Results: The frequencies of pregnancy complications in the 3 groups were: Small-for-gestational-age (birth weight < -2.2% from the expected mean): 7.3%, 4.7% and 5.9% NS (p=0.53), Preeclampsia: 12.8%, 5.2% and 5.9 % NS (p=0.08), Preterm delivery (gestational age < 37 weeks): 18.2%, 7.4 % and 5.9% p=0.04. The composite endpoint (one or more of the three variables): 32.7%, 15.2% and 17.7% p=0.008. The risk of preterm delivery and the composite endpoint was significantly different in the three groups and highest in those with amenorrhea. There was no statistical significant difference between the groups regarding maternal age and parity.

Conclusion: In PCOS, women with amenorrhea have a higher risk of pregnancy complications as preeclampsia, preterm delivery or small-for-gestational-age infants compared to oligomenorrhoic or regular menstruating women with PCOS.

ABSTRACT 116
Poster position PoOb 78

Whole genome copy number variations in the umbilical cord blood of fetuses of severely preeclamptic women

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Objectives: Molecular karyotyping is a versatile method for detecting whole genome copy number variations (CNVs). In the present study, using array comparative genomic hybridisation (aCGH), we demonstrate several regions of losses and gains in fetuses of severely preeclamptic women compared to their healthy controls.

Methods: Pooled DNA extracted from umbilical cord blood of 19 fetuses of severely preeclamptic women was compared with pooled DNA from 19 healthy controls on 720K arrays (NimbleGen). Individual fetuses of preeclamptic mothers from this cohort were compared to a pool of normal controls on 135K arrays (NimbleGen). Results were confirmed by quantitative PCR. Regions of gains and losses were analysed using the genome browsers of University of California, Santa Cruz (UCSC) (http://www.genome.ucsc.edu/), the National Centre for Biotechnology Information (NCBI) (http://www.ncbi.nlm.nih.gov/) and Ensembl (EMBL, WTSI) (http://www.ensembl.org/index.html). The Database of Genomic Variants (DGV) (http://projects.tcag.ca/variation/) was used to identify structural variation identified in healthy control samples.

Results: Approximately 50 big regions of gains and losses were found in the genome of fetuses of preeclamptic women. The most interesting regions, in relation to genes with a putative role in the development of preeclampsia, were losses on chromosomes 1, 7, 15 and 19. Genes in these regions were CFHTR1, FKBP36, POTEB and GOLGA8E. Gains were found on chromosome 8, which included the genes BAI1 and PSCA.

Conclusion: Fetal genome copy number variations might have a role in the pathogenesis of preeclampsia.

ABSTRACT 117
Poster position PoOb 18

Advantages of the population-based approach to pregnancy dating demonstrated with results from 73,400 second-trimester ultrasound examinations

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Background: Ultrasound dating is an essential part of modern pregnancy care. Thus, it is imperative that the dating models are reliable. Traditional term prediction models are sample-based, and the small and selected study samples may cause systematic prediction biases. The population-based models are constructed from unselected populations and predict the remaining time of pregnancy.

We compared the estimated date of delivery (EDD) predictions from two sample-based models ('Snurra' and 'Terminhjulet') and from a population-based model ('eSnurra') on data from three Norwegian databases.

Methods: The study populations included 41 343 routine examinations in Trondheim, 9046 in Stavanger and 23 020 in the Oppland County. We included second-trimester ultrasound measurements of fetal biparietal diameter (BPD) and femur length (FL). The three prediction models were applied to the ultrasound measurements, and the resulting EDD predictions were compared with the actual time of the subsequent deliveries. The difference - the median bias - was calculated for each of the models for the BPD/FL-measurement values through the inclusion range and for the study population as a whole.

Results: In all three study populations, we found inherent weaknesses in the traditional models' EDD predictions, creating biases of the same size and direction. The size of the bias depended on the fetal size at the time of the examination, and in general, one model estimated the EDD too early and the other too late. The biases varied between -4 and +4 days and showed the same tendency of variation with fetal size both for the BPD- and the FL-based predictions. For the same BPD-value, the difference in EDD predicted by the two models was in the range of 3–4 days.

For the population-based model, the predictions were stable over the inclusion range and the median bias was largely within ±1 day, both for the BPD- and the FL-based predictions.

Conclusion: The evaluation of term prediction models in three different populations, comprising 73 400 routine examinations, demonstrated that the traditional, sample-based models produced systematically biased EDD predictions, while the population-based model did not. The biases, which have clinical implications, particularly for the management of post-term pregnancies and threatening preterm deliveries, seem inevitable with the sample-based models.

The choice of term prediction model directly influences the rate of pregnancies defined as being post-term, and hence, also the number of post-term inductions of labor, no matter which cut-off is chosen.

There is a need for an overall standardization of dating methods, including which parameters to measure, measurement charts, measurement techniques and education of sonographers, in order to maintain prediction quality and achieve comparable obstetric quality indicators.

ABSTRACT 118
Withdrawn

ABSTRACT 119
Poster position PoOb 36

Intravenous sulprostone infusion in the management of retained placenta – three-year university hospital experience

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Background: The rate of retained placenta is approximately 2.5%. Retained placenta causes postpartum hemorrhage and often leads to operative procedures such as manual extraction. We wanted to evaluate the efficacy of intravenous sulprostone infusion in the treatment of retained placenta.

Methods: This was a retrospective observational study in a university teaching hospital. A total of 126 consecutive women with retained placenta received intravenous sulprostone infusion as the initial treatment during a three year period (October 2007 - December 2011). Hospital records of these women were reviewed. The primary endpoints were expulsion of placenta and the total amount of blood loss.

Results: The placenta was successfully expelled in 50 (40%) of the patients, while manual removal was needed in 76 (60%) patients. Blood loss was significantly less in patients with successful placental expulsion compared to patients who had manual removal (582 ±61 ml vs. 1275 ± 83 ml, P<0.0001). Sulprostone infusion was not associated with adverse effects or postpartum morbidity.
Conclusions: Intravenous sulprostone infusion is safe and reduces both blood loss and the need for manual removal of placenta.

**ABSTRACT 120**

Poster position PoOb 13

**A population-based reference chart for fundal height measures**

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Objective: Detection of fetal growth restriction is a core component of antenatal care. Screening in Scandinavia is mainly based on fundal height measures but reference charts have unknown screening properties and some are obsolete. In this study, we aimed to develop population-based gestational specific percentile curves for fundal height measures.

Methods: We conducted a retrospective analysis of a computerized obstetric database from Sweden over a 5 year period, containing 42,018 ultrasound dated singletons and a total of 276,347 fundal height measures between gestational weeks 24 and 42. A non-linear regression of fundal height measurement on day of pregnancy was used to construct a reference chart for the median and other percentiles of fundal height measures.

Results: Reference curve for fundal height measures showed a linear continuation with uniform growth until term. This chart had a considerably higher median fundal height at each gestation compared to the currently used charts for fundal height measures in Norway and Denmark. Compared to the Swedish chart, a higher median was only observed at gestations > 34 weeks. Importantly, the reference chart also differed significantly from currently used charts at the high and low measures defining positive screening tests. E.g. in the Norwegian reference chart, a positive test for a large fundal height in late gestation includes the median measures of the population, while even fundal height measures < the 1st percentile still have negative screening tests in early gestations and would miss severe growth restrictions.

Conclusions: A new population-based Scandinavian reference curve for fundal height measures indicates that currently used screening tools for fetal growth restriction are obsolete for our population. The screening properties of fundal height measures based on the new reference curves need further evaluation.

Keywords: Antenatal Care and Diagnosis, Fetal Monitoring.

**ABSTRACT 121**

Poster position PoOb 27

**Low dosage misoprostol versus dinoprostone for induction of labor. Maternal and fetal benefits and harms**

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Objective: Off-label use of the prostaglandin E1 misoprostol for induction of labor has within the last years become the standard of choice. Internationally the off-label use has made dosage and intervals of application less uniform resulting in uncertainty regarding efficiency and safety. Danish labor wards often use a cautious regimen with 25 mcg misoprostol during the first day of induction.

On this background the aim of the present study was to evaluate the consequences of change from the prostaglandin E2 dinoprostone to misoprostol measured by induction-delivery time and safety assessed by fetal and maternal outcomes.

Setting: Induced births at the Department of Obstetrics and Gynecology, Hillerød Hospital, during two time periods: i.e. dinoprostone from 2003 to 2005 and misoprostol from 2008 to 2010.

Methods: A retrospective cohort of 635 women induced by dinoprostone and 633 women given misoprostol was sampled from chart review with information on induction method, outcome and potential confounders. Cox multiple regression analyses compared induction times and logistic multiple regressions the maternal and fetal outcomes.

Results: During the initial 24 hours of induction women administered dinoprostone was given a single (36%) or a double dose (64%) of three mg, whereas
administration of misoprostol in the vast majority (99%) was one dosage of 25 mcg. The second day of induction the pattern of misoprostol was changed as equally sized groups was given 25, 50 or 75mcg depending on progression. The dinoprostone regimen was the same as the first day.

In women induced by misoprostol 38.2% gave birth during the first 24 hours, compared to 56.9% when induced by dinoprostone. During the second day 40.0% and 29.7% gave birth, respectively.

The adjusted hazard ratio for delivery comparing misoprostol to dinoprostone was 0.82 (95% CI 0.73–0.93). Similar estimates were found when comparing subgroups according to different indications for induction. Maternal safety assessed by post partum hemorrhage and delivery method was equal in the groups, however perineal ruptures were more frequent when induced by misoprostol (OR 1.33, 95% CI 1.03–1.71). No uterine ruptures occurred.

In the misoprostol group there was a non significant lower odds ratio of meconium stained liquor (OR 0.85, 95% CI 0.63–1.15), five min Apgar score lower than seven (OR 0.39, 95% CI 0.13–1.18) and transfer to neonatal intensive care unit (OR 0.64, 95% CI 0.38–1.08) compared to women induced by dinoprostone.

**Conclusion:** Using a cautious dosage in regimens of induction with misoprostol seems inferior to traditional regimens of dinoprostone regarding induction-delivery times. Maternal and fetal safety is comparable between groups, however with a tendency of healthier neonates in the misoprostol group.

**ABSTRACT 122**

Poster position PoGy 20

**Oral contraception and risk of venous thromboembolism within the first year following birth**

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**Objective:** The use of combined oral contraceptives (COC) is associated with a well known risk of venous thromboembolism (VTE). Pregnancy stimulates biological activation of hemostasis and increases the risk of VTE development. A potential association between these risks recently made the WHO change its recommendation concerning time of initiation of oral contraceptives following pregnancy from three to six weeks.

The aim of this study was to examine a potential interaction between these risks of VTE within the first year following birth.

**Methods:** In a retrospective nationwide cohort, Danish women aged 15–49 through the period 1995–2009 were included. Women in one or more periods of pregnancy attributed 774,379 person years. The first year after birth was the study period. Women were excluded if prior VTE diagnosis, cardiovascular disease or gynaecological surgery ceasing fertility had occurred.

The VTE outcomes and information of potential confounders i.e. education, calendar year, maternal age, BMI and smoking were extracted from the National Registry of Patients.

Poisson regression with use of COC as time varying covariate provided multiple adjusted rate ratios (RR).

**Results:** The crude incidence rates 0–6, 7–13, 14–26, 27–39 and 40–52 weeks following birth were 3.5, 0.4, 0.2, 0.2 and 0.2 events of VTE per 1,000 person years, respectively. The crude incidence rates were furthermore divided between COC users and non users and were 4.5/3.5, 0.7/0.3, 0.5/0.1 and 0.4/0.1, respectively. The numbers needed to harm by COC use in each interval was 967, 2393, 3271, 2387 and 3973 person years per VTE.

Adjusted RR comparing COC users to non users as reference were 1.1 (95% CI 0.4–2.9), 1.6 (95% CI 0.7–3.8), 2.0 (95% CI 1.1–3.7), 3.2 (95% CI 1.7–6.1) and 2.3 (95% CI 1.2–4.7) in each interval respectively.

**Conclusion:** The initial 6 weeks following birth an increased incidence rate of VTE was observed. The risk associated with COC within the first 3 month after birth was not significantly increased, possibly due to few users of COC in this period.

Numbers needed to harm is lower immediate after birth due to increased risk in the first 6 weeks of the postnatal period supporting the recommendation from WHO.
**ABSTRACT 123**

**Poster position PoGy 59**

**Adenocarcinoma of the spleen and pancreas metastatic from the Fallopian tube as part of a live liver donor evaluation**

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**Background:** This is a case of a 48 year old woman who originally presented to the transplant department as a potential live liver donor for her brother-in-law who suffers from hepatitis C complicated by partial portal vein thrombosis, ascites, spontaneous bacterial peritonitis, and encephalopathy. As part of the preoperative workup, the patient received a CT scan which showed an incidental 4cm mass in the tail of the pancreas. She was ruled out as a potential liver donor based upon the finding of this mass.

**Methods:** She underwent a distal pancreatectomy and splenectomy with a final pathology consistent with a high grade adenocarcinoma with papillary features and psammomatous calcifications, possibly originating from a gynecologic malignancy. The tumor cells were positive for CK7, P53, and WT-1; CA125 was markedly elevated- all of which are commonly associated with gynecologic cancers. The patient had no gynecologic symptomatology. She underwent a total abdominal hysterectomy, bilateral salpingoophorectomy and staging in which the final pathology revealed a Grade 2 Papillary Serous Carcinoma of the Fallopian tube metastatic to the right common iliac lymph node.

**Results:** The patient was treated with postoperative “dose dense” Taxol chemotherapy in addition to Carboplatin. Given the lack of survival data and the risk of bleeding and thrombosis Avastin was not added as a therapy.

**Conclusions:** This a unique case of primary fallopian tube cancer, metastatic to the pancreas and spleen, found in an incidental workup as part of a live liver donor evaluation.

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**ABSTRACT 124**

**Poster position PoOb 29**

**Induction of labor in women with one previous Cesarean Section and the risk of acute Cesarean Section in labor**

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**Background:** The current evidence does not address the comparison between induction of labor (IOL) and expectant management (Exp) in women with a previous Cesarean Section and their risk of having an acute Cesarean Section (CS) in labor.

**Objective:** To compare the risk of acute CS in labor in women with one previous CS between induction of labor and a later either induced or spontaneous labor.

**Methods:** Data of all term, singleton, cephalic deliveries in women 20 years of age or older with one previous CS and no vaginal deliveries were collected in the Danish Medical Birth Registry from 2004 to 2011. Women with CS before birth, CS because of pregnancy problems or medical illnesses were excluded. The included group of women was stratified into gestational age groups. Women with induction of labor in one gestational age group were compared with women waiting to a later gestational age for either a spontaneous or an induced labor. Outcome measure was CS in labor because of labor complication.

**Results:** Total number of women with one previous CS included was 16 137. The overall rate of inductions was 17.7%. The overall rate of CS in labor was 29.6%. Results from univariate analysis are shown in Table I.

<table>
<thead>
<tr>
<th>Gestational week</th>
<th>Number of IOL</th>
<th>CS%</th>
<th>RR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>171</td>
<td>33.9</td>
<td>1.149 (0.931–1.418) NS</td>
</tr>
<tr>
<td>38</td>
<td>419</td>
<td>33.9</td>
<td>1.14 (0.995–1.306) NS</td>
</tr>
<tr>
<td>39</td>
<td>592</td>
<td>35.3</td>
<td>1.134 (1.013–1.27) S</td>
</tr>
<tr>
<td>40</td>
<td>890</td>
<td>38.2</td>
<td>1.137 (1.037–1.247) S</td>
</tr>
</tbody>
</table>

**Table I:** RR of acute CS in labor after IOL compared with Exp

Gestational week 37: Number of IOL: 171, CS% 33.9, RR= 1.149 (0.931–1.418) NS  
Gestational week 38: Number of IOL: 419, CS% 33.9, RR= 1.14 (0.995–1.306) NS  
Gestational week 39: Number of IOL: 592, CS% 35.3, RR= 1.134 (1.013–1.27) S  
Gestational week 40: Number of IOL: 890, CS% 38.2, RR= 1.137 (1.037–1.247) S
Gestational week 41: Number of IOL: 787, CS% 41.8, RR= 1.078 (0.965–1.204) NS
NS=not significant; S=significant.

