



2016 AUDIT MEETING

Diabetic Pregnancy Study Group of the EASD



Dublin, Ireland
September 29 – October 1, 2016



DIABETIC PREGNANCY STUDY GROUP / EASD
[HTTP://DPSGHOME.ORG](http://dpsghome.org)



SEPTEMBER 2016

Welcome!

Dear DPSG Audit Meeting attendees, invited guests, and friends,

On behalf of the DPSG Board and local Organising Committee, I am pleased to welcome you to the DPSG Audit Meeting 2016 in Dublin, Ireland.

The last DPSG meeting to be hosted in Ireland was in 1991 in County Wexford, located in the “sunny south east” of the island. This year the Audit Meeting is taking place for the first time in the country’s capital city close to both the city centre and Irish coast.

This year’s Audit Meeting has a very intensive schedule which will focus on the future of the DPSG, as well as the most pressing topics facing our field today. We hope the three day programme will provide a forum for networking and collaboration, as well as an opportunity to connect with friends, both old and new. In addition to the extensive daily programme, we hope you will be able to sample a flavour of traditional Irish culture and have the chance to wind down in the unique surroundings of the hotel.

The Organising Committee would like to thank attendees who have travelled from all over the world to participate in the meeting - your participation is very important to the advancement of the DPSG. We would also like to acknowledge the generous support and cooperation of the members of the DPSG Board, as well as our key Industry Sponsors who play a vital role in the future of our field and beyond.

Finally, we would like to wish you an enjoyable and educational stay in Dublin.



Prof. Fidelma Dunne MD PhD
Committee Chair of the 2016 Audit Meeting of the Diabetes Pregnancy Study Group (DPSG)



Organizing Committee

The Board of the Diabetic Pregnancy Study Group of EASD

Ute Schaefer-Graf (Germany), Chair
David McCance (UK), Past Chair
Angela Napoli (Italy), Member
Maria del Pilar Ramos Alvarez (Spain), Member
Gernot Desoye, (Austria), Treasurer

Local Organizing Committee

Fidelma Dunne, Chair

Sponsors

The Organizing Committee of the DPSG Audit Meeting would like to thank our industry sponsors for their contributions in support of this meeting.



Thursday, Sept 29 th	Friday, Sept 30 th	Saturday, Oct.1 st
ARRIVALS		
	8:30-10:15 SESSION A: Type 1 Diabetes Chairs:- Rosa Corcoy / Adam Tabak	08:30-10:15 SESSION C: Fetal Growth and Development Chairs: Charles Savona-Ventura / Sander Galjaard
	10:15-10:30 Coffee Break	10:15-10:30 Coffee Break
14:00-19:00 REGISTRATION	10:30-11:30 BREAK OUT SESSION for TYPE 1 DM WORKING GROUPS 11:30-12:30 WORKING GROUPS CONVENE For presentation and discussion	10:30-11:30 BREAK OUT SESSION for FETAL GROWTH & DEVELOPMENT WORKING GROUPS 11:30-12:30 WORKING GROUPS CONVENE For presentation and discussion
	12:30-13:30 Lunch	12:30-13:30 Lunch
15:00-17:00 BOARD MEETING Shrewsbury Room	13:30-15:15 SESSION B: Obesity and GDM in Pregnancy Chairs: Josip Djelmis / Kristina Renault	13:30-15:15 SESSION D: Public Health Issues Chairs: Donald Coustan/Sarah Meltzer /Christos Zoupas
	Short Recess Break	15:15-15:30 Coffee Break
	15:15-16:15 BREAK OUT SESSION for OBESITY & GDM WORKING GROUPS 16:15-17:15 WORKING GROUPS CONVENE For presentation and discussion	15:30-16:30 BREAK OUT SESSION for PUBLIC HEALTH ISSUES WORKING GROUPS 16:30-17:30 WORKING GROUPS CONVENE For presentation and discussion
18:00-20:00 SESSION Meeting Overview and DPSG Future Pembroke Rooms 1&2 Fidelma Dunne and Ute Schaefer-Graf	Short Recess Break	17:30-18:00 Break
20:00 Special Address to Attendees	17:15-18:15 GENERAL ASSEMBLY Chair: Ute Schaefer-Graf	18:00-20:00 CONCLUSION Chairs: Ute Schaefer-Graf / Angela Napoli Final discussion DPSG Future Verbal Report from External Auditors

2016 Audit Programme

THURSDAY, SEPTEMBER 29

Opening Session and Dinner

18:00 – 20:00

Chairs : Ute Schaefer-Graf and Fidelma Dunne

1. Welcome and purpose of the Audit (5 minutes)
2. Review of structure of the meeting (5 minutes)
3. Introduction of the external auditors (10 minutes)
4. Future of the DPSG (90 minutes including discussion)
 - a. Primary focus of DPSG: What have we accomplished and which direction would we like to take in the future? (20 minutes)
Ulf Eriksson/Helen Murphy/Katrien Benhalima
 - b. Structure of future meetings, registration fees, industry involvement, awards (20 minutes)
Ute Schaefer-Graf/Maria del Pilar Ramos / Christina Vinter
 - c. Our visibility in the public / international lobbying (15 min)
David McIntyre /Maria Grazia Dalfra/Jeannet Lauenborg
 - d. Databases, Cohorts, Biobanking
Would we like to set up an international database/biobank led by DPSG members? (15 min)
Robert Lindsay/Marta Viana/Louise Kelstrup
 - e. Finances, What to do with our financial deposit? (10 minutes)
Gernot Desoye/David McCance (Charity Status)

20:00 Special Address to Attendees

FRIDAY, SEPTEMBER 30

8:30- 10:15 Session A

Type 1 Diabetes

Chairs: Rosa Corcoy/Adam Tabak

Update: *Perinatal Outcome: development since the 2006 Audit (10 minutes)*

Rosa Corcoy/Adam Tabak

1. Advantage of new technologies: analogs, insulin pumps, CGM (20 min)

Elisabeth Mathiesen/ Helen Murphy/Aoife Egan

2. Optimal glucose and HbA1c targets to improve outcome vs risk for maternal hypoglycemia (20 min)

Michael Maresh/Eleni Anastasiou/Jenny Myers

3. Risk and complications: obstetrical, vascular complication (nephropathy, retinopathy, hypertension) (20 min)

Jacques Lepercq/ Angela Napoli

4. Could we prevent or delay Type 1 Diabetes in the offspring? (20 min)

Rosemary Temple/Per Ovesen/ Nicoletta Dozio /Yasue Omori

10:15- 10:30

Coffee break / Working groups move to break-out rooms

10:30-11:30

Division of participants into 4 working groups as to their interest area to further discuss and work on one of the topics 1-4. Working groups are chaired by the speakers.

11:30 – 12:30

Reunion of all participants: Short presentation and discussion of the results of the working groups presented by the speakers who chaired the working group

12:30-13:30 LUNCH

13:30 – 15:15 Session B

Obesity and GDM in Pregnancy

Chairs: Josip Djelmis/Kristina Renault

Update: Prevalence and obstetrical problems (10 min)

Josip Djelmis/Kristina Renault

1. Obesity - Underlying mechanism for pathophysiology/therapy: Miscarriage, PCOS (evidence for metformin use), preeclampsia, GDM (20 min)

Patrick Catalano/Harold de Valk/Agnieszka Zawiejska

2. Weight gain: influence on outcome, targets for weight gain (20 min)

Fidelma Dunne/Ewa Wender-Ozegowska/Christina Vinter

3. Interventions : Exercise, diet, Vitamin D, probiotics, bariatric surgery (20 min)

David Simmons/Mireille van Poppel/Annunziata Lapolla

4. Risk based management strategies/ Low and high risk GDM/ individual intensity of care/ who qualifies for Metformin (20 min)

David McIntyre/ Janet Rowan / Denise Feig /Ute Schaefer-Graf

15:15

Working groups move to break-out rooms / Short recess

15:15-16:15

Division of all participants into 4 working groups as to their interest areas to further discuss and work on one of the topics 1-4. Working groups are chaired by the speakers

16:15– 17:15

Reunion of all participants: Short presentation and discussion of the results of the working groups presented by the speakers who chaired the working group

17:15

Short Recess

17:15 – 18:15 GENERAL ASSEMBLY

SATURDAY, OCTOBER 1

8:30 – 10:15 Session C

Fetal Growth and Development

Chair: Charles Savona-Ventura/Sander Galjaard

Update: *Development of birth weight in general, prevalence of growth disorders and malformations- regional/ethnicity differences (10 min),*