Conclusion: In women with one previous CS there was a small but statistically significant higher risk of acute CS in labor when labor was induced in gestational week 39 and 40 compared with women that waited for a later either induced or spontaneous labor. Addressing the clinically important difference between IOL and Exp needs more focus in the future, not the least in the group of women with previous CS that have the intention of vaginal delivery.

**ABSTRACT 125**

Poster position PoGy 8

Simple learning of 2- and 3-Dimensional transvaginal ultrasound in diagnosing adenomyosis

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Objectives: Diagnosing adenomyosis with 2-Dimensional (2D) transvaginal ultrasound (TVU) is highly dependent on the observer. Using 3-Dimensional (3D) TVU it is possible to visualize the junctional zone and to save 3D volumes. We evaluate the observer variation of 2- and 3D TVU between inexperienced and experienced observers for diagnosis of adenomyosis. The findings are controlled by the gold standard, pathology.

Materials: 50 premenopausal women scheduled for either hysterectomy or transcervical resection of the endometrium (TCRE) for benign reasons will be enrolled. Participating patients go through a pre-operational 2- and 3D TVU examination performed by an experienced and an inexperienced observer, blinded to each other. Also a 30 sec. 2D video sweep and 3D volumes are saved for later evaluation.

Methods: A structured learning program was constructed. An inexperienced observer went through one month of structured learning how to control the high-end-scanner and visualize the uterus. Pattern recognition was practiced hereafter during real-time 2D examinations by focusing on different terms for diagnosis of adenomyosis. Imaging evaluation of saved 2D video sweep and 3D volumes were then evaluated using 4D view computer program. The process of learning was evaluated by the observer variation.

Results: The structured learning terms for diagnosing adenomyosis will be presented at the congress, by showing 2- and 3D images of pattern recognition of adenomyosis.

The final results for the observer variation will be available by the end of June 2012.

Conclusion: With a structured learning program for diagnosing adenomyosis using 2- and 3D transvaginal ultrasound, it may be possible to teach an inexperienced ultrasound observer how to diagnose adenomyosis.

**ABSTRACT 126**

Poster position PoOb 109

Feasibility and clinical effects of laparoscopic abdominal cerclage: an observational study

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Objective: To evaluate the effect of laparoscopic abdominal cerclage performed as an interval procedure in non-pregnant women in high risk of second trimester spontaneous abortion and early preterm birth.

Design: Observational study

Sample: Fifty-two consecutive patients in high risk of preterm birth.

Methods: Patients were registered prospectively. Indications for surgery included classical cervical insufficiency, PPROM or two conisations/cervical amputation.

Results: No operative or postoperative complications were observed. A total of 45 pregnancies were registered during the observation period. Out of 36 pregnancies lasting beyond 16th week of gestation, 30 women (83.3%) gave birth by Cesarean section after 36 weeks of gestation and the overall mean
gestational age was 37.4 weeks compared to a mean gestational age of 25.2 weeks of the pregnancies prior to the cerclage.

**Conclusion:** Our results indicate that laparoscopic abdominal cerclage is a feasible and safe procedure. Obstetrical outcomes were encouraging, but controlled studies are needed to define the effectiveness of the laparoscopic cerclage compared to the traditional vaginal approach.

**ABSTRACT 127**
Withdrawn

**ABSTRACT 128**
Poster position PoOb 51

**Prevalence of anal incontinence among norwegian women, a cross-sectional study (hunt 3)**

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(2) Trondheim University Hospital, Department of Clinical Service, Trondheim, Norway
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(4) Trondheim University Hospital, Department of Surgery, Trondheim, Norway
(5) Croydon University Hospital, Croydon, United Kingdom

**Background:** Anal incontinence is a symptom associated with age, bowel symptoms and obstetric injuries. Aim of the study was to establish the prevalence of anal incontinence among women and the impact on daily life. Secondary aims were to study associations between anal incontinence and bowel symptoms and health related factors such as age and body mass index (BMI).

**Methods:** The study is a part of a cross-sectional, large community-based survey (HUNT 3) conducted in Nord-Trøndelag, Norway. Data were collected through interviews, questionnaires and clinical examinations. In total 40 955 community-dwelling women (aged 30+) were invited to participate. All eligible women attending the research centres received a questionnaire (Q2) containing a section about anal incontinence. Anal incontinence was defined as involuntary loss of feces and/or flatus weekly or more. Fecal and flatal incontinence was defined as involuntary loss of feces and flatus weekly or more, respectively. Statistical methods included tests of association and logistic regression analysis. Data were analysed using SPSS v17.

**Results:** A total of 25 037 women aged 30+ participated in HUNT 3, giving a response rate of 61.1%. Questionnaire 2 (Q2) was returned by 24 738 of the participants. In Q2, the section including anal incontinence was completed by 20 391 (82.4%) of the responders. Non-responders and responders to the anal incontinence section did not differ significantly on background data available, non-responders were excluded from further analysis. Among the 20 391 women included in the study, anal incontinence was reported by 19.3% (95%CI 18.7–19.8). In total, 3.0% (95%CI 2.8–3.2) of the women reported fecal incontinence ≥weekly, 18.6% (95%CI 18.1–19.1) reported leakage of gas ≥weekly. Lack of ability to defer defecation for 15 minutes was experienced by 2 586 women (13.7%, 95%CI 13.2–14.2). Among women with anal incontinence, 794 (26.0%, 95%CI 24.4–27.5)) stated it had impact on daily life.

Increasing age, BMI ≥35, menopause, surgery treatment for pelvic organ prolapse, diarrhea and disability to defer defecation for 15 minutes were experienced by 13.7% of the women (95%CI 13.2–14.2). Among women with anal incontinence, 794 (26.0%, 95%CI 24.4–27.5) stated it had impact on daily life.

**Conclusion:** Prevalence of anal incontinence in the study population was 19.3%, fecal incontinence 3.0%. The study confirms that anal and fecal incontinence are age-related conditions. Bowel symptoms are significantly associated with anal and fecal incontinence, whereas parity is associated only with anal incontinence.
ABSTRACT 129
Poster position PoGy 26

Successful IVF cycles complicated by OHSS have an 100 fold increase in risk of VTE in the first trimester A retrospective cohort study based on 10 years of deliveries in Sweden

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Background: OHSS, Ovarian hyperstimulation syndrome (OHSS), is an iatrogenic and potentially fatal IVF complication that occurs in mild forms in up to 33% of all IVF cycles. According to literature 3% to 8% of IVF cycles are complicated by moderate or severe OHSS, potentially fatal, and predominantly reported in achieved pregnancies. Most feared is thromboembolism, TE. The incidence of VTE in relation to IVF has been reported at approximately 0.1% of treatment cycles. Based on data from relatively few cases, the VTE risk associated with OHSS is reported to be between 0.8% and 2.4%. However, there are no reliable data on the incidence or increased risk of VTE in relation to IVF during the first trimester for a large population series.

The administration of human chorionic gonadotropin (hCG) to induce ovulation after ovarian stimulation, or endogenous hCG in conceived pregnancies, are involved in the development of OHSS (4, 5). In conjunction with rapidly increasing estradiol levels, hCG may trigger OHSS in predisposed women.

Despite decades of research, the exact mechanisms behind OHSS are not fully clarified. VTEs in association with IVF have the unusual propensity to be located in the upper extremities and the neck, as compared to their usual occurrence in the left leg (5, 7).

Objective: Swedish National Health Registers are based on the personal identification number PIN. By linking of register data, it is possible to estimate the incidence and risk of specific diagnoses on an individual level as well as in the background population. Our study aimed to estimate the incidence of VTE in relation to IVF with or without the presence of OHSS in women giving birth among one million Swedish pregnancies over a ten-year period.

Methods: National Discharge Register, NDR, National Birth Register, NBR, the IVF register was used.

We found the incidence of VTE in the first trimester in women with IVF to be approximately 32/19,194 = 0.17%, which is a ten-fold increase over the background population. After the first trimester, IVF pregnancies did not differ in VTE risk compared to pregnancies in the background population.

ICD codes for OHSS and VTE, delivery and date of embryo transfer was linked based on PIN in all deliveries (n = 964,532) 1998–2007

Results: VTE incidence in IVF pregnancies was 0.2%, a tenfold increase, compared to the background population. In the group with OHSS a 100 fold risk of TE was present in the first trimester opposed to a 5-fold risk without OHSS. TE was diagnosed at a mean gestational age of 62 days, and the increased risk was exclusively found in the first trimester.

Conclusion: IVF pregnancies complicated with OHSS were associated to an high increase in VTE risk during the first trimester. Prolonged thromboprophylaxis may be motivated up to the 13th week of gestation in pregnant woman with a diagnosis of OHSS.

ABSTRACT 130
Poster position PoOb 52

Is oxytocin augmentation of labour an independent risk factor for anal sphincter rupture?

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Background: Obstetric anal sphincter rupture (OASR) is a major complication to vaginal delivery, and may lead to anal incontinence in 20 to 67% of cases. Studies have shown that close cooperation between the woman and the birth attendant is important to avoid perineal tears. Oxytocin augmentation of labour might
compromise this by causing too fast progress in the second stage of labour. The aim of our study was to explore the influence of oxytocin augmentation on the risk of OASR.

Methods: Population based study of consecutive, prospectively collected data from all deliveries (n=48521) in our region from January 1997 to October 2011. Stavanger University Hospital is the only hospital and delivery unit in the region, serving a population of 320000 people. All women with spontaneous start of labour and vaginal delivery of a child > 500 g were included (n=40213, 83%).

We used multivariate logistic regression analysis with OASR grade 3–4 as dependent variable, oxytocin augmentation as explanatory factor, and variables known to correlate with OASR as covariates. Data were analysed separately for primiparous and multiparous women.

Results: The overall incidence of OASR was 3.7%. In primiparous women oxytocin augmentation was an independent predictor for OASR, odds ratio (OR) 1.17; (95% Confidence Interval (CI) 1.0–1.4). Other factors predicting OASR were episiotomy (OR 0.82, 95% CI 0.7–0.9), birth weight > 4000 g (OR 2.33, 95% CI 2.0–2.7), operative vaginal delivery (OR 2.28, 95% CI 1.97–2.63), while epidural analgesia was not (OR 1.14, 95% CI 0.99–1.3).

In multiparous women, oxytocin augmentation was an independent predictor for OASR, OR 1.52; (95% CI 1.19–1.94). Other factors predicting OASR were episiotomy (OR 1.79; 95% CI 1.37–2.31), birth weight > 4000 g (OR 2.63; OR% CI 2.18–3.18), operative vaginal delivery (OR 2.69; 95% CI 2.0–3.6), while epidural analgesia was not (OR 1.03; 95% CI 0.80–1.33).

Conclusion: We found that oxytocin augmentation of labour was an independent risk factor for OASR. The risk was highest in multiparous women.

ABSTRACT 131
Poster position PoGy 54

The preoperative assessment of deep myometrial invasion by MRI vs. 3D ultrasound in endometrial carcinoma

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Background: Preoperative evaluation of the depth of myometrial invasion in endometrial carcinoma is challenging. The objective of this study was to evaluate the usefulness of magnetic resonance imaging (MRI), three-dimensional ultrasound (3D US), and three-dimensional power Doppler angiography (3D-PDA) in this setting.

Methods: Preoperative 3 Tesla MRI and 3D US findings were compared to the final histopathology report after a complete surgical staging in 20 women with endometrial carcinoma. A 3D US volume of the uterus was analyzed and the depth of myometrial invasion was assessed. The vascularity indices VI, FI and VFI (vascularization index, flow index, and vascularization flow index, respectively) were calculated by 3D-PDA. In MRI the depth of myometrial invasion was estimated by consensus reading of 2 radiologists.

Results: The mean (±SD) age of the patients was 68.7±5.56 years. In 8 patients the myometrial invasion was limited to the inner half (all had FIGO 2009 Stage IA disease), while 12 patients with a deep myometrial invasion had Stage ≥IB disease. In detecting deep myometrial invasion, the sensitivity of 3D US, MRI and their combination was 50%, 91.7% and 100%, respectively. The specificity was 87.5%, 50% and 50%, respectively. The presence of leiomyomas made the interpretation of the findings difficult, especially for 3D US. There were no significant differences in the 3D-PDA vascularity indices between the two groups.
Conclusion: MRI appears to be more sensitive than 3D US in detecting deep invasion, while 3D US has a better specificity.

Keywords: Endometrial carcinoma, MRI, 3D ultrasound, 3D-PDA, staging

**ABSTRACT 132**
Poster position PoGy 31

Integral approach in preoperative management of urogynecological patients
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Background: many intra/postoperational complications of POP-surgery, including recurrent POP forms arise because of inadequately operative correction at not enough surveyed patients.

Methods, Results: in prospective study 125 women with POP-Q ≥ II operated and observed for 2004 for 2011. Besides standard complex of preoperative inspection (complains, anamnesis, general survey, gynecologic status) were estimated specific anatomic and functional perineum status. Pelvic Organ Prolapse - Quantification (POP-Q) - simple quantitative pelvic topographic anatomy estimation. Vaginal cartography by C.Zimmermann, A.Nieuwaudt (2007) reveals pelvic fascias defects on vaginal rugaes changes. Elevate-test with clamps and operation modeling reveals occult SUI and demonstrate future operation effect. At cystocele leading fascial defect (paravaginal/high transverse/central) demands selective correction (paravaginal/apical/prosthetic TVM). Clinical methods insufficient at hernia sack contain exact definition. At apex method has low specification: false cystocele diagnoses and operates in 57%. POPQ specification at cysto-rectocele search in severe apical prolapse cases only 35%. More information in cystocele search gives perineal ultrasound (sensibility 97%), in apical prolapse - MRI (sensibility 95%) compared with US sensibility 60%. In rectocele search MRI (sensibility 83%, with rectal contrast - 95%). Connective tissue dysplasia (CTD) level revels with T.Smolnova Scale (1999). It severe forms demand prosthetic mesh surgery. In bladder dysfunction cough and Valsalva tests applied pre- and intraoperative in occult SUI search for it concomitant treatment. In UI type, anal, sexual dysfunction and quality of life survey used questionnaires (PFIQ, UIQ, PISQ-12, Wexner Continence Scale, EQ-5–9, Nottingham Health Profile), micturition dailies. Subjective patients estimation's important in recurrent forms correction necessity. All patient's rectal inspection estimates rectovaginal septum, anal sphincter, rectal mucous state. In proctologic complains/severe rectocele applies defecography, at pathologic anal excretions - proctologist’s consultation. For all patients in cervix decease exclusion applies colposcopy, in endometrial study - endometrial biopsy cause of 0.8% adenocarcinoma after uterus stayed POP operations.

Conclusion: complete preoperative study leads at non proved surgery and mesh use reduction. That decreases complication risks and follows us in principle: one narcosis - one operation.

**ABSTRACT 133**
Poster position PoOb 15

The effect of ultrasound power level on obstetric biometric measurements
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Background: In 1991, the maximal permitted ultrasound intensity was increased from 94 to 720 mW/cm2 and the ultrasound operators were expected to keep the energy emission at or below what corresponds to a Thermal Index of 1.0. Here we test the hypothesis that reducing the ultrasound power level from that corresponding to a Thermal Index for bone (TIB) of 1.0 to that of 0.1 does not affect linear biometric measurements in a 2D grey scale image.