Charles Savona-Ventura/ Sander Galjaard

1. What drives excessive fetal adiposity? (20 min)

Alicia Jawerbaum/Emilio Herrera/Sylvie Hauguel de Mouzon/Louise Kelstrup

2. Assessment of fetal and neonatal growth (including growth pattern in diabetes) (20 min)

Roland Devlieger/Helena Fadl/ Philippe Deruelle

3. Relevance of first trimester vs third trimester for fetal development- update on knowledge about the role of the placenta (20 min)

Chris Nolan /Gernot Desoye/ Dorte Moller-Jensen/Mette Tanvig (20 min)

4. Malformations

Mary Loeken/Parri Wentzel/Marta Viana/Ulf Eriksson

10:15- 10:30

Coffee break / Working groups move to break-out rooms

10:30-11:30

Division of participants into 4 working groups as to their interest area to further discuss and work on one of the topics 1-4. Working groups are chaired by the speakers.

11:30 – 12:30

Reunion of all participants: Short presentation and discussion of the results of the working groups presented by the speakers who chaired the working group

12:30 – 13:30 LUNCH

13:30 – 15:15 **Session D**

Public Health Issues

Chair: Donald Coustan/Sarah Meltzer/Christos Zoupas

Update: Epidemiology of diabetes and obesity in pregnancy, childhood and young adults worldwide; influence of ethnicity and society, economic burden for health systems (10 min)

Donald Coustan/ Sarah Meltzer/ Christos Zoupas

1. Long-term outcome of mother and child after pregnancy with diabetes –do we really have a long-term benefit for the children from treating women with diabetes? What about normosomic newborn from lean mothers with GDM? What about non-biochemical issues like autism? (20 min)

Cheril Clarson/Alexandra Kautzky-Willer/Martina Persson/Lene Ringholm

2. Education: Weight loss before pregnancy, periconceptional care specially in Type 2 DM, nutrition education

David McCance/Eleanor Scott

3. GDM screening strategies - Screening in first trimester, screening in third trimester 50 g vs fasting vs 1 step OGTT (20 min)

David Sacks/Boyd Metzger/Peter Damm/Anne Vambergue

4. Microbiomics, genomics, epigenetics, metabolomics, proteomics

David Hill/Bill Lowe/ Tine Clausen

15:15- 15:30

Coffee break / Working groups move to break-out rooms

15:30-16:30

Division of all participants into 4 working groups as to their interest areas to further discuss and work on one of the topics 1-4. Working groups are chaired by the speakers

16:30 – 17:30

Reunion of all participants: Short presentation and discussion of the results of the working groups presented by the speakers who chaired the working group

18:00 – 20:00 **CONCLUSION SESSION**

Chair: Ute Schaefer-Graf/Angela Napoli

1. Final discussion about the future of the DPSG (All members) (90 min)
 2. Report from the External Auditors (30 min)
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Opening Session:

Welcome – Ute Schaefer-Graf and Fidelma Dunne

Primary Focus of DPSG: Where have we been and which direction would we like to take in the future?

Katrien Benhalima / Ulf Eriksson / Helen Murphy

DPSG in the past and now

- Founded in 1969 (Jorgen Pedersen, John Stowers, Joseph Hoet)
- Multidisciplinary clinical and basic scientists
- Members: 40 ordinary (Europeans), 20 honorary (retired) and international
- Associate members
- Meeting held every year
- Inspiration for “other” diabetic pregnancy study groups
- Outstanding research activities: 60 percent of publications on diabetes in pregnancy are from DPSG members.
- Since the start, the research at the DPSG has always been intended for the improvement of the health of the diabetic mother and of the unborn and newborn child.
- The DPSG performed “Translational Medicine”, before this term was commonly used.
- The most important inspiration for the research and clinical approach of the DPSG with start on many large and multidisciplinary collaborations: Hyperglycemia Adverse Pregnancy Outcome “HAPO Study”, studies on Developmental programming,
 - on screening for GDM, studies on the link between Diabetes and Obesity in pregnancy
- The DPSG has been on the frontline of basic and clinical research and clinical management in diabetes and obesity during pregnancy in Europe and worldwide.
- The DPSG has been at the origin of new developments and knowledge.
- The DPSG is an outstanding forum of discussion and information within/for Europe.