Methods: Based on a power calculation we included 113 women with singleton pregnancies at 12–36 weeks of gestation according to an ethically approved protocol. We measured the fetal femur, diameter of...
the intra abdominal portion of the umbilical vein and the transverse diameter of the posterior horn of one of the fetal lateral cerebral ventricles in an axial section. Starting out at a power level giving a TIB of 1.0, or below that when 1.0 was not attainable, we measured each structure three times. We then reduced the power level to that giving a TIB of 0.5 or below, optimized the image gain, and repeated the procedure. The procedure was then repeated at TIB 0.1. We used a mixed linear regression model accounting for correlation between measurements within individuals to relate the biometric values to the predictor variable TIB. It was adjusted for gestational age and maternal body mass index. The residuals from each analysis were re-entered into the model to assess whether parameter variance changed with decreasing power level.

Results: All structures were measured in all participants yielding 3051 linear measurements for the statistical analysis. We found that the measured values for the femur decreased with decreasing power level, while the measured values for the umbilical vein and cerebral ventricle increased with decreasing power level. The effect was statistically significant for the femur and umbilical vein. The greatest effect was found for the length of the femur, changing less than 0.03 mm across the power level range we examined. This is less than the axial resolution of the probe, and well below inter- and intra-observer variation demonstrated in previous studies. There was no increase in the residuals with decreasing power level, indicating no effect on parameter variance.

Conclusion: A reduction in ultrasound power level from that corresponding to a TIB of 1.0 to that of TIB 0.1 has a small and significant effect on linear biometric measurements in a 2D grey scale ultrasound image. However, the effect is way below the level of transducer resolution limits and inter- and intra-observer variation and therefore of no practical importance. A corresponding reduction in the level of TIB can probably be recommended as a starting point for clinical use.

ABSTRACT 134
Poster position PoGy 45

**Introduction of Human Papillomavirus Vaccination in Nordic Countries**

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**Background:** Human Papillomavirus (HPV) vaccination is a new tool for control of cervical cancer. Nordic countries (Denmark, Finland, Greenland, Iceland, Norway and Sweden) are wealthy, have predominantly publicly paid health care systems, but the incidence of cervical cancer varies. Our aim was to provide an update of the current status of introduction of HPV vaccination into the childhood vaccination programmes in this region, and furthermore to describe the debate that took place in the process of introducing vaccination in each of these countries.

**Methods:** Data on cervical cancer, cervical screening programmes, childhood immunization and HPV vaccination programs for Nordic countries were obtained from PubMed, various health organizations and grey literature. We furthermore contacted selected local experts to obtain otherwise inaccessible information.

**Results:** The incidence rate of cervical cancer is highest in Greenland (25 per 100,000, World Standard Population, ASW) and lowest in Finland (4 per 100,000 ASW). The rates in other Nordic countries vary between 7 and 11 per 100,000 ASW. Greenland and Denmark were first to introduce HPV vaccination, followed by Norway. Vaccination programmes are underway in Sweden and Iceland, while Finland has just recently recommended introduction of vaccination. The primary sector-based vaccination programme in Denmark had higher vaccination coverage than the school-based programme in Norway. Introduction of mass HPV vaccination was intensively debated in the public and among health professionals, particularly in Denmark and Norway.

**Conclusion:** In several Nordic countries, the introduction of HPV vaccination was a priority issue, although some variation was observed in the way and the speed with which it was finally implemented. Many players became active, including general public, health profes-
sionals, special interest groups, and the two vaccine manufacturers. The latter undertook unusual steps to secure their market share. The different stakeholders seemed to prioritize different health care needs and weighed differently the uncertainty about the long-term effects of the vaccine.

In Greenland and Denmark, where the background risk of cervical cancer has been high, mass HPV vaccination started in 2008. In Finland, a country with a very low incidence, the introduction was not recommended until 2011. HPV vaccination has generally posed a pressure on public health authorities to consider the evidence for and against it, and on politicians to weigh the wish for cervical cancer protection against other pertinent health issues.

**ABSTRACT 135**

Poster position PoOb 39

**Historical Trends of Cervical Cancer in Greenland: A 60-Year Overview**

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**Background:** At present, Greenland has a high incidence rate of cervical cancer, 24.8 per 100,000 women (World-standardised rate, ASW). Cervical cancer is caused by sexually transmitted Human Papillomaviruses (HPV). In Greenland sexual activity is initiated early and average number of sexual partners is higher than in several other countries. However, data for Greenland have not been routinely included in historical volumes of major international cancer overview publications, e.g. Nordcan and Cancer Incidence in Five Continents. Therefore, it is not very easy to understand the historical context for the presently high incidence of cervical cancer in this country. Based on data reported from various sources, our aim was to describe the incidence of cervical cancer in the 60-year period since the 1950’s.

**Methods:** We systematically searched PubMed for articles reporting the incidence of cervical cancer in Greenland. We supplemented this search by obtaining novel population-based incidence data for 1980–2009, by searching own archives, and by consulting the electronic archives of the Danish Royal Library for published scientific reports.

**Results:** Incidence of cervical cancer was not always very high in Greenland. It was around 10 per 100,000 (ASW) in 1950–59. In 1960–69, the incidence increased to around 30 per 100,000 (ASW), and to around 60 per 100,000 (ASW) in the 1970’s. From around 1985 onwards, the incidence of cervical cancer started decreasing. By the late 1980’s, the incidence had decreased to 50 per 100,000 (ASW), whereas the current level is around 25 per 100,000 (ASW).

**Conclusion:** Combining data from various sources suggested that the incidence of cervical cancer has been changing substantially over the last 60 years. It is a challenge to determine whether these apparent changes, an initial increase and later decrease, were true changes or were due to data artefacts. We therefore sought further evidence that could substantiate either of the explanations. It appeared that under-reporting in the 1950’s and the 1960’s was probably small. Furthermore, the rate of out-of-wedlock births started increasing from 1940 onwards. Sexual behaviour appeared to have further changed in parallel with the economic development from the 1950’s onwards, and an increase in other sexually transmitted infections like gonorrhoea and syphilis was observed. Use of tobacco also increased. In recent decades, data do not suggest that major changes in sexual behaviour have taken place. The decrease in the incidence since the 1980’s would be consistent with introduction of screening, which started in the 1970’s.

A high burden of cervical cancer in Greenland appears to be a phenomenon that developed gradually. The data strongly suggest that the observed trends in the burden in cervical cancer ran parallel to changes in sexual behaviour.

**ABSTRACT 136**

Poster position PoGy 25

**Regulation of nitric oxide synthesis of endothelial cells in ovarian hyperstimulation syndrome**

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Background: Ovarian hyperstimulation syndrome (OHSS) is a life-threatening complication of ovarian stimulation, affecting about 0.5-5% of IVF treatment cycles. The pathophysiology of OHSS is largely unknown. Characteristic to the syndrome is, however, an increase in capillary permeability, which leads to a fluid shift from intravascular to extravascular space, such as the abdominal and pleural cavities, and furthermore, hypotension, hemoconcentration, dyspnea, and thromboembolic complications. Nitric oxide (NO) is an important regulator of vascular tone and permeability. Our aim was to investigate if endothelial NO synthesis is affected in infertility patients that develop OHSS.

Methods: We investigated the effects of serum from patients with moderate or severe early-onset OHSS (N=10) on nitric oxide synthase (NOS) protein levels and activity in human umbilical vein endothelial cell (HUVEC) cultures at different time points. Serum from fertile-age women (N=5) in mid-luteal phase served as controls. Nitrate and nitrite (NOX) levels (µM/mg protein) were measured with a fluorometric NOX assay. The levels of total endothelial NOS (eNOS), the active phosphorylated (Ser1177) eNOS, and inducible NOS (iNOS) were detected with Western blotting using specific antibodies. Protein intensities were normalized to a housekeeping protein (GAPDH) and expressed as relative optical density units.

Results: eNOS protein expression maintained on the baseline level in cells incubated with control serum. However, in cultures with OHSS serum, eNOS protein levels were significantly decreased after 24 hours of culture compared to control (0.861±0.134 vs. 2.082±0.423, p=0.014). The level of eNOS phosphorylation remained low in the OHSS group during 24 hours of culture, but increased in the control group (0.319±0.136 vs. 1.366±0.394, p=0.009). The relative amount of iNOS protein was remarkably lower than eNOS in endothelial cells. However, iNOS protein levels were upregulated in cells cultured with OHSS serum compared to control serum (0.692±0.151 vs. 0.350±0.040, p=<0.0001). Finally, NOX levels in culture medium from cells incubated with OHSS serum were 28% lower than from cells incubated with the control serum (2.905±0.256 vs. 4.056±0.288, p=0.005).

Conclusions: The activity and the protein levels of eNOS are downregulated in endothelial cells cultured with serum from patients with moderate or severe OHSS. We hypothesize that this downregulation may lead to loss of the normal control of vascular integrity, and increase in vascular permeability. The modest increase in iNOS expression may be a reflection of a higher immune activity in OHSS patients.

ABSTRACT 137
Poster position PoOb 93

Traumatic Childbirth from the Perspective of the Healthcare Professional

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Background: Even though midwifery and obstetrics are usually associated with joyous events, they entail rare cases of the midwife or doctor being involved in so-called traumatic birth incidents, where the baby is born with severe and possibly fatal injuries related to the birth. When such complications arise in the delivery room, the incident is assessed in order to clarify whether the adverse event could have been avoided. The subsequent management of employee reactions mainly regards organizational practice, where the most important question is what lessons can be learned from the incidents. While the organization has had a significantly increased focus on patient safety over the past decade, the individual midwife’s and doctor’s professional and personal reactions and management of a traumatic childbirth have not been equally considered. The lack of research within this field is in stark contrast with studies showing that both midwives and doctors have a high incidence of work-related mental health problems, such as depression, burn-out and stress. This poses a problem, not only to the employees, but also to the patients, as emerging research has shown that the emotional state of the health care professionals can influence their clinical performance and impact patient safety.

The overall purpose of this study is to investigate how midwives and obstetric doctors experience and cope with involvement in traumatic childbirths, hence contributing to a more qualified management of the aftermath of such incidents.
Methods: The study employs a mixed methods approach consisting of a quantitative questionnaire survey and a qualitative interview study, thus allowing a descriptive as well as an exploratory dimension.

Questionnaire: A questionnaire will be sent to all midwives and obstetric consultants and trainees in Denmark, adding up to a total of 2400 (Spring 2012).

Qualitative interviews: The qualitative part of the study will consist of 16–20 individual semi-structured interviews, equally distributed between midwives and doctors (Spring 2013).

Expected results: This project will in a Danish context contribute to scientific knowledge in a field that previously has not been investigated. Knowledge about how midwives and obstetricians experience being involved in traumatic childbirths will serve to improve the management of the aftermath of the traumatic events from the perspective of the healthcare professionals. Such improvements could be important in the effort to prevent work-related mental health problems amongst midwives and doctors. In addition, the results will be of interest in an increased safety culture, acknowledging that the emotional state of the health care professionals has an impact on patient safety.

ABSTRACT 138
Poster position PoGy 61

To assess the management of menopause in women with a personal history of hormone-derived cancer in the tertiary menopause clinic at Guy's and St. Thomas’ NHS Foundation Trust

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Background: The treatment of oestrogen-dependent cancers such as breast, endometrial and ovarian increasingly involves the use of adjuvant therapy such as tamoxifen and letrozole. Although they are effective in treating these cancers, they can also induce a premature menopause. Each type of symptom (vasomotor, psychological and somatic) may be more severe in these women, compared with those who undergo a natural menopause. Whilst treating women undergoing natural menopause is relatively simple, with published guidelines, treating menopause in women with a history of oestrogen-dependent cancers presents a clinical dilemma. The increased risk of HRT must be balanced against its efficacy in managing symptoms. Currently, there are no consensus guidelines, and the management of these patients requires specialist consultation at tertiary menopause clinics.

Methods: Between 10/01/2012 and 27/01/2012, 590 patient records were identified and 146 patients (24.7%) were found to have a history of cancer. Of these, 68/146 (46.6%) were younger than 50 years old. Data was collected about their cancer type and treatment, symptoms, severity, prior use of HRT, bone density analyses and menopause treatments.

Results: 78/146 (53.4%) had a history of cancer in which HRT was contraindicated. Of these, 20 (25%) were using HRT to manage their symptoms, while 57 (72%) were using alternative therapies such as antidepressants and herbal remedies. 91/146 (62%) reported having moderate or severe vasomotor symptoms, and 32 (35%) of these women were using HRT. Despite being contraindicated for it, 12/32 (37.5%) still took HRT. 8/146 (5%) were self-managing their symptoms without any medical therapy.

Conclusions: Our results demonstrate the factors that influence the management of menopause in a group of patients in whom HRT was contraindicated. These include the difference in expectations between the patient and the clinician and balancing of the risk/benefit ratio. Understanding the patient’s expectations is vital to maximising their symptom control during the menopause. The results from this study will form the basis for a prospective audit on women’s attitudes to HRT and the influence of a personal or family history of cancer.

ABSTRACT 139
Poster position PoOb 9

Is the fetal heart rate affected by uterine contractions during pregnancy? A pilot study

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Background: New monitoring technology enables long-term recording of the fetal heart rate without discomfort for the mother. The aim of this pilot study was to test the feasibility and success rate of a new fetal Holter monitor. We hypothesised that uterine activity during pregnancy affected the fetal heart rate.

Methods: Twelve pregnant women were monitored with a portable Holter device (Monica AN24®, Monica Healthcare Ltd.), which recorded the maternal and fetal electrocardiogram (ECG) and the electrohysterogram (EHG) by five abdominal electrodes. The recording was performed outside the hospital and the participants were not imposed any restrictions for their activities during the time of the recording. Data on fetal and maternal heart rates and the strength of uterine contractions was available in 2 seconds epochs during the entire recording. The EHG data were categorised into a basal level, and slightly, moderately or severely increased uterine activity (UA). Each participant’s data was analysed separately.

Results: The recordings lasted 18.8 hours (range 17.4–19.3) and were taken at a gestational age of 32+6 weeks (range 25+0 - 38+2). Data on maternal and fetal ECG was available for 99.9% and 73.1% of the recorded time. There was a linear correlation between maternal and fetal heart rates in 11/12 cases. The coefficient Beta for these participants was at mean 0.189, for participants < 36 weeks (N=7) 0.106 and for those ≥ 36 weeks (N=5) 0.305. In all participants UA affected the fetal heart rate. Compared to the basal tone, mild, moderate and severe UA were associated with an increase of the fetal heart rate by 1.37, 4.1 and 5.9 beats/min, respectively.

Conclusion: The relationship between fetal and maternal heart rates could reflect a circadian rhythmicity in both the mother and the fetus. Uterine contractions during pregnancy, accompanied by increased umbilical blood flow, may represent a physiological challenge for the development and adaptation of the fetal cardiovascular system.

ABSTRACT 140
Poster position PoOb 6
Recurrence of Second Trimester Pregnancy Loss
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Background: Prior studies have shown an increased risk of recurrent second trimester pregnancy loss in subsequent pregnancies. However, results are conflicting which may be caused by differences in selection and stratification.