Strengths of DPSG

- DPSG leads to excellent collaboration between leading experts in the field of diabetes in pregnancy
- For a young researcher DPSG is an unique opportunity to meet experienced researchers and experts in the field
- Interaction in small groups makes possible the ability to obtain direct feedback and to ask questions without barriers
- Is an important foundation for collaboration on a European level with other researchers
- Leads to collaborations with other important stakeholders in Europe such as EBCOG

Challenges for the future and ideas to improve

- It is important for members to introduce enough young researchers.
- It is important to have a balanced proportion of basic scientists, translational and clinical researchers. Specifically it is important to have and recruit enough ‘adiposity in pregnancy’ scientists in the group
- It is important to have a good balance between researchers in the different fields: diabetes, GDM, obesity...

- It is important that researchers from many different European countries attend with a good representation of the different regions in Europe
- Travel grants for young researchers are very useful and if feasible should be extended
- In the future: Could a panel of experienced researchers of DPSG provide advice on grant applications?
- Be aware of ‘unconscious bias’ when planning the program; Important to have enough speakers of both genders; Alternate speakers of the different genders as much as possible; Stimulate Q&A by women

Conclusion

- The DPSG has been on the frontline of basic and clinical research and clinical management in diabetes and obesity during pregnancy in Europe and worldwide.
- The DPSG has been at the origin of new developments and knowledge.
- The DPSG should strive to continue to be an outstanding forum of discussion and information within/for Europe.
- The challenge is to introduce enough young researchers from many different fields and countries to the group

Structure of future meetings, registration fees, industry involvement, awards

Ute Schaefer-Graf / Maria del Pilar Ramos / Christina Vinter

Structure of future meetings

Situation

- Keynote lectures
- Oral presentations
- Parallel Poster sessions
- Seminars/Debate

Suggestions from last meeting (Malaga)

- Excellence scientific content
- Pro et con debates (not only for Thursday evening get-together debate)
- The posters should remain longer on display to allow everyone to see them
- Allow more time for lunch or provide buffet-type service which is more efficient and would allow more time for people to view the posters during lunch/coffee time.

Proposals

- Keep/Modify? the present structure of the meeting
- Add one debate session
- Basic/clinic more balanced
- Deadline for early registration should be after the notifications of acceptance of abstracts
- Keep the posters on display during the entire meeting
- Provide more time for lunch or perhaps buffet-type service
- Welcome new/young participants
- Initiative: “Young clinical researchers” and “Young basic science researchers”

Registration fees

Situation

- During last 5 meetings registration fees have not increased (between 500 – 580 Euro)

- Normally, meeting costs are covered by delegates' registration and local sponsorships
- Last meeting in Malaga saw a deficit of approximately 20K

Proposals

- To discuss: Increase registration fee to be independent of industry sponsorships versus set an upper limit of 550 Euros
- Decrease cost of the future meeting:
 - Lunch-Coffee-dinner: decrease cost.
 - Lunch- buffet: short time; time for resting/discussing, ...before next sessions
 - Dinners in hotel: do not require transport costs, help to obtain overall discounts from the hotel
 - Tourist locations should be avoided
 - Hotel: Review type of hotel: 5 or 4 stars, is this really necessary? Fixing a maximum price for hotel accommodation?
 - Clarify cancellation details: some participants cancel their hotel & hospitality booking at the last moment, which means most of the costs are covered by the organizer/DPSG
 - Abstract books should be available online on our website with only the scientific programme in paper print
 - Bags: not necessary (unless supported by companies)

Industry involvement

Situation

- Support by industry/companies variable but has become increasingly complicated to acquire
- Mainly pharmaceutical companies
- Aims supported by industry:
 - Awards
 - Meeting
- Pharma sponsorship funding was declined given recent policies:
 - Event locations (no resorts)
 - Social activities (where accompanying persons are in attendance)
 - If the meeting accommodates "accompanying persons"

Proposals

- Type of companies supporting DPSG: Pharmaceuticals & Technological & Food
- Should we allow companies to represent themselves? Can companies submit an abstract?
- Being careful in organizing the meeting to avoid problems with support
- Should we give up industry sponsorships for meetings and try to lower the costs of meetings by lowering the standard of the meeting venue and covering all the costs through registration fees?

Awards

Situation

- Travel awards for young Scientists
- The John Stowers Research Award (Best poster)
- The Joseph Hoet Research Award
- The Jörgen Pedersen Lecture
- Distinguished Ambassador
- Award for best short oral presentation.

Proposals

- New awards?
- Discontinuing some awards?

Other

DPSG Congress App with scientific programme, social programme, room information, speaker information with picture and short bio notes, delegates lists, etc.