Objective: To investigate whether a history of second trimester pregnancy loss (15 to 28+6 weeks) is associated with risk of second trimester loss in subsequent pregnancies. Furthermore we will aim to characterize the first second trimester loss to identify factors associated with the risk of recurrence. These factors include gestational age, onset of symptoms leading to abortion/birth, length of the cervix, multiple conceptions and therapy strategies. Personal and social factors current at the first second trimester loss is sought to be identified as well. These include height, weight, marital status, ethnicity, use of tobacco and alcohol, obstetric and medical history plus maternal and neonatal complication. Also we will evaluate the association between gestational age at first second trimester pregnancy loss and the risk of recurrence in subsequent pregnancies. Birth weight of the parent contains a possible association to the risk of recurrent second trimester pregnancy loss, which we will investigate. Finally we will describe historical and regional differences in prevention- and therapy strategies within a Danish population

Methods: Retrospective population-based cohort design. Using population-based registries we have identified a cohort of about 3500 women in Denmark who had their first and at least one subsequent second trimester fetal loss or preterm birth (15 to 28 weeks of gestation) from 1997–2010. Register-based information on maternal age, gestational age, order of pregnancies and Apgar score will be supplied by information obtained from a standardized questionnaire send to all women in the cohort. Validation of corresponding data from registries and questionnaire will be conducted as a review of birth records.
Perspective: With this study we hope to add knowledge to the understanding of risk factors leading to recurrent second pregnancy loss. It will provide obstetricians with data about recurrence risk of second trimester pregnancy loss. This will improve the possibilities for guidance of women with a history of second trimester abortion in a prior pregnancy.

**ABSTRACT 141**
Poster position PoOb 66

**Perinatal mortality among generations of Pakistani immigrants to Norway: a linked registry based study**

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Background: Perinatal death rates are elevated among offspring of migrant women with Pakistani country background compared to the host population of ethnic Norwegian women. Previous studies have rarely distinguished between generational status; that is if the woman is born abroad (immigrant) or born in Norway (descendant). We wanted to examine if the effect of maternal Pakistani country background on perinatal death is different for immigrants and descendants of immigrants to Norway.

Methods: We performed a cohort study using linked registry data from the time period 1980–2010 from the Medical Birth Registry of Norway (MBRN) and Statistics Norway. We included singleton live- and stillbirths with a birth weight of ≥ 500g among women of Pakistani country background categorized as immigrants (born abroad of foreign-born parents, n=15,158) or descendants (born in Norway of foreign-born parents, n=1,814). As a reference group, we used births among ethnic Norwegians during the same time period (n=1,437,369). Associations between migrant groups and perinatal death were analyzed using univariate and multivariate methods.

Results: During 1980–2010 perinatal mortality was 11.7/1000 (95% CI: 10.1–13.6) among immigrant Pakistanis, 8.3/1000 (95% CI: 4.6–13.6) among descendant Pakistanis and 6.8/1000 (95% CI: 6.7–7.0) in the reference group. Factors associated with perinatal death among the Pakistani population was year of birth of baby, very preterm and late preterm birth, serious and all fetal malformations, hypertensive disorder in pregnancy, unknown father, maternal education ≤ 10 years, missing paternal education and birth weight of baby. Crude odds ratio (OR) for perinatal death in the immigrant group was 1.73 (95% CI: 1.49–2.00) compared to OR 1.21 (95% CI: 0.73–2.01) in the descendant group. Over the period, a downward trend in mortality rates was observed in both the Pakistani and Norwegian groups. Adjustment for year of birth of baby as well as differentially distributed demographic factors, strengthened the estimate for immigrants to aOR 2.03 (95% CI: 1.74–2.37), and for descendants to aOR 1.72 (95% CI: 1.02–2.89, p=0.041), both significantly higher than the reference group. Adjustment for maternal health in pregnancy did not change the results. Preterm birth, fetal malformations, birth weight and socioeconomic status were identified as potentially mediating factors and were not adjusted for. We applied the same model with restriction to 1999–2010 which strengthened the estimates for both groups.

Conclusion: We found no indication of a generational change in perinatal mortality in the offspring of women of Pakistani country background that so far have given birth in Norway.

**ABSTRACT 142**
Poster position PoGy 55

**Evaluation of prevalent and incident ovarian cancer co-morbidity**

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Evaluation of prevalent and incident ovarian cancer co-morbidity

Methods: We performed a cohort study using linked registry data from the time period 1980–2010 from the Medical Birth Registry of Norway (MBRN) and Statistics Norway. We included singleton live- and stillbirths with a birth weight of ≥ 500g among women of Pakistani country background categorized as immigrants (born abroad of foreign-born parents, n=15,158) or descendants (born in Norway of foreign-born parents, n=1,814). As a reference group, we used births among ethnic Norwegians during the same time period (n=1,437,369). Associations between migrant groups and perinatal death were analyzed using univariate and multivariate methods.

Results: During 1980–2010 perinatal mortality was 11.7/1000 (95% CI: 10.1–13.6) among immigrant Pakistanis, 8.3/1000 (95% CI: 4.6–13.6) among descendant Pakistanis and 6.8/1000 (95% CI: 6.7–7.0) in the reference group. Factors associated with perinatal death among the Pakistani population was year of birth of baby, very preterm and late preterm birth, serious and all fetal malformations, hypertensive disorder in pregnancy, unknown father, maternal education ≤ 10 years, missing paternal education and birth weight of baby. Crude odds ratio (OR) for perinatal death in the immigrant group was 1.73 (95% CI: 1.49–2.00) compared to OR 1.21 (95% CI: 0.73–2.01) in the descendant group. Over the period, a downward trend in mortality rates was observed in both the Pakistani and Norwegian groups. Adjustment for year of birth of baby as well as differentially distributed demographic factors, strengthened the estimate for immigrants to aOR 2.03 (95% CI: 1.74–2.37), and for descendants to aOR 1.72 (95% CI: 1.02–2.89, p=0.041), both significantly higher than the reference group. Adjustment for maternal health in pregnancy did not change the results. Preterm birth, fetal malformations, birth weight and socioeconomic status were identified as potentially mediating factors and were not adjusted for. We applied the same model with restriction to 1999–2010 which strengthened the estimates for both groups.

Conclusion: We found no indication of a generational change in perinatal mortality in the offspring of women of Pakistani country background that so far have given birth in Norway.
Background: The peak in incidence of ovarian cancer occurs around 65 years and concurrent increasing risk by age for a numbers of diseases strongly influence treatment and prognosis. The aim with this study was to estimate prevalent and incident pre-defined medical conditions at certain time periods in relation to ovarian cancer diagnosis and to evaluate the occurrence in comparison with the general population.

Methods: The study population was defined as all patients diagnosed with ovarian cancer (ICD-7 code 175) in Sweden 1992–2006 (n=11 139). Five controls per case were randomly selected from the Register of Total Population (n=55 687). Data on co-morbidity diagnoses occurring from 1987 to 2006 was obtained from the Swedish Patient Register and categorized into 13 major diagnosis groups. The prevalence of a specified co-morbidity was defined as having one of the selected diseases either as a primary or secondary discharge diagnosis from 10 years before the ovarian cancer diagnosis up to 30 days after. The incidence of specified condition was defined as having an admission in the period starting at 30 days after the ovarian cancer diagnosis until end of follow-up. The prevalence estimates were analyzed with conditional logistic regression and the incidence estimates with Cox proportional hazards models. Additionally, analyses of the prevalence of co-morbidity for the most common histological tumour types, high risk and medium risk epithelial tumours were performed.

Results: In the predefined diagnosis groups, 11 out of 13 were more prevalent among ovarian cancer patients than controls. The highest prevalence was for thromboembolism (OR=2.5), hematologic (OR=3.6) and gastrointestinal complications. The majority of excess co-morbidity was detected within the period of 3 months preceding cancer diagnosis. When excluding co-morbidity diagnosed within 90 days before the ovarian cancer diagnosis, only the risk of liver and pancreatic disease (OR=1.4) was statistically significant elevated. The results were overall similar in analyses for histologic subgroups.

In the incidence analyses, the highest risk increase amongst ovarian cancer patients was for hematologic complications, which was most frequent the first year after diagnosis with a HR of 23.4. There were also large risk increases the first year for thromboembolism and GI complications (HR=14.9 and 9.2 respectively). Excluding prevalent cases had only minor effects on the results.

Conclusion: Women developing ovarian cancer do not have higher overall morbidity the years preceding cancer diagnosis. The incidence of many common diagnoses was increased several years following ovarian cancer.

It is crucial to consider time between co-morbidity and cancer diagnosis to understand and interpret associations.

Fear of childbirth; the relation to anxiety and depression

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Objective: To study the associations of anxiety and depression with fear of childbirth.

Design: A cross-sectional questionnaire study.

Setting: Prenatal public healthcare in Norway.

Sample: Pregnant women (n=1642) recruited during November 2008 until April 2010.

Methods: Data were collected by a postal questionnaire at pregnancy week 32. Fear of childbirth was measured by the Wijma Delivery Expectancy Questionnaire (W-DEQ) and by a numeric rating scale. Symptoms of anxiety were measured by the Hopkins Symptom Check List (SCL-25) and symptoms of depression by the Edinburgh Postnatal Depression Scale (EPDS). Main outcome measure. Fear of childbirth.

Results: Eight percent (137 of 1642) of the women had fear of childbirth (W-DEQ≥85), 8.8% (145 of 1642) had anxiety (SCL-anxiety≥18) and 8.9% (146 of 1642) had depression (EPDS≥12). More than half (56.2%) of the women with fear of childbirth did not have anxiety or depression; however, presence of anxiety or depression increased the prevalence of fear of childbirth (odds ratio 2.4, 95% confidence interval
1.1–5.2 and odds ratio 8.4, 95% confidence interval 4.8–14.7, respectively). Women with both anxiety and depression had the highest prevalence of fear of childbirth (odds ratio 11.0, 95% confidence interval 6.6–18.3). Similar associations of anxiety and depression were estimated by using the numerical rating scale for measuring fear of childbirth.

Conclusions: Presence of anxiety and depression increased the prevalence of fear of childbirth; however, the majority of women with fear of childbirth had neither anxiety nor depression.

**ABSTRACT 144**
Poster position PoOb 83

**Placental weight relative to birthweight in pregnancies with maternal diabetes mellitus**

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**Background:** Maternal diabetes in pregnancy increases the fetal supply of glucose, and the offspring has an increased risk of being large for gestational age. The placenta is essential for fetal growth regulation, oxygenation and nutrition. We studied whether the placental weight and placental to birthweight ratio is increased in pregnancies with maternal diabetes. We also studied whether placental to birthweight ratio in diabetic pregnancies differed by type of diabetes, birthweight or offspring sex.

**Methods:** We included all singleton births in Norway during 1999–2008 (n= 536 997) and used data from the Medical Birth Registry of Norway. We calculated the distributions of pregnancies with and without diabetes across deciles of placental weight z-scores and placental to birthweight ratio. The distributions of placental to birthweight ratio by offspring sex were also presented. Within birthweight groups we calculated mean placental to birthweight according to maternal diabetes status.

**Results:** Mean placental weight was 736.6 grams in diabetic pregnancies, and it was 672.1 grams in non-diabetic pregnancies (p<0.001, student’s t-test). In diabetic pregnancies, 26.2 % of the placentas were in the highest decile of placental weight z-score, whereas 9.7% of non-diabetic pregnancies were in the highest decile. Pregnancies with diabetes also had a higher placental weight relative to birthweight, and 18.2% of diabetic pregnancies were in the highest decile of placental to birthweight ratio as compared to 9.9% in non-diabetic pregnancies (p<0.001, chi square test). The highest placental to birthweight ratio was seen in diabetes type-1 followed by diabetes type-2 and gestational diabetes. Independent of maternal diabetes status placental to birthweight ratio was highest in pregnancies with a female offspring and at low birthweights.

**Conclusion:** Placental weight as well as placental weight relative to birthweight was higher in diabetic as compared to non-diabetic pregnancies.

**ABSTRACT 145**
Poster position PoOb 79

**The relationship between infant birth weight and future maternal type 2 diabetes**

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**Background:** Pregnant women with gestational diabetes or obesity are known to give birth to offspring large for gestational age (LGA), they also have an increased risk for future type 2 diabetes mellitus (T2DM). However, no consensus exists on the definition of gestational diabetes and adverse neonatal outcome has been related to glucose levels just below the diagnostic cut-off level. The aim of our study was to investigate the association between offspring birth weight and maternal future type 2 diabetes.

**Material and Method:** Data from the Swedish Medical Birth Registry was merged with data from the Swedish National Diabetes Registry. Our study
Methods Prospective cohort study. A validated questionnaire was filled out by all women 2 to 3 days after the delivery, and a second questionnaire was filled out one year later. Background data and obstetric data were obtained from the medical records.

Results: The study group comprised 745 women, who did not report any urinary incontinence before the pregnancy. 716 had a singleton pregnancy and 29 had a multiple pregnancy. Five hundred and seventyfive delivered vaginally and 170 by cesarean section. The overall incidence of urinary incontinence one year after the delivery was 27.8 % (stress incontinence 15.3%, urge incontinence 8.2%, mixed incontinence 4.3%). A significantly higher incidence of urinary incontinence was found in women who had experienced urinary incontinence during the pregnancy compared to women who were continent during the pregnancy (48% vs. 19%, p < 0.005) -in women with vaginal delivery compared to women with cesarean section (30% vs. 21%, p < 0.05) - in women with perineal lesions compared to women without (33% vs. 24%, p < 0.05) and in women with pre-pregnancy BMI > 30 compared to women with BMI < 30 (36% vs. 26%, p < 0.05). The remaining maternal and perinatal factors were not significantly associated with urinary incontinence one year after the delivery. Results of multivariate analyses will be presented.

Conclusion: Urinary incontinence one year after the womens first delivery was associated with urinary incontinence during the pregnancy - vaginal delivery - perineal lesions and pre-pregnancy BMI > 30.

Objective: To examine the relationship between maternal and perinatal factors and the occurrence of urinary incontinence one year after the women's first delivery

Material: Seven hundred and ninety-nine women who had their first delivery at Glostrup Hospital.
Aim: To investigate on the impact of first- and second line treatment on survival and recurrences of advanced epithelial ovarian cancer (EOC).

Methods: In a population-based cohort of 198 women with EOC (FIGO IIIc) diagnosed in Norway during 2002 the patients were treated at teaching (TH, N=108) or non-teaching hospitals (NTH, N=90), 174 patients underwent primary surgery followed by chemotherapy and were included in the study. 24 women who received neoadjuvant chemotherapy at TH were excluded. Data were derived from notifications to the Norwegian Cancer Registry on medical, surgical and histo-pathological records. We defined the time to first recurrence as treatment free interval-1 (TFI-1) from end of primary treatment to first recurrence or death, and time to second recurrence TFI-2 from start of second line treatment to second recurrence or death. The end of follow-up was November 1st, 2010.

Results: During the TFI-1 127 patients had recurrent disease, 43 progressive disease and four no sign of recurrence. Median TFI for women primary operated at TH, was significantly longer than for those operated at NTH (10.3 months vs. 7.2 months, P=0.02, HR 1.44, 95% CI 1.06–1.97). After adjustment for performance status, the risk of getting recurrence or death at NTH was still 1.4 higher compared to TH, (95% CI 1.02–1.94, P=0.04).

On recurrence 102 patients were eligible for second line treatment. For second line treatment, platinol-based chemotherapy (C) (N=60) resulted in a significantly longer median TFI-2 when compared to non platinol-based C given to 37 women, (13.2 months vs. 7.0 months, P=0.02 regardless whether the primary treatment took place at TH or NTH. Secondary cytoreductive surgery followed by (C) performed on 5 patients, compared to C treatment alone, resulted in longer median TFI-2 (20 months vs. 10 months) indicating a beneficiary role of secondary cytoreductive surgery followed by C.

Conclusions: Patients with EOC IIIc operated primary at TH achieved longer TFI-1 compared to patients operated at NTH. After second line treatment, patients eligible to platinol based treatment experienced prolonged TFI-2 compared to those treated with non-platinol based C regardless of hospital level. The secondary cytoreductive surgery warrants further investigation as a second line treatment.