Our visibility in the public / international lobbying

David McIntyre / Maria Grazia Dalfra / Jeannet Lauenborg

To be provided on-site

Databases, cohorts, biobanking

Robert Lindsay / Marta Viana / Louise Kelstrup

To be provided on-site

Finance - What to do with our financial deposit?

Gernot Desoye / David McCance

Background/open questions

- Our finances have developed stably with a more or less continuous increase in net property.
- Our three principle sources of 'income' are membership fees (currently € 7150 per year if all pay), as well as industry support from Eli Lilly and Novo Nordisk. Occasionally we receive 50% of the surplus from the DPSG meeting.
- Eli Lilly support for the meetings has been more and more difficult to obtain, the regulations have become tighter year by year (e.g. no tourist destination, no fancy hotel, clear focus on science/ education only), and the items that can be claimed towards the meeting support have become more restricted (e.g. no travel costs, accommodation and registration fee for speakers). Our EliLilly contact changed and we have not worked yet with the new person.
- Novo Nordisk (NN) has supported DPSG over past years thanks to Peter Damm's intensive efforts. This support used to be formalized in a contract between NN and DPSG. NN seems to have changed their policy and they may consider supporting the meeting plus the DPSG operational costs for the meeting. More details will follow when Peter and team negotiate with NN for next year's meeting in Denmark.

Current uncertainties

- Further one time costs for establishing DPSG charity
- Running costs for the DPSG company and DPSG charity (e.g. accountants, taxes, etc.)
- Development of industry support

Questions to discuss

- Shall we continue with our efforts to raise support from two companies (EliLilly, NovoNordisk) or just one and, if the latter, which one?
- Or shall we make ourselves independent of external sponsorships?
- Shall we increase the membership fee? (proposal: € 75 for honorary, international and associate members, and € 120 for ordinary members leading to a total of € 9525)

- What shall we do with our property? Put it into savings account, buy bonds or stocks or a combination thereof?
-

Session A – TYPE 1 DIABETES

UPDATE: Perinatal Outcome: Development since the 2006 Audit

Chairs: Rosa Corcoy / Adam Tabak

1. Outline of 2006 Audit Presentation
 2. Systematic Literature Review since 2006
 - Publications in the period 2006-2016
 - Outcomes of interest: severe, robust outcomes
 - Congenital malformations
 - Mortality (stillbirth, neonatal, perinatal)
 - Limits
 - Articles with information on a reference population
 - Language: English, Roman languages, Hungarian
 - Time trend analysis
-

Session A.1

Advantage of new technologies: analogues, insulin pumps, CGM

Elisabeth Mathiesen / Helen Murphy / Aoife Egan

Background

- Overview of outcomes for women with type 1 diabetes in pregnancy.
(Improvements but not yet meeting St Vincent's Declaration target)
- Description of new technologies currently available.
(Insulin analogues, insulin pumps, continuous glucose monitoring systems)
- Summary of completed studies in these three areas.

Discussion

- Strengths and limitations of existing studies.
- What questions remain unanswered?
- Will on-going/planned studies address these limitations and unanswered questions?
(Describe active studies inc. Conceptt)
- Current recommendations for care.
(Review of guidelines inc. NICE)
- Future directions: discussion of emerging technologies.
(eg. Closed loop systems)

Session A.2

Optimal glucose and HbA1c targets to improve outcome vs. risk for maternal hypoglycaemia

Michael Maresh / Eleni Anastasiou / Jenny Myers

1. Outcome measures – maternal and fetal (reflecting both hypoglycemia and hyperglycemia)
2. Hypoglycemia
 - Definitions
 - Prevalence
 - Implications
3. Review studies on
 - Glucose and outcomes
 - HbA1c and outcomes
4. Evidence for strategies which may reduce risks associated with hyperglycemia
 - Centralisation of care
 - Insulin pumps
 - CGM
5. Evidence for strategies which may reduce hypoglycemia risk
 - Education
 - Insulin analogues
 - Insulin pumps
 - CGM
6. Current recommendations on targets
 - Glucose
 - HbA1c

Session A.3

Type1 Diabetes - Risks and Complications: obstetrical, vascular complications(Nephropathy, retinopathy, hypertension)

Jacques Lepercq, Angela Napoli

Background - Vascular Complications: nephropathy, hypertension

Prevalence of Complications/Hypertension in fertile women and pregnancies with type1 diabetes

1. impact of diabetic complications on pregnancy outcome
2. impact of pregnancy on diabetic complication appearance and progression
 - How often do different complications coexist in our population?
 - Does it change the prognosis?
 - Hypertension in pregnancy
 - The pathogenesis of hypertension in pregnancy: is there any difference between gestational hypertension and preeclampsia as well as between early and late preeclampsia?