ABSTRACT 148

Poster position PoOb 72

Risk of preeclampsia in pregnancies from assisted reproductive technologies

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Objective: Adverse perinatal outcomes are more common in pregnancies after assisted reproductive technologies (ART) compared to those spontaneously conceived (non-ART). This disadvantage is not fully understood, but increased obstetrical complications in ART pregnancies have consistently been observed. We estimated the risk of preeclampsia (PE) in singleton pregnancies following ART compared to spontaneous conceptions.

Methods: Population-based data from Medical Birth Registry of Norway, 1988–2010, including 583,506 mothers with at least one offspring. Information about ART was available through a separate registry. Infants were linked to their mothers by the national identification number, enabling us to do birth order specific analyses dependent on each woman’s previous reproduction.

Outcome measures: Odds ratio (OR; 95% confidence intervals) of PE in first, second and third pregnancies of women with ART relative non-ART was estimated. ART in second and third pregnancies were following non-ART births.

Results: The prevalence of PE was 4.6% in first, 2.2% in second and 2.1% in third pregnancies. Corresponding figures in ART pregnancies were 5.3%, 4.4% and 3.3%. Thus, the ORs of PE in ART relative non-ART pregnancies increased from 1.2 (1.1–1.4) in first, 1.6 (1.3–2.0) in second to 2.1 (1.4–3.3) in third pregnancies. Adjusting by maternal age lowered the OR to 1.4 (1.1–1.7) and 1.9 (1.1–3.3), respectively. Further adjustment for change of partner did not influence the results.

Conclusions: The prevalence of PE is decreasing by parity, while the risk of PE in ART relative to non-ART pregnancies increases. The association between infertility and PE is not explained by maternal age or new partner.
**ABSTRACT 149**

Poster position PoOb 77

**Activation of Pattern Recognition Receptors in First Trimester Trophoblasts Induce Pro-inflammatory Cytokine Production**

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**Aim:** To examine the expression and activation of Pattern Recognition Receptors (PRRs) in first trimester trophoblasts, in order to extend knowledge of relevance for an immunological role in placental inflammation.

**Background:** The placenta constitutes a physical and immunological barrier to protect the fetus against invading infectious agents and harmful inflammation. Normal pregnancy is characterized by a mild systemic inflammation, representing the body’s physiological adaption to pregnancy, while a pregnancy complicated by pre-eclampsia (PE) is characterized by a harmful state of elevated systemic and placental inflammation. Intrauterine infections and cell stress or damage may evoke local inflammatory responses by activation of PRRs. PRRs are critically important sensors of both invading pathogens and endogenous inflammatory inducers, and activation results in production of pro-inflammatory cytokines. At the fetal-maternal interaction site, local maternal immune cells have traditionally been assigned the most active immunological role. However, recent observations of PRR expression in trophoblasts suggest that trophoblasts contribute to placental immunity and inflammation, both in normal pregnancies and in inflammatory pregnancy disorders.

**Methods:** Primary trophoblasts were isolated from first trimester placentas (n = 6) by enzyme degradation and gradient centrifugation with lymphocyte separation medium. Gene expression of Toll-Like Receptors (TLR1 - TLR10), NOD-Like Receptors (NLRP3, NOD1 - NOD2) and RIG-1-Like Receptors (RIG-1, LGP-2) in primary first trimester trophoblasts and trophoblast cell lines (BeWo and ACH-3P) was quantified by RT-qPCR. Trophoblasts were stimulated with specific PRR ligands and release of pro-inflammatory cytokines was analyzed by Multiplex.

**Results:** Primary first trimester trophoblasts expressed all 15 PRR mRNAs examined and specific PRR-activation of trophoblasts increased production of the pro-inflammatory cytokines IL-6, IL-8, and IP-10. The trophoblast PRR gene expression and cytokine production pattern differed between individuals. When primary trophoblasts were compared with trophoblast cell lines, they were found to express a broader panel of PRRs and to respond more potently to PRR-activation.

**Conclusion:** Primary first trimester trophoblasts broadly express PRRs and PRR-activation induces potent release of pro-inflammatory cytokines, indicating a broad trophoblast immune potential and demonstrating that trophoblasts may contribute to placental inflammation.

**ABSTRACT 150**

Poster position PoOb 14

**Normative curves for abdominal circumference and weight at birth and the association with maternal pregestational BMI**

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**Objective:** To establish normative birth curves for abdominal circumference and weight stratified by gestational age and gender and to estimate the impact of maternal pregestational BMI.

**Methods:** Nationwide data on Danish pregnant women and their offspring born between January 1, 2004 and December 31, 2010 were extracted from The Danish
Medical Birth Registry. Children born in gestation 35+0–41+6 weeks were selected for further analyses. Normative reference curves for birth abdominal circumference and birth weight, stratified by gender and gestational age, were constructed. Only the offspring of mothers who were non-smokers, had no medical condition and were in the healthy pregestational Body Mass Index (BMI) category «18.5 to 24.9 kg/m²» contributed to the normative curves. In addition, we investigated the relation of abdominal circumference and birth weight to maternal pregestational BMI by using linear regression analyses and by constructing curves stratified by maternal pregestational BMI.

**Results:** 366 886 children were born in gestation 35+0–41+6 weeks from 2004 till 2010 and were included for further analyses. 181 487 children were born to healthy, non-smoking mothers with BMI between 18.5 and 24.9 kg/m² and contributed to the normative curves. Across all gestational ages both birth weight and birth abdominal circumference increased and boys were consistently larger than girls. Maternal pregestational BMI had a significant positive impact on both mean abdominal circumference and mean birth weight.

**Conclusions:** We have constructed new normative curves for birth weight and abdominal circumference based on the offspring of healthy, non-smoking mothers with a normal BMI. We have shown positive association between maternal BMI and both birth weight and birth abdominal circumference and created curves visualizing the results.

**ABSTRACT 151**

Poster position PoOb 23

**What do pregnant women know about Downs syndrome when they come for prenatal diagnosis?**

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**Background:** Fetal diagnostic testing for Downs syndrome (DS) is frequently used in Sweden as a part of the antenatal care. Information to expecting women about prenatal diagnosis (PND) for chromosomal aberrations focuses on the risk of bearing children with chromosomal abnormalities, i.e. DS, and the risks associated with amniocentesis and chorionic villus sampling. Routinely, no information is given about the symptoms of DS and the consequences for the child and the family. This study examined what pregnant women know about medical, cognitive and social aspects of DS.

**Method:** A questionnaire was answered by 105 women taking a CUB-test (combined ultrasound and biochemistry) at Uppsala University hospital during 2010–2011.

**Results:** 18% of the women had received information about DS and 63% would like more information. 50% of the children with DS learn to speak, which 49 % of the women answered. 43 % of the women thought that all of them learned to speak. Everyone with DS learns to walk, which a majority of the women answered. 17% of the women thought that 50% or less learn to walk. 20% of the children with DS learn to read, which only 33 % answered. The majority of the women thought that the number was higher. Half of the children with DS have heart anomalies, which 50% answered. 34% of the women thought it was more common with heart anomalies. 70% of children with DS have hearing problems, which only 20% of the women knew. 77% thought it was less common with hearing problems. More than 90% of the children with DS live with their biological parents, which 64% of the women answered. 30% thought this number was lower. Parents with children with DS work outside the home as often as parents of other children do, which 53% answered. 44% of the women thought that parents of children with DS were less likely to work outside their home.

The study also showed that those who had a higher education had better knowledge than those who had only finished high school. Parity and whether the women lived in the countryside or in the city had no statistic significance.
Conclusion: Many pregnant women who choose to do CUB-testing have insufficient knowledge about the medical, cognitive and social consequences for children with Downs syndrome. These findings support the view that prior to antenatal screening for Downs syndrome, pregnant women need more information about Downs syndrome and what it means for the affected child and the family. Improved information to pregnant women about medical, cognitive and social consequences of DS, could help the women to make informed decisions regarding PND.

**ABSTRACT 152**

Poster position PoOb 60

**Use of ICD-10 Codes to monitor Uterine Rupture: Validation of a National Birth Registry**

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The rapidly increasing frequency of cesarean section (CS) in many countries makes it essential to be able to monitor severe complications in subsequent pregnancies. One known complication in pregnancies after CS is uterine rupture. The aim of our study was to examine the validity of registration of uterine rupture within the population of pregnant women with prior CS in the Danish Medical Birth Registry, by conducting a review of the medical records.

**Materials:** The Birth Registry contains data on 99.8% of all deliveries in Denmark. Since 1995 data on complications and interventions during pregnancy and delivery are recorded according to the International Statistical Classification of Diseases 10th Revision (ICD-10) and NOMESCO’s classification of surgical procedures. Uterine rupture during labor is described by the ICD-10 code D0711 and closure of uterine rupture by the intervention code KMCC. Information on prior CS is defined by the codes DZ358E and D0342 in the particular pregnancy and by search for prior deliveries with codes for CS in the registry.

The present study is based on data from the Danish Medical Birth Registry from January 1st 1997 to December 31st 2007.

**Methods:** We identified women with singleton births at term recorded with D0711 or KMCC (n=629). To comply with possible lack of reporting uterine rupture, the extraction was supplemented with information on women with singleton births at term recorded with prior CS and adverse perinatal outcome (Apgar score below 7 at 5 minutes, umbilical artery blood pH less than 7.05, admission to NICU for more than 1 week or incidence of diagnosed respiratory therapy or neonatal seizures (ICD10 codes; DP52, DP90))(n=1076). Information from the 1705 medical records was requested and 1637 (96%) medical records (610 coded with rupture and 1027 with prior CS and adverse neonatal outcome) were retrieved and reviewed manually.

**Results:** Among the 610 women recorded with D0711 or KMCC in the Birth Registry 380 (62%) actually had a uterine rupture of which 145 were complete and 235 were partial uterine ruptures. In women with prior CS and adverse perinatal outcome 29 had a complete uterine rupture and 19 had a partial uterine rupture. Thus, during the period there were at least 174 complete uterine ruptures of which 29 (16.6%) were not reported to the Birth Registry.

The sensitivity of the codes D0711 and KMCC in the Danish Medical Birth Registry was 88.8%, and the specificity was 99.4%. Positive and negative predictive value was respectively 62.3% and 99.9%

**Conclusions:** The diagnosis of uterine rupture is massively over-reported to the Birth Registry. Furthermore at least 16% of clinical important complete uterine ruptures are not reported. At present the Danish Birth Registry is not able to provide a valid monitoring of uterine rupture. Education in coding of obstetric data and implementation of specific codes for suspected, complete and incomplete uterine rupture are proposed.
ABSTRACT 153
Poster position PoOb 75

A population and family based study design to investigate genetic predisposition to preeclampsia and cardiovascular disease. The Norwegian Preeclampsia Family Study
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Aim: We aimed to establish a population based biobank, founded on a cohort of Norwegian families with increased occurrence of preeclamptic pregnancies, with phenotypical characterization of the participating individuals and their families.

Background: Preeclampsia (PE) is the most frequent gestation-associated complication in the Western world. It affects 2–8% of all pregnancies, and is a major cause of maternal and fetal morbidity and mortality. PE is commonly defined as reproducible hypertension with proteinuria after 20th gestational week. Importantly, women with PE pregnancies have up to eight-fold higher risk for subsequent development of atherosclerosis/cardiovascular disease (CVD). PE is a multifactorial syndrome where research indicates affected women to have an immunological and/or inflammatory imbalance and pathologic angiogenesis. PE is considered a complex genetic syndrome, with divers and partly unrecognized genetics underlying disease susceptibility. PE clusters within families, and a woman has a 3–5 times increased risk of an affected pregnancy if a 1st degree relative experience PE. This implies syndrome predisposition, and accordingly, family studies are increasingly recognized as valuable resources for investigating the underlying genetics of such diseases.

Methods: Planning of the Norwegian PE Family Study started in 2002 with application for approvals, and in 2008 the final confirmation from the Norwegian Directorate of Health was given. We defined a familial disposition for PE as when a woman and her mother, daughter or sister both were registered as having the disease. 1003 women giving birth in 1967–2005 and fulfilling the criteria were identified in the Medical Birth Registry of Norway through the national identity numbers. The diagnoses were validated using hospital records as gold standard. 426 index women of families containing two first-degree relatives with validated PE diagnoses were invited to participate in the study and to include relations. Information on obstetric and medical history of participants and their families, focusing on PE phenotype, growth restricted offspring (SGA), CVD and diabetes, was gathered in a structured interview. Peripheral blood samples were collected from all participants and stored at -80° C. Pedigrees were recorded and phenotypes noted according to disease subgroups.

Results: 76 families with a total of 451 individuals participated in the Norwegian PE Family Study, volunteering clinical information and blood samples, and were strictly characterized according to phenotype. The phenotypes were grouped as: PE according to severity, PE with or without SGA infants, and PE with or without CVD development or diabetes.

Conclusion: We have, through a population and family based cohort study, established a substantial biobank valuable for future research on PE.

ABSTRACT 154
Poster position PoOb 7

Procedure-related complications and perinatal outcome after intrauterine transfusions in red cell alloimmunization in Stockholm
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Introduction: We present a review of all cases of intrauterine transfusions (IUT) in red cell alloimmunization over the last 20 years in Stockholm. The aim of the study was to establish the frequency of procedure-related complications, define factors related to complications and to investigate the perinatal outcome of the pregnancies.

Material and Methods: A retrospective cohort study was conducted of all women treated with IUT due to erythrocyte immunization in Karolinska University Hospital between June 1990 and June 2010. Primary outcome variables were fetal and neonatal survival, procedure-related complications and gestational age at delivery. Data were retrieved from hospital medical records and from registers and databases at the Department of Transfusion Medicine. Neonatal data were obtained from The Swedish Quality Register on Neonatal Intensive Care (www.pnq.se) and from medical records. All data was entered into a standardized web-based database (www.gravimm.se) before analysis. Stepwise forward logistic regression analysis was performed to define factors independently related to procedure complications.

Results: A total of 284 transfusions were performed in 84 pregnancies, with an overall survival rate of 91.8%. The most common cause of severe hemolytic disease requiring IUT was RhD immunization that occurred in 83.3% of the women. Of these, 28.3% had been immunized during their first pregnancy. Procedure-related and fatal complications occurred in the present study in 4.9 and 1.4% of fetuses or neonates, respectively. Procedure-related complications were significantly more common in free-loop transfusions than in transfusions in the intrahepatic part of the umbilical vein (OR: 5.4, p = 0.025). There was no significant difference between the intrahepatic and the placental cord insertion route (p = 0.83). Gestational age at first transfusion was significantly associated with an increased risk of a procedure-related complication (OR: 0.8, p = 0.019). Of the live-born infants, 24% of the neonates were born before gestational week 34. A majority, 61.2%, of the neonates were treated with exchange transfusions after birth and all but two required phototherapy.

Discussion: Our study confirms previous studies demonstrating favorable results with intrauterine transfusions. The results from our hospital are comparable with published results from larger centers.

Is high sagittal position (‘høy likestand’) an indication for Cesarean section?

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Background: In Nordic and German obstetrical literature persistent sagittal position (HSP) of the fetal head is suggested as an indication for Cesarean section (CS). High sagittal position (HSP) is called ‘høy likestand’ (Norwegian), ‘høj ligestand’ (Danish), ‘hög rakstand’ (Swedish), ‘korkea suora’ (Finnish) and ‘hoher Geradstand’ (German). In Latin the position is divided and called either ‘Positio occipitalis pubica’ or ‘Positio occipitalis sacralis’. In English and French literature high sagittal position is not an obstetrical issue. It is not known if this difference is due to linguistics or obstetrical practice. The aim of the study was to examine if primiparous women with prolonged first stage of labor and ultrasound assessed high sagittal position could deliver vaginally.