Management

Preconception care: Maternal Status

- Contraceptions: Divulge WHO guidelines.
 - Are new contraceptive methods more effective, efficient and safer in diabetic women?
- Which grade of severity of diabetic nephropathy is a contraindication to hormonal contraception?
 - Gaps to be filled

- Which grade of severity of diabetic nephropathy is a contraindication to pregnancy?
- Do we need new strategies to promote pregnancy planning?
 - *multidisciplinary non-traditional teams (psychologists, bioengineers, informatics,..) to build educational projects taking into account young people's channels of communication, their emotions and involvement*
 - *(apps, webgames, social networks)*
- **Evaluate the presence and severity of diabetes complications**
 - *Microalbuminuria and GFR estimation.*
 - *Autonomic diabetic neuropathy: DN Index to all women?*
 - *Hypertension*

Prenatal Care

- Hypertension
 - Hypertension: Do we need more stringent threshold for hypertension diagnosis and treatment?
 - What do we have to observe?
 1. BP levels
 2. Retinopathy
 3. Microalbuminuria / proteinuria GFR estimation
 4. New markers
- Prevention of preeclampsia

Level of perinatal care in the presence of vascular complications and hypertension

- Would new or more sophisticated diagnostic methods (such as OCT for diabetic retinopathy or 24hr- BP monitoring, add any significant information in pregnancy? Which indications and to whom?
- Microalbuminuria and Retinopathy:
 - would new diagnostic methods such as OCT for diabetic retinopathy add any significant information in pregnancy?
- *Diabetic Neuropathy (autonomic/peripheral)*
 - *Impact on pregnancy outcome*
- *Which contraindications to pregnancy?*

Fetal surveillance

Timing and mode of delivery

1. Indicated preterm delivery/term delivery
2. Mode of delivery
3. Treatment of diabetes during delivery
4. Level of prenatal care in the presence of vascular complications and (A/N)

Other risk factors to consider in prenatal care

1. Corticosteroids for fetal maturation
2. Ketoacidosis (*role of new strips testing hematic ketones*)

Session A.4

Could we prevent or delay Type 1 diabetes in the offspring?

Rosemary Temple / Per Ovesen / Nicoletta Dozio / Yasue Omori

Each part requires

- Studies of relevance
- Points made/gaps in knowledge
- Open questions
- What can the DPSG contribute
- Do the DPSG member need to embrace or sustain different practices

Topics to be developed

- A question that we address during the pre-pregnancy consultation: what is the risk of my child developing diabetes? (prediction of risk of disease and/or autoimmunity)
- Can Type 1 diabetes be prevented or delayed at all at present? at which cost? (Trialnet and other studies)
- What is specific of children of mothers vs. fathers with diabetes? Is there enough evidence for a “modulation” of immunity in utero vs. genetics?
- What about the differentiation and maturation of the beta-cell and of autoimmunity in the last weeks of pregnancy and just after birth, can this have an impact? (Cesarean sections? microbioma?)
- Comment regarding cord blood stem cells

Session B – OBESITY AND GDM IN PREGNANCY

UPDATE: Prevalence and obstetrical problems

Chairs: Josip Djelmis / Kristina Renault

Prevalence: Obesity is a major medical problem in today's world, in both developed and developing countries. The share of obese adult women rises annually by 0.3%-0.6% in industrialized and developing countries alike. In spite of famine still present in greater parts of the world, it is estimated that currently there are more than a half of billion obese people worldwide. In the United Kingdom and the USA, more than 50% of women of reproductive age have BMI greater than 25 kg/m². In Germany, a 0.39% annual increase in the prevalence of obesity has been recorded over the past two decades. Germany had the highest number of obese individuals in Europe. However, in comparison to Germany, the share of obese individuals is higher in the United Kingdom, Greece and East European countries. Surprisingly, in spite of the traditionally healthy dietary habits, this unfavorable trend has also been recorded in Mediterranean countries, where the prevalence of obesity was low and constant in 1980, since when it has been abruptly increasing, currently reaching 30% of the population of women and children. Almost every fourth woman of generative age is overweight or obese.