Methods: We performed a prospective observational study in 105 primiparous women with prolonged first stage of labor according to WHO. Prolonged first stage was defined when cervical dilatation crossed the ‘action line’ 4 hours parallel to the ‘alert line’. Abdominal and transperineal ultrasound were used to define fetal position and head descent. Sagittal position was defined as position ≥11.00 and ≤1.00 or ≥5.00 and ≤7.00 hours, and high station was defined as head-perineum distance > 40 mm (corresponding to a station higher than zero, ‘above the spines’). The main outcome was vaginal delivery vs. Cesarean section and a secondary outcome was duration of labor. Results were analysed using chi-square test and Kaplan-Meier curves.

Results: Twenty-eight fetuses (27%) were in sagittal position and 12 (11%) in high sagittal position at the moment of diagnosis prolonged labor. Seven (58%) of the 12 fetuses in high sagittal position delivered vaginally and five (42%) had a CS (p=0.89). Time from
crossing the action line to delivery for women at high stations stratified to HSP or non-HSP was not significantly different.

**Conclusion:** More than 50% of fetuses in high sagittal position delivered vaginally, probably due to spontaneous rotation. Diagnosing high sagittal position in a primiparous woman with prolonged first stage labor should not necessarily suggest a Cesarean section.

**ABSTRACT 156**

Poster position PoOb 103

An evaluation of improved access to transport for emergency obstetric care in Northern Uganda using caesarean section rate

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(3) Doctors with Africa CUAMM, Kampala, Uganda
(4) University of Bergen, Bergen, Norway

**Introduction:** Despite the global emphasis on reduction of maternal mortality, it has been slow in most low-income countries. Improved access to transport for mothers with complications during pregnancy, delivery and/or post-partum is one way to improve maternal health. Doctors with Africa (CUAMM), a non-governmental organization introduced a free-of-charge 24-hour ambulance service including communication services in Oyam District, Northern Uganda with the aim of improving access to emergency obstetric care in the district. We evaluated this intervention by using ‘caesarean section proportion’ (CSP, one of the UN process indicators for monitoring maternal mortality), comparing it with the neighbouring district of Apac, without the intervention.

**Methods:** We compared time series of secondary data from maternity registers and/or theatre operations log books in intervention and non-intervention areas 3 years before and 3 years during the intervention.

**Results:** The average CSP in the intervention district increased from 0.57% prior to the introduction of the intervention to 1.21% (p=0.022) during the intervention, while there was no change in CSP in the neighbouring district (0.51% to 0.58%, p=0.512). In addition, hospital deliveries showed an increase from an average of 1082 before the intervention to 1491 during the intervention, while there was no change in the number of hospital deliveries in the neighbouring district over the same period (a mean of 1776 before and 1725 during the intervention).

**Conclusion:** Providing a reliable 24-hour transport and communication services from primary health care facilities to the hospital increased access to and utilization of emergency obstetric care services and improved the process indicator CSR towards reducing maternal mortality in Uganda.

**ABSTRACT 157**

Poster position PoOb 106

New ways to prevent mother to child transmission during breastfeeding in low-resource settings – the PROMISE PEP trial

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(3) University of Ouagadougou, Ouagadougou, Burkina Faso
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The PROMISE PEP trial (also numbered ANRS 12174) is a clinical trial comparing the efficacy and safety of prolonged infant peri-exposure prophylaxis (PEP) with lopinavir/ritonavir (LPV/r) versus lamivudine to prevent HIV-1 transmission through breast milk in children born to HIV-1-infected mothers not eligible for highly active antiretroviral treatment (HAART) and having benefited from perinatal antiretroviral (ART) regimens. The study started enrollment in November 2009 and is recruiting 1500 mother-infant pairs in 4 African countries, Burkina Faso, Uganda, Zambia and South Africa. The study design is a multisite, randomised clinical trial. Infants are randomised to receive LPV/r or lamivudine twice daily from day 7 after birth until 4 weeks after cessation of breastfeeding (BF). We promote exclusive BF (EBF) up to 6 month followed by a transition period. The primary
objective is to compare the efficacy of infant LPV/r from day 7 until 4 weeks after cessation of BF (maximum duration 50 weeks) to prevent postnatal HIV-1 acquisition between 7 days and 50 weeks of age. The main endpoint is acquisition of HIV-1 (as assessed by HIV-1 DNA PCR) between day 7 and 50 weeks of age and secondary outcome is HIV-1-free survival until 50 weeks. A secondary objective is to assess the safety of long-term infant prophylaxis with LPV/r versus Lamivudine (including resistance, adverse events and growth) until 50 weeks. The study population consists of HIV-uninfected infants at day 7 (± 2 days) born to HIV-1 infected mothers not eligible for HAART who choose to breastfeed their infants and who have benefited from the national prevention of mother to child transmission (PMTCT) program during pregnancy and delivery. The expected outcome of the study when completed in 2013 is to inform on the relative advantages (efficacy) and drawbacks of two interventions to support HIV-1 infected mothers not eligible for HAART to safely breastfeed their babies. If found to be safe and efficacious, the regimens would avoid the existing contradiction between optimal infant feeding and the prevention of MTCT through breast milk. ClinicalTrials.gov Identifier: NCT00640263.

Methods: We carried out an exclusive breastfeeding promotion study, PROMISE-EBF, in three African countries: Burkina Faso, Uganda and South Africa. It was a multicentre community-based cluster-randomised behavioural-intervention trial. Here, we report the perinatal mortality of two sites: rural Banfora, southwest Burkina Faso and Mbale District, eastern Uganda. All pregnant mothers in the clusters were followed from second semester until day 7 after birth. A total of 895 pregnant women were followed in Burkina Faso and 835 in Uganda.

Results: We were able to document very high perinatal mortality rates in two of our sites: Uganda and Burkina Faso.

<table>
<thead>
<tr>
<th></th>
<th>Stillbirths (a)</th>
<th>END (b)</th>
<th>Perinatal mortality (c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burkina Faso</td>
<td>54</td>
<td>27</td>
<td>79</td>
</tr>
<tr>
<td>Uganda</td>
<td>19</td>
<td>22</td>
<td>41</td>
</tr>
</tbody>
</table>

(a) Stillbirth rate/1000 pregnancies
(b) Early neonatal deaths/1000 live born
(c) Perinatal deaths/1000 pregnancies

Conclusion: The advantage of these figures is that they are based on prospectively followed pregnancies and at least these figures are not artificially low. Based on these findings, efforts focusing on improving birth care are desperately needed in both these countries.

Abstract withdrawn
**Background:** The significance of breast size increment during pregnancy in PCOS women, for successful breast feeding is unexplored. The impact of metformin on breast size increment and breast feeding duration is also essentially unknown.

**Methods:** To study this, we performed a follow-up study of a randomized controlled trial (The PregMet study), involving 11 secondary care centers. Women with PCOS were randomized to metformin or placebo from first trimester to delivery. Questionnaires were sent to 256 participants one year postpartum; 199 responded. Pre-pregnancy and late pregnancy bra size, weight development in pregnancy, breast feeding pattern and androgen levels were registered.

**Results:** Women with no change in breast size were older, more obese, had higher blood pressure, serum triglycerides and fasting insulin levels, and had shorter duration of breast feeding compared to those with breast size increment.

No difference in breast size increment and breast feeding were found between the placebo and metformin group. Breast size increment correlated positively to the duration of exclusive breastfeeding, while BMI correlated negatively to the duration of partial breast feeding. Dehydroepiandrosterone (DHEAS), testosterone and free testosterone index (FTI) in pregnancy did not correlate to breast size increment or duration of breast feeding.

**Conclusions:** PCOS women with no breast size increment in pregnancy seem to be more metabolically disturbed and less able to breast feed. Metformin had no impact on breast feeding.

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**ABSTRACT 161**

**Poster position PoOb 68**

**Metformin-effect on newborn head size, maternal and infant weight development: a follow-up study of an RCT on PCOS**

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(3) Unit for Applied Clinical Research, Institute for Cancer Research and Molecular Medicine, Norwegian University of Science and Technology, Trondheim, Norway

**Background:** The impact of metformin medication in pregnancy on the offspring’s anthropometry and weight development, and maternal weight in PCOS is essentially unexplored.

**Methods:** This is a follow-up study of a randomized controlled trial (The PregMet study), conducted in 11 secondary care centers. Women with PCOS were randomized to metformin (2000 mg daily) or placebo from first trimester to delivery. Questionnaires were sent to 256 participants one year postpartum; 199 responded. Maternal weight development in pregnancy and one year postpartum, and offspring anthropometry at birth and weight one year postpartum were registered.

**Results:** Women randomized to metformin during pregnancy, gained more weight from the first trimester of pregnancy to one year postpartum, compared to those in the placebo group. Metformin exposed girls had increased head circumference at birth compared to placebo exposed ones in multivariate regression model (p = 0.001). In boys, there was no difference between the groups. At one year of age, intrauterine metformin exposure resulted in increased body weight in both girls and boys.

**Conclusions:** PCOS women randomized to metformin during pregnancy, had higher weight one year postpartum compared to those in the placebo group. Metformin exposure in utero seems to increase head circumference in girls but not in boys at birth. Metformin might have long-term impact on weight development in utero exposed children.

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**ABSTRACT 162**

**Poster position PoOb 25**

**Preload reserve in the second half of pregnancy: a longitudinal study**

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**Background:** Hemodynamic response to passive leg raising (PLR) has been used recently as a dynamic test of preload reserve and appears to be a better predic-
tor of fluid responsiveness than the static measures of preload, such as central venous pressure and pulmonary capillary wedge pressure. This manoeuvre provides an “autofluid challenge” which is rapid, transient and reversible. PLR transfers blood contained in the venous reservoir of the lower extremities to the central venous compartment leading to a transient increase in preload that should lead to an increase in cardiac output by Frank-Starling mechanism in preload responsive individuals. Blood volume mobilised by leg raising can vary significantly even among healthy individuals depending on their body composition, total circulating blood volume, state of hydration etc. Pregnancy causes profound alterations in systemic hemodynamics and circulating blood volume is increased significantly. However, no study has so far evaluated hemodynamic effect of PLR in pregnant women.

**Objective:** Serially evaluate the hemodynamic response to PLR in the second half of normal pregnancy.

**Method:** Hemodynamic response to PLR was longitudinally studied in 46 healthy pregnant women during 20–40 weeks of pregnancy at 4-weekly intervals using impedance cardiography. Heart rate (HR), mean arterial pressure (MAP), Stroke volume (SV), cardiac output (CO) and systemic vascular resistance (SVR) were measured in a semi-recumbent position at baseline and 90 second after PLR. Preload reserve was calculated as the percent change in CO during PLR compared to baseline.

**Results:** From 20 to 40 weeks, the PLR caused a 2.3 to 4.3% decrease in HR (p=0.2733), and 5.4 to 4.0 decrease in MAP (p=0.1861). PLR led to a 2% increase in SV at 20 weeks, no change at 25–28 weeks and a 2% reduction at 35–40 weeks (p=0.2139). PLR decreased SVR by 9.7% at 20 weeks to 0.3% at 31 weeks, thereafter it increased the SVR from 0% at 32 weeks to 1.9% at 40 weeks (p =0.0026). The CO decreased by 1.5% from the baseline at 20 weeks and by 0.1% at 22 weeks during PLR, but after 23 weeks it increased steadily until 40 weeks from 0.6% to 6.2% (p=0.0097).

**Conclusion:** There was a small but significant change in preload reserve during the second half of normal pregnancy and a positive response to PLR was seen only after 22 weeks of gestation.

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**ABSTRACT 163**

**Poster position PoGy 1**

**Impact of over-night shifts on cognitive functions and laparoscopic skills among Norwegian gynaecologists**

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(3) University of Surrey, Guildford, United Kingdom

**Background:** Gynaecologists working long on call shifts often have to perform emergency operations at the end of their shifts. Previous studies have shown impaired technical skills among surgeons after a night on call assessed by Virtual Reality (VR) simulator. Because it is unethical to run a clinical trial involving sleep-deprived surgeons, simulation studies have become an accepted substitute for real-life surgery in this field of research. However, surgery consists of proper judgement as well as technical skills. We are therefore conducting a study where both cognitive functions and laparoscopic skills among gynaecologists are tested directly after 17.5 hours on site call.

**Methods:** A prospective cohort study of 28 gynaecologists trained to proficiency on the SimSurgery VR laparoscopic simulator. Directly after 17.5 hours on call the participants are asked to repeat 3 procedures of the ectopic pregnancy module on the VR simulator (SimSurgery). The cognitive test consists of a standardized cognitive test-battery (CANTAB) performed on a touch screen PC (http://www.camcog.com/). Rested baselines for both tests have been gathered before post call testing is conducted. Construct validation of the Ectopic Pregnancy module on the SimSurgery VR simulator has been done as part of this trial.

Outcome measures are laparoscopic psychomotor skills and cognitive performance. The participants’ age, sex, former surgical experience, hours of sleep, caffeine-intake and subjective feeling of tiredness, Karolinska Sleepiness Scale (KSS) (range 1–9), are being recorded.

**Results:** Baseline performances on cognitive functions and laparoscopic skills of 28 gynaecologists working on call shifts at the Department of Gynaecol-
ogy and Obstetrics, Haukeland University Hospital have been collected. The post call testing will be completed by the end of April 2012. The results will be analyzed and presented on the 38th Nordic congress of obstetrics and gynaecology in Bergen, June 2012.

**ABSTRACT 164**

Poster position PoOb 2

**Hyperemesis gravidarum - what is new? Highlights from seven Norwegian epidemiological studies**

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(4) Department of Mathematics, University of Oslo, Oslo, Norway

Studies based on Norwegian Medical Birth Registry

1. There is a substantial variation in prevalence of hyperemesis gravidarum (hyperemesis) in Norway by maternal country of birth which cannot be explained by differences in maternal socio demographic factors. Women born in Africa (except North Africa) and India or Sri Lanka were 3.4 (95% confidence interval (CI): 2.7–3.5) and 3.3 (95% CI: 2.6–3.4) times more likely to develop hyperemesis than women born in Norway.

2. Associations between hyperemesis and duration of residence in Norway did not show a universal pattern across immigrant groups. Women born in Central and South America had lower risk of hyperemesis with increasing length of residence, p for trend=0.026.

3. Consanguinity was not associated with hyperemesis in this study.

4. Daughters who were born after a pregnancy complicated by hyperemesis had 3 times higher risk of having hyperemesis in their own pregnancy, while women who were born after an unaffected pregnancy had a risk of 1.1%; unadjusted odds ratio 2.9 (95% CI: 2.4–3.6).

Studies based on the Norwegian Mother and Child Cohort

5. Among non-smokers, both underweight and obese women were more likely to develop hyperemesis than normal-weighted women; odds ratio (OR) 2.36 (95% CI: 1.43–3.88) and OR 1.48 (95% CI: 1.00–2.20), respectively. No associations were found among smokers.

6. Moderate intake of water and adherence to a healthy diet, including vegetables and fish, are associated with a lower risk of developing hyperemesis. Women in the upper tertile of seafood consumption had lower risk of developing hyperemesis than those in the lower tertile, OR 0.56 (95% CI: 0.32–0.98). Women in the second tertile of water intake had a lower risk of developing hyperemesis than those in the first tertile, OR 0.43 (95% CI: 0.25–0.73).

Institution based Case-Control Study

7. This study did not find Helicobacter pylori exposure to be significantly associated with the development severe hyperemesis among immigrant women residing in Norway. This was regardless of whether Helicobacter pylori exposure was investigated by IgG seropositivity, CagA and VacA seropositivity or by presence of Helicobacter pylori feces antigens.

**ABSTRACT 165**

Poster position PoOb 87

**Postpartum weight retention and breastfeeding among obese women from the LiP (Lifestyle in Pregnancy) Study**

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**Background:** Postpartum weight retention may have important implications for future health and weight development. There is limited knowledge about the postpartum effect of a lifestyle intervention program in obese women during pregnancy.
Objective: To study the effects of restricted gestational weight gain on weight retention six months postpartum among obese women from the “Lifestyle in Pregnancy” (LiP)-study, and to determine the effect of breastfeeding on postpartum weight retention.

Design: The LiP-study was a clinical trial in 360 obese women randomized to a lifestyle intervention program with diet counseling and physical activity or to a control group during pregnancy. A number of obstetric outcomes and gestational weight gain was recorded. Follow-up six months postpartum was to examine maternal weight development, lifestyle habits, and breastfeeding status.

Results: A total of 46.3% of women from the intervention group and 57.4% of women in the control group had retained weight six months postpartum, though the difference was not significant (p=0.088). Women with gestational weight gain <9kg, as recommended within Institute of Medicine, had significantly lower postpartum weight retention compared to women who exceeded 9kg (median -0.7 versus 1.5, p<0.001). Ninety-two percent in each group breastfed. The rate of breastfeeding was significantly higher among women with postpartum weight retention <5kg compared to those >5kg (94.2% versus 85.1%, p=0.034).

Conclusions: The lifestyle intervention during pregnancy in obese women resulted in significantly lower gestational weight gain, but no sustainable effect was measured six months postpartum. Women who adhered to gestational weight gain recommendations had significantly lower postpartum weight retention. Breastfeeding was negatively associated with weight retention postpartum.

Introduction: The aim of this study was to describe venous thromboembolism (VTE) in pregnancy and the puerperal period and to validate ICD-10 diagnoses of VTE.

Material and Methods: Historical cohort study including all pregnancies in Denmark from 1995 to 2009. VTE diagnoses were retrieved from the National Registry of Patients.

Results: In 1,377,286 pregnancies, 1,436 women had a first ever VTE diagnosis. Hospital records were retrieved for 1,210 women (84.3%). Most women had relevant clinical symptoms, and 796 (65.8%) were considered confirmed by a positive diagnostic test or instituted anticoagulation treatment. In all, 72.6%, 53.7%, 58.5% and 79.1% of the diagnoses were confirmed in the first, second, and third trimester, and the puerperal period, respectively. The incidence rate of confirmed VTE was 0.7 per 1,000 pregnancies. The 796 confirmed diagnoses of VTE included 624 women with deep venous thrombosis only, 133 with pulmonary embolism, of which 27 also had deep venous thrombosis. During pregnancy, deep venous thrombosis was located in the left lower limb in 83.8%, compared to 67.9% in the puerperal period. The mean number of days with clinical symptoms before admission with deep vein thromboses and pulmonary embolism was 5.8 days and 8.0 days, respectively. Of the 654 confirmed events of deep vein thrombosis, 586 (89.6%) were diagnosed by Doppler ultrasound or phlebography. Of 133 pulmonary embolism, 109 (82.0%) were confirmed by pulmonary scintigraphy or CT-scan. Of the confirmed deep venous thrombosis the proportion with a positive diagnostic test rose from 87.7% in pregnancy to 97.2% in the puerperal period.
Conclusions: Almost all women diagnosed with VTE had relevant symptoms. Diagnoses of VTE were paraclinically confirmed in 2 out of 3 women. The validity of diagnoses of VTE was highest during the first trimester and in the puerperal period.

ABSTRACT 167
Poster position PoOb 33

Vaginal breech delivery during the last ten years. A prospective registration study

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(2) Oslo University Hospital, Oslo, Norway

Background: In 2000, the results of a randomized multicenter trial, the Term Breech Trial (TBT), were published in the Lancet. The trial revealed lower neonatal morbidity and mortality in the planned cesarean section arm versus the planned vaginal delivery arm. The consequences have been significant, and most countries now recommend planned cesarean section in breech births. In Norway, however, the recommendations have not been changed, mainly due to a low perinatal morbidity in Norway compared to both study groups of the TBT. Furthermore, in Norway there is a high quality fetal monitoring, skilled obstetric staff, and a good neonatal service, in contrast to many of the participating clinics in the TBT trial. As a result, Norway has continued a practice with vaginal delivery assuming that guidelines are being followed. However, delivery of breech babies has been heavily debated also in Norway following the TBT trial, both by professionals and the general public. The aim of this study was to explore neonatal mortality in a Norwegian hospital ten years after the TBT trial.

Methods: Data on breech deliveries at Sørlandet Hospital has been prospectively collected in a comprehensive ‘breech database’ since 2001. Maternal delivery data as well as neonatal morbidity and morbidity data are registered. All women with a singleton at term (>37 weeks) between 2001 and 2011 were included.

Results: In this period, 568 women had persistent singleton breech presentation at Sørlandet Hospital Kristiansand. Of these, elective caesarean section was planned in 279 (49%) cases, whereas vaginal delivery was planned in 289 (51%) cases. Fifteen percent (83/568) of the women in the planned vaginal group had an undiagnosed breech presentation at birth, and of these 51 women (61%) delivered vaginally. Acidemia was defined as pH below 7.05 and measured in 149 cases, whereof 119 belonged to the planned vaginal group. Of these, 11 had pH < 7.05, and none in the planned cesarean section group. Seven children in the planned vaginal group had an Apgar score <7 after five minutes versus none in the planned cesarean section group. 37 infants were transferred to the neonatal intensive care unit, significantly more in the planned vaginal group (29) than in the planned cesarean section group (8, p< 0.001). Among the 568 breech deliveries, there was only one case of neonatal neurological morbidity in the planned vaginal delivery group, comprising neonatal cramps, brachial plexus injury, cephalohematoma, and mechanical ventilation treatment. According to the medical chart, this child showed normal development at two year’s age.

Conclusions: Vaginal delivery was planned in a half of singleton fetuses in breech presentation at term. Except for one case, no serious morbidity was observed in any of the fetuses delivered vaginally. Vaginal delivery of breech presentation remains a safe clinical option that can be offered to women provided that the recommend guidelines are followed.

ABSTRACT 168
Poster position PoGy 34

Does levator avulsion cause clinical distension of the levator hiatus?

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Background: Levator avulsion, the traumatic disconnection of the levator ani muscle from the pelvic sidewall, is common and associated with prolapse and prolapse recurrence. To diagnose avulsion it has been necessary to use 4D ultrasound or magnetic resonance imaging. It has recently been shown that enlargement of the levator hiatus can be diagnosed clinically by measuring the distance between the urethra and the anus on maximal Valsalva, a measure known as ‘genital hiatus + perineal body’, gh+pb. In this
study we set out to determine whether gh+pb can predict levator avulsion. We also analysed the association between hiatal area on Valsalva and avulsion.

Methods: A total of 295 women attended a tertiary referral service for urodynamic testing and 4D pelvic floor ultrasound imaging between September 2010 and October 2011. Patients underwent an interview and a clinical examination using the ICS POP-Q, including measurement of the genital hiatus (gh) and perineal body (pb) at maximal Valsalva. Offline analysis of ultrasound datasets was performed retrospectively, and blinded to all other patient data. We used tomographic ultrasound imaging (TUI), to diagnose avulsion of the puborectalis muscle. The measurement of gh+pb was tested against avulsion. We also measured the hiatal area on maximal Valsalva, and tested its predictive performance for avulsions.

Results: When adding genital hiatus(gh) and perineal body(pb) on Valsalva, we obtained a mean of 7.9 (range 4.2–13) cm. 70 women (24%) were diagnosed with an avulsion on tomographic ultrasound. The mean hiatal area on Valsalva was 28.3 (range 9.7–59.5) cm2. On using ROC characteristics to describe the predictive performance of measuring gh+pb for avulsion, we found that optimal sensitivity (70%, 95%CI 59–79%) and specificity (70%, 95%CI 66–72%) was achieved with a cut off of 8.5 cm for gh + pb. By using ROC characteristics to describe the predictive performance of hiatal area for avulsion, we found optimal sensitivity (81%, 95%CI 71–89%) and specificity (73%, 95%CI 70–75%) with an area of 30cm2 as a cut off. Avulsion was substantially more likely in women with gh + pb ≥ 8.5cm (OR 5.32, 95%CI 2.85–9.98, RR 3.51, 95%CI 2.20–5.72). In comparison, a hiatal area of 30cm2 or more on Valsalva gave an OR of 11.64 (95%CI 5.70–24.15) and a RR of 6.5 (95% CI 3.71–11.94) for avulsion.

Conclusion: The measurement of genital hiatus and perineal body (gh+pb) on maximal Valsalva is associated with avulsion injury. Values over 8.5cm imply a high risk of avulsion and allow the identification of women at potentially increased risk of prolapse and prolapse recurrence after corrective surgery. However, imaging evidence of hiatal overdistension seems a more powerful predictor of levator avulsion than the measurement of gh+pb on clinical examination.

**ABSTRACT 169**

Poster position PoOb 1.2

The Cardiac State Diagram as a novel approach for evaluation of phases of the cardiac cycle in asphyxiated fetal lambs

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Objective: To investigate myocardial wall motion, using echocardiography and colour-coded tissue velocity imaging and generate Cardiac State Diagram according to a recently new developed program for evaluation of the duration of the Pre- and Post Ejection phases, in the cardiac cycle in asphyxiated fetal lambs.

Methods: Six near term lambs were partly exteriorized and monitored using echocardiography and colour-coded tissue velocity imaging while brought through asphyxia to cardiac arrest. Arterial blood sampling for lactate and blood gas measurements were simultaneously performed, the first sample taken before cord occlusion and then every 5 min until cardiac arrest. The heart’s mechanical function of the fetal lamb was evaluated in newly developed software GrippingHeart Lab based on the assumption that the heart’s pumping and regulating functions acts according to a new pump-principle today recognized as the Dynamic Adaptive Piston Pump principle. The results from the software are displayed in an easy to interpret Cardiac State Diagram.

Results: All foetal lambs showed a prolongation of the Pre- and Post Ejection phases at the same time when the most pronounced change in lactate and pH occurred. The percentage change of the duration of the Pre- and Post Ejection phases were significantly longer in all fetal lambs, 49% (p<0.001) and 38% (p<0.049) respectively. The heart’s mechanical function was interpreted and visualized in a Cardiac State Diagram where the cardiac events are detected and displayed.
Conclusion: As asphyxia progresses in fetal lambs, the duration of the Pre- and Post Ejection phases increased and the Cardiac State Diagram has the potential of being a comprehensible tool for detecting fetal asphyxia.

ABSTRACT 170
Poster position PoGy 17

Effects of hormonal contraception on women's sexual function: a cross-sectional study in a cohort of Danish women

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Objective: To investigate the relationship between the use of combined hormonal contraceptives (HC) (oral, transdermal or vaginally) and women's sexual function, with special emphasis on type of progestin.

Design and Methods: A questionnaire including Female Sexual Function Index (FSFI) and Female Sexual Distress Scale (FSDS) with additional questions on use of contraception was completed by a community sample of 252 healthy women aged 18–35 years.

The participants were divided into two groups: 151 users of HC and 101 non-HC users. The HC group was further divided into two subgroups: 27 participants using HC containing anti-androgenic progestin (AP-HC) and 124 participants using HC containing other types of progestin (O-HC).

Main outcome measures were FSFI, cut-off at 26.55 indicating sexual problems and FSDS, cut-off at 15 indicating Female Sexual Distress.

Independent samples t-test was performed comparing FSFI and FSDS scores. Chi-squared test was performed comparing the distribution around cut-off.

Results: The HC group reported significantly less sexual distress than the non-HC group. We found no differences in reported sexual problems between the HC and the non-HC groups.

In subgroup analysis, we found that the AP-HC group reported significantly more sexual problems and significantly more sexual distress than the O-HC group. The AP-HC group also reported significantly more sexual problems, but not more sexual distress, than the non-HC group.

In the subgroup analysis we found that the O-HC group reported significantly less sexual problems and significantly less sexual distress than the non-HC group.

Conclusion: In a cross-sectional setting we found a significant negative influence of combined HC containing anti-androgenic progestin on women's sexual function. Users of other types of combined HC had significantly less sexual problems and significantly less sexual distress than non-HC users.

ABSTRACT 170
Withdrawn

ABSTRACT 172
Poster position PoGy 36

Combined anal sphincter repair and site specific posterior repair with anatomic perineorrhaphy. Retrospective study and a DVD demonstration of the surgical technique

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Background: Diagnosed, obstetric anal sphincter injury occurs in 3–6% of all vaginal deliveries. Our hypothesis is that women with anal incontinence and an ultrasonographic sphincter defect also have a defect in the rectovaginal fascia with a low rectocele and a thinned perineal body. Patients will therefore benefit from a combined anal sphincter repair, a site specific posterior repair and anatomic perineorrhaphy.

Method: A retrospective study. All women underwent a 3D anal ultrasound, a 3-month clinical follow up and a telephone interview follow-up for up to 53 months postoperatively. St. Marks score was used to evaluate anal incontinence. All women had a preoperative and a 3-month postoperative gynecologic examination.
POP-Q was used to evaluate pelvic organ prolapse. ICI-Q was used to evaluate urinary incontinence. Bother in relation to defecation, urinary incontinence, LUTS, prolapse, sexual function and QoL was evaluated using a 0–10 point scale. We used a midline incision in the vaginal skin. In cases with an overlooked grade four perineal tear a transverse incision was made at the mucocutaneous transicion. In all other cases we used a midline incision in the perineum. The rectovaginal fascia and the perineal body was dissected by the urogynecologist. The fossa ischiorectalis was dissected by the colo-rectal surgeon, who then performed an overlap sphincteroplasty. Rectovaginal fascia defects were sutured by the urogynecologist, who also rebuild the perineal body anatomically, as the bulbospongious and the transverse perineal muscles were reunited in the midline. We used descriptive statistics and a paired students t-test was used to compare St. Marks scores.

Results: Eighteen women with a median age of 35.5 years (range, 22–54 years) were operated between September 2005 and October 2009. Median follow up was 22.5 months (range, 3–53 months). Median parity was 2. According to the women, 11 of the sphincter injuries were diagnosed and sutured primarily (61%). Fourteen women had a rectocele stage > 2 preoperatively and 6 described having a wide genital hiatus. The mean St. Marks score was 13.9 preoperatively and 5.5 postoperatively (p < 0.001). Ten women had improved sexual function. At 3-months follow up none of the women had a rectocele and 12 were satisfied with the caliber of the genital hiatus. Six and eight women, respectively, had persistant bother > 5 in relation to defecation problems and of QoL. Perioperative complications included rectal mucosal lesion with fistula, hematoma and wound infection.

Conclusions: The overall results after combined anal sphincet repair, site specific posterior repair and anatomic perineorrhaphy are excellent in relation to anal incontinence with a significant decrease in St. Marks score. However further, prospective studies are needed to confirm our findings.

ABSTRACT 173

Poster position PoGy 51

A discordant histological risk classification in preoperative biopsy and hysterectomy specimens in endometrial cancer is reflected in metastatic risk and prognosis

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Introduction: In endometrial cancer, tissue for histological evaluation is obtained preoperatively as endometrial biopsy and peroperatively. Clinicians base advice for adjuvant treatment and prognosis on the histology obtained after hysterectomy. Preoperative biopsy results are thereafter ignored, including when results are discordant in grade or histological type. We wanted to investigate if a discordant risk classification based on preoperative biopsy and hysterectomy specimens is reflected in metastatic risk and prognosis.