Obstetrical problems: Women may be overweight at the time of conception or may have high gestational weight gain, which results in obesity. Antepartum, intrapartum and postpartum complications are more common in such pregnancies. Frequent antepartum complications are spontaneous abortion, premature delivery, gestational hypertension, preeclampsia, gestational diabetes and urinary infections; intrapartum complications include those related to umbilical cord, meconium

stained amniotic fluid and prolonged labor second stage; and postpartum complications are hemorrhage, puerperal infection and thromboembolism. Women with pre-pregnancy overweight more frequently have macrosomic children, which increases the use of oxytocin, as well as labor termination by operative vaginal procedure and cesarean section. Perinatal mortality is higher in neonates born to obese women, which is related to premature delivery and twin pregnancy. However, great gestational weight gain in women with high pre-pregnancy BMI can lead to the higher rate of low birth weight infants. Children born to obese mothers more frequently suffer from major congenital malformations. Neural tube defects and other anomalies of the central nervous system, great blood vessel anomalies are more frequently found in children born to extremely obese women. Women with high gestational weight gain enter subsequent pregnancy with higher body weight. In obese women, delivery is more frequently terminated by cesarean section as compared to women with normal BMI. There is evidence for obesity as a risk factor for maternal mortality.

Session B.1

Obesity – Underlying mechanism for pathophysiology/therapy: Miscarriage, PCOS (evidence for metformin use), preeclampsia, GDM

Patrick Catalano / Harold de Valk / Agnieszka Zawiejska

Background

Normative changes in pathophysiology of pregnancy complicated by obesity

- insulin resistance
- insulin response

Use of Metformin in pregnancies complicated by obesity

- EMPOWAR (Rebecca Reynolds)
- METFORMIN to decrease neonatal birth weight (Kypros Nikolaidis)

Why lifestyle interventions in obese women may not improve perinatal outcomes

- Insulin response in early pregnancy affects placental growth and gene expression
- Postpartum weight loss and return of maternal pre-pregnancy metabolic status.

Session B.2

Weight gain: Influence on outcome, targets for weight gain

Fidelma Dunne/ Ewa Wender-Ozegowska / Christina Vinter

Background

- Gestational weight gain and influence on outcomes (GDM, birthweight, LGA, SGA)
- Inter-pregnancy weight gain and influence on outcomes (GDM, birthweight, LGA, SGA)
- Targets for weight gain: Overview of results from population based studies *after* "IOM 2009 recommendations on gestational weight gain" with focus on gestational weight gain in obesity class 1, 2 and 3

Discussion

- Strengths and limitations in existing studies
- Recommendations for gestational weight gain
- iWIP collaboration (international Weight management In Pregnancy)
- Future directions: What questions still need to be answered, thus directing future research in the area

Session B.3

Interventions : Exercise, diet, Vitamin D, probiotics, bariatric surgery

David Simmons / Mireille van Poppel / Annunziata Lapolla

Background

- Multiple studies on lifestyle interventions-UPBEAT, LIMIT, DALI, LIP, TOP, RADIEL
 - No effect in the obese
 - For gestational weight gain limitation, combined better than physical activity/healthy eating alone
- Vitamin D supplementation
 - For prevention of GDM-e.g., Sydney study-limited studies-no effect
 - For treatment GDM-limited studies-no effect
 - Other vitamins e.g., myoinositol-GDM prevented-
- Probiotics
 - Finnish/Italian studies-prevents GDM-some caveats
 - Brisbane study awaited
- Prior Bariatric surgery
 - Prevents GDM
 - Complications from post-surgery state

Gaps in knowledge

- GDM prevention:
 - ?lifestyle interventions in the non-obese pregnant woman-do we need more?
 - ?lifestyle interventions from 6-8 weeks gestation-can they be done-would they work
 - Lifestyle before/between pregnancies-can they be done-would they work
- Vitamin D supplementation
 - Do we need any more studies?
 - Is it ethical to do RCT of supplementation if Vit D is <25
 - Best ways to supplement if deficient/insufficient
- Probiotics
 - Real, which, when, how, where?
 - Mechanisms?
 - Colonic lavage-good or bad?
- Prior Bariatric surgery
 - Are the studies good enough?
 - Mechanism of benefit?
 - Consequences of dumping/nutritional deficits
 - How long to wait before getting pregnant?