Material and Methods: We analysed data on 1374 prospectively included patients in a multicentre setting (MoMaTe study). Mean follow-up was 32 months. Preoperative biopsies and hysterectomy specimens were classified as low (hyperplasia and endometrioid histology grade 1 and 2) versus high risk (endometrioid grade 3, all non-endometrioid histological subtypes), and related to presence of lymph node metastasis. Survival differences were calculated by means of Kaplan-Meier and Cox proportional hazard models.

Results: A discordant risk in preoperative biopsy and hysterectomy specimen was found in 207 (16%) cases. Lymph node metastases were detected in
6.9% and 23.0% of patients with concordant low and high risk respectively, compared to 13.9–19.7% in the discordant groups (p<0.001). 5-year survival in the discordant groups proved intermediate (75.5–80.2%) to those with concordant low (94.3%) or high (59.5%) risk. Cox analysis showed both hysterectomy and preoperative biopsy results to have independent prognostic impact on survival with adjusted hazard ratios of 2.4 (95%CI 1.5–3.9) and 2.1 (95%CI 1.3–3.2) respectively.

**Conclusion:** A discordant risk in preoperative biopsy and hysterectomy identifies an intermediate group with respect to disease spread and prognosis. Preoperative biopsy results therefore remain important also with the hysterectomy histology available and should be incorporated in the clinical practice.

**ABSTRACT 174**

**Follow up after obstetric anal sphincter injuries - comparison of telephone interview and clinical follow-up**

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**Background:** Obstetric anal sphincter injury (OASIS) leads to a high risk of sequelae, including anal incontinence (AI). The incidence of AI is highly underreported due to social stigma. Different set-ups have been used to detect women with AI after OASIS. This is important both to make early secondary reconstruction of OASIS possible and to offer further treatment. We conducted a retrospective study comparing women with OASIS offered a telephone interview (TI) and clinical control (CC) if symptoms (Group A) with historical controls (Group B).

**Methods:** Data on women at Hillerød Hospital, Denmark, with OASIS were extracted from the local database, medical journals and questionnaires. OASIS was classified according to Sultan. The clinical interventions were similar in the groups. In Group A women with OASIS were offered a TI day 7, 3 and 12 months, and CC if symptoms. The TI was done by specially trained nurses according to a modified ICIQ-B questionnaire and if the women reported symptoms of AI or pain, they were seen by one of two doctors with special interest in OASIS. In Group B all women with OASIS were offered unsystematic CC after 3 months. They were assessed by different doctors without using a systematic questionnaire or CC. Data on attendance, AI, urgency and dyspareunia were compared.

**Results:** The rate of OASIS in group A and B was 3.6% (94/2637) and 3.0% (87/2893), respectively. The rate of women who did not attend the offered follow-up was 14.9% (14/94) in group A and 21.8% (19/87) in group B.

In group A the remaining 80 women called for TI at day 7; 75 (93.7%) called at 3 months and 56 (70%) called at 12 months follow-up. Of these 7.5% (6/80) had a CC after 7 days, 13.3% (10/75) and 10.7% (6/56) after 3 and 12 months, respectively. The rate of women who at day 7, 3 and 12 months TI reported AI for gas was 40.0% (32/80), 29.3% (22/75) and 21.4% (12/56); for soft stools 11.2% (9/80), 6.7% (5/75) and 8.9% (5/56); for solid stools 1.2% (1/80), 4% (3/75) and 3.6% (2/56) and faecal urgency 21.2% (17/80), 18.6% (14/75) and 16.1% (9/56) respectively. Overall, 21.3% (16/75) reported dyspareunia at 3 month TI.

In group B no systematic data at CC on AI and other sequelae were available. In the medical journal 7 had no data on AI, 19 had no data on dyspareunia and 60 patients had no data on faecal urgency. Of the remaining 36.1% (22/61) reported AI for gas, 9.8% (6/61) for soft stools, none for solid stools, 87.5% (7/8) reported faecal urgency and 33.3% (16/48) reported dyspareunia.

**Conclusion:** Follow up after OASIS is essential as sequelae are frequent and affects quality of life. As the historical CC was done unsystematically, data are not possible to compare. However, follow-up by TI increased the rate of attendance compared to clinical follow-up. Furthermore offering a systematic follow-up by TI at day 7 makes it possible to detect AI, thereby making early secondary repair possible.
**ABSTRACT 175**

Poster position PoOb 84

**The pregnancy following a pregnancy complicated by gestational diabetes (GDM)**

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During a three-year period (2009–2011) in total 9740 gave birth at the Department of gynaecology and obstetrics, Lillebaelt Hospital, Kolding, Denmark, and 305 (3.1%) were diagnosed GDM. The diagnosis was the result of the Danish routine screening program, inviting pregnant women with: Prior GDM; pre-pregnancy BMI ≥ 27; a family history of diabetes; a previous offspring birth weight above 4500g; or glucosuria were invited to have a 75g-Oral Glucose Tolerance Test (OGTT). The blood samples were analysed at the hospital laboratory in accordance with a standardised procedure. The pregnant woman were diagnosed GDM if the blood glucose was 9,0mmol/l or higher after two hours.

Women with pre-gestational diabetes mellitus are not comprised of the screening program (OGTT) and they are therefore not considered in the present study.

Among the sample of 305 GDM patients 47 were admitted for antenatal care during the following pregnancy. This study consider the preconceptional BMI, the OGTT and HbA1C and the pregnancy outcome among them.

**ABSTRACT 176**

Poster position PoGy 9

**Unwanted pregnancies and the choice of induced abortion in women under 25 years of age in Denmark**

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**Background:** In the period 1999 to 2009 the rate of induced abortions in women below 25 years of age was increasing in Denmark. The National Board of Health decided in 2009 to conduct a nationwide investigation of the women in the age groups 15 to 19 and 20 to 24 seeking for induced abortion in order to learn more about the background of the decision of induced abortion and the knowledge of contraceptive methods and the use of contraception in these groups. The intention was to be able to focus and adjust family planning work to meet the needs.

**Methods:** In the period April 1st to November 30th 2009 all women in the above mentioned age groups seeking for induced abortion were asked to fill in a questionnaire regarding partnership, socio-economic status, social situation, level of education of themselves and their parents, knowledge and use of contraception, etc.

**Results:** 1216 women completed the questionnaire (516 ages 15–19, 700 ages 20–24). After analyzing the results the women could be grouped into three groups according to their contraceptive use and knowledge: “The beginners”, “The insecure”, and “The experienced”. To the surprise of the investigators more than half of the women had not used any contraception at the intercourse that resulted in the unwanted and unplanned pregnancy leading to the induced abortion. Many other things were learnt from the answers to the questionnaire.

**Conclusion:** This study gave a lot of knowledge about adjustment of the contraceptive counseling according to different groups with different knowledge, habits and needs. A lot could be learnt by this study regarding future family planning work.

**ABSTRACT 177**

Withdrawn

**ABSTRACT 178**

Poster position PoGy 50

**PEComa, a case with recurrent tumour of the uterus and vagina**

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(3) Odense University Hospital, Odense, Denmark

**Background:** In the period 1999 to 2009 the rate of induced abortions in women below 25 years of age was increasing in Denmark. The National Board of Health decided in 2009 to conduct a nationwide investigation of the women in the age groups 15 to 19 and 20 to 24 seeking for induced abortion in order to learn more about the background of the decision of induced abortion and the knowledge of contraceptive methods and the use of contraception in these groups. The intention was to be able to focus and adjust family planning work to meet the needs.

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**Conclusion:** This study gave a lot of knowledge about adjustment of the contraceptive counseling according to different groups with different knowledge, habits and needs. A lot could be learnt by this study regarding future family planning work.
Background: Perivascular epitheloid cell (PEC) is a cell type constantly present in a group of tumours called PEComas which include angiomyolipoma (AML), clear-cell "sugar" tumour (CCST) of the lung and extrapulmonary sites and lymphangioleimyomatosis (1). They are usually composed of epitheloid but occasionally spindled cells with clear to granular eosinophilic cytoplasm and focal perivascular accentuation (2).

PEComas occurs most often in middle-aged patients of both genders with an overall female-to-male ratio of 7:1 (3). PEComas have been described in different organs, often kidney, lung and uterus, and are considered ubiquitous tumors (1).

Gynecologic PEComas often occur in the uterus corpus, but is also described in cervix, the broad ligament, the rectovaginal space and the vagina (1).

PEComas usually shown benign behaviour, but some are aggressive and have metastases (1).

Materials and methods: We report a case of PEComa in the vagina in a 48-year-old woman who was referred to the gynaecological department in 2009 due to tumours in the vagina. A biopsy was taken and diagnosed as PEComa. Since 1993 she had had several tumours removed from the uterus and from the vagina and cervix, all of them were originally diagnosed as leiomyomas. The tumors removed from the uterus were primarily removed by fertility sparing operation twice but later a hysterectomy was performed.

After the PEComa was diagnosed in 2009 the other tumours were taken to second opinion and rediagnosed as PEComas as well.

A MR and PET scan was performed. It showed several small tumours in the wall of vagina and a few slightly enlarged lymphnodes by the iliac artery and vein but otherwise normal conditions and no distant metastasis.

A total vaginal extirpation was performed. Unfortunately microscopically the vaginal resection margin was not free and the patient has therefore been followed with MR scans every fourth month in the first 2 year. The patient still show no signs of recurrence.

Conclusion: The case story shows the importance of knowledge of this very rare tumour. The malignancy potential is unclear, but it is important to try to remove the tumour radically in order to reduce the risk of recurrence. Even though usually benign or low malignant there have been reports about metastasis and also death caused by the PEComa (1).


ABSTRACT 179
Poster position PoGy 48

Hexamino levulinate photodynamic therapy for treatment of cervical dysplasia

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Introduction: Patients with cervical dysplasia (CIN) are either followed up regularly to ensure regression or treated using surgical procedures. As watchful waiting may cause patient anxiety and conisation is associated with undesirable side effects, a non-invasive therapeutic modality is needed. Hexamino levulinate (HAL) photodynamic therapy (PDT) offers the patient and gynecologist a selective treatment for dysplastic cells by activation of a photosensitive drug. The product is developed by Photocure with support from The Research Council of Norway. Here we report the first feasibility study and design of an on-going multicenter study using this procedure.

Method: In the feasibility study, 13 patients were recruited from 3 centres in Norway and France. Patients with biopsy confirmed mild to moderate grade dysplasia (CIN1/2) were included and randomised to receive HAL 5% ointment or placebo for 5 hours followed by light activation of 100J/cm2. HAL is easily applied ectocervically by the gynaecologist using a cervical cap with an integrated light source. After drug absorption a red light will automatically be turned on and treat the affected area. At end of treatment, the light will shut down and the patient will remove the device herself. Patients were followed up with cytology, HPV test and biopsy for 6 months.
Results: Of 13 patients 10 received active and 3 placebo treatment. Eleven patients had diagnosis of CIN1 and two patients had CIN2. The drug/device was easily applied by the gynaecologist and well tolerated by the patients including removal of the device. Average time from device insertion until removal was 16 hours. Nine patients reported 11 adverse events of which 3 were related to the treatment. These events were mild to moderate discomfort from using the device and one report of flor vaginalis.

Out of 10 patients with CIN1 who received HAL PDT seven showed a normal biopsy, five with normal cytology and two with ASCUS at 6 months. Two additional patients showed normal colposcopy and cytology but with no available biopsy. One patient progressed to CIN3. In the placebo group one CIN1 patient regressed while two patients with CIN2 were stable and progressed to CIN3 respectively. HPV was available from 9 patients with variable results.

Based on these safety data FDA granted Photocure permission to embark on a double-blind, placebo controlled study that has recruited 262 patients with CIN1/2 from 23 centres in Europe and US. The results of the study will be reported at the end of 2012.

Conclusion: HAL PDT is a new tissue preserving treatment under development for patients with CIN1/2. The treatment is easy to use and seems to be well tolerated. Efficacy must be documented in ongoing clinical trials.

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**ABSTRACT 180**

Poster position PoOb 110

**Elective induction of labour in parous women and the risk of caesarean section**

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Objective: To estimate the association between elective induction of labour and caesarean section in a cohort of parous women without prior caesarean section and to assess if the association is influenced by method of induction.

Methods: In a cohort of 8167 term (37-41 weeks) births without prior caesarean section or present pregnancy complication, the risk of caesarean section was calculated for births with induced onset using births with spontaneous onsets as reference. Births with elective caesarean section were not included. Inductions with amniotomy and cervical ripening were studied separately. The risks were calculated as odds ratio (OR) and adjusted for parity, maternal age, gestational length, infant’s weight, use of epidural anesthesia and year of birth.

Results: In the cohort 346/8167 (4%) births had an elective induction of labour. Compared with labours with a spontaneous onset, induced labours had a more than twofold increased risk of caesarean section, OR 2.5 (95% CI 1.4–4.2). The risk was especially high if cervical ripening was required, OR 3.6 (95% CI 1.7–7.6).

Conclusions: In parous women without prior caesarean section elective induction of labour increases the risk of caesarean section. The risk is influenced by requirement of cervical ripening agents. Women need to be counseled about the increased risk.

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**ABSTRACT 181**

Poster position PoOb 5

**Expression and function of sweet taste receptors in the human uterus**

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Objectives: Sweet taste perception is detected by G-protein coupled receptor which functions as heterodimer; T1R2/T1R3 (1) Evidence suggests an association between pre-term delivery and consumption of artificially sweetened soft drinks.(2) It is possible artificial sweeteners may modulate uterine contractility as recent evidence has shown that saccharin augments bladder contraction.(3)

We hypothesized that these receptors are present in human uterus and direct activation of sweet taste receptors by artificial sweeteners alters myometrial contractility contributing to pre-term labour.

Materials and methods: 6 uterine samples were collected with informed consent from pregnant and non-pregnant women during surgical procedures such as elective caesarean section and hysterectomy. Sections of human uterine wall were cut from paraffin blocks and stained by immunohistochemistry (IHC)
to determine presence of the receptor proteins. Uterine homogenates were subjected to sodium dodecyl sulfate-polyacrylamide electrophoresis and immunoblotting to quantify expression and molecular weight of each T1R protein.

**Results:** Expression of T1R2/T1R3 sweet taste receptors is evident in endometrium and myometrium of non-pregnant and myometrium of pregnant human uterus by immunostaining. Immunoblotting revealed bands at expected molecular weights in human pregnant and non-pregnant uterus and these proteins are more densely expressed in myometrium compared to the endometrium. Bands expressing proteins for T1R2 appeared to be denser in pregnant myometrium than in non-pregnant myometrium. However, for T1R3 the bands appear to be slightly denser in non pregnant myometrium.

**Conclusion:** Sweet taste receptors are expressed in the uterus and may provide a target for the action of artificially sweetened soft drinks on myometrial contractility. This action may be enhanced in pregnant myometrium due to increased expression of the T1R2 receptor. We are carrying out further investigations to determine the effects of pregnancy on sweet taste receptor expression and effects of artificial sweeteners on uterine contractility by organ bath methodology.

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Bayer HealthCare invites you to a Symposium on Sunday, June 17th, 12.00–13.00

New Treatment Option for Endometriosis

Prof. ALFRED O. MÜCK
Centre of Endocrinology and Menopause, University Women’s Hospital of Tübingen, Germany.

Dr. THOMAS FAUSTMANN
Global Medical Affairs Gynecological Therapy, Bayer Pharma, Berlin, Germany.

Dr. MARGITA GUSTAFSSON
Hallands Hospital, Kungsbacka, Sweden.
FRONT COVER

By the Norwegian artist and anatomist Harald Kryvi: “The art of vaginal delivery”? Not only the Norwegian Trolls are delivered in breech or by forceps. By focusing on the skills of vaginal deliveries, excellent statistics for perinatal outcome is combined with a cesarean section rate around 10% at the hosting institution.