Session B.4**Risk based management strategies/low and high risk GDM/individual intensity of care/who qualifies for metformin**

David McIntyre / Denice Feig / Janet Rowan / Ute Schaefer-Graf

Background

- Not all women with GDM are equal
- Identifying low and high risk populations
 - HAPO and other data
 - Obesity as an important interaction
 - Fetal perspective
 - “Early GDM”
- Risk based engine concept

Management of low vs. high risk women/individual intensity of care

- Lifestyle advice – diet and weight gain
- Frequency of glucose monitoring
- Role and frequency of ultrasound
- Other obstetric risk factors to consider
- Glucose targets
- When to use metformin
- Locality of care and when to transfer between low and high risk setting

Session C – FETAL GROWTH AND DEVELOPMENT**UPDATE: Development of birth weight in general, prevalence of growth disorders and malformations – regional/ethnicity differences**

Chairs: Charles Savona-Ventura / Sander Galjaard

Infant birth weight is known to be dependent on the interplay of nature and nurture. An excessive birth weight has been associated with definite biological maternal characteristics which in part contribute to the genetic make-up of the child determining fetal growth and birth weight. Infant birth weight is also strongly influenced by the nutrient availability during intrauterine life. Macrosomia is particularly associated with maternal obesity, carbohydrate abnormalities during pregnancy, and excessive weight gain during pregnancy as driven by placental factors. Fetal gender and specific genetic abnormality representing the presence of insulin-related genes also predispose towards excessive birth weight. The altered biochemical state in the first trimester of pregnancy can predispose towards a state of fuel-mediated teratogenesis increasing the risks of early fetal loss and congenital malformations. The workshop will review the drivers towards the development of fetal adiposity and fuel-mediated teratogenesis, and review the current knowledge about the role of the placenta as a determinant for eventual fetal size. The methods available to assess fetal and neonatal growth will also be discussed and analyzed.

Session C.1

What drives excessive fetal adiposity?

Alicia Jawerbaum / Emilio Herrera / Sylvie Hauguel de Mouzon / Louise Kelstrup

Background

1. Impaired maternal homeostasis

- Excessive metabolites glucose
- Excessive metabolites: lipids
- Excessive Insulin Resistance

2. Impaired placental homeostasis

- Maternal-Fetal transfer function
- Endocrine function

Points to discuss

- Fetal lipid metabolic activity
- Role of PUFAs: quantity and quality
- ⊖ Link between adiposity: Insulin, cytokines and PPARs pathways
- Link between adiposity: Immune-inflammatory pathways
- Link between adiposity and adverse intrauterine programming

Areas and questions for further research

1. Define the goals to achieve and the targets to impact:

- Should we adapt maternal diet or energy expenditure?
- Should we target fetal leptinemia and /or insulinemia?
- Should we prevent excess inflammation?

2. Do we have the right tools to do so?

- Maternal strategies (diet/lifestyle)
- Placental strategies: miRNAs/cfDNA/others

3. Define the Timing of intervention

Session C.2

Assessment of fetal and neonatal growth (including growth pattern in diabetes)

Roland Devlieger / Helena Fadl / Philippe Deruelle

Assessment of fetal and neonatal growth

Each part requires:

- Studies of relevance
- Points made/gaps in knowledge
- Open questions

Background

- Ultrasound is being used to follow fetal growth
- Weight and Length are being used to follow neonatal growth
- Can we do better to identify foetuses/neonates at risk for metabolic disorders later in life?
- In all women, or only in women at risk (excessive GWG, GDM, Obesity)?
- Pre-existing diabetes and GDM- differences in growth patterns? Differences in long term morbidity depending on growth patterns?

Fetal growth

- Ultrasound measurements- aspects on frequency and timing
- Early trimester identification? Biochemical markers for prediction of LGA?
- MR- will it have a role in the future?
- Customized growth charts- differences; what markers most important?
- Fetal body composition - measurements during pregnancy?
- Prediction of childhood obesity
- Sex differences
- Management : Should pregnancies without be induced for impending macrosomia ?
- The optimal timing for induction of labour in GDM and diabetic pregnancy depending on fetal growth/macrosomia
- When is small too small for diabetic pregnancy??

Neonatal growth

- Methods to assess neonatal adiposity
- Which index to use?
- Prediction of childhood obesity

Session C.3***Relevance of first trimester vs third trimester for fetal development- update on knowledge about the role of the placenta***

Chris Nolan / Gernot Desoye / Dorte Moeller Jensen / Mett Tanvig

Background/open questions

- Placenta early in pregnancy associates with maternal glucose/insulin axes and with fetal anthropometry, but it is unknown whether placental size/metabolism limit materno-fetal transfer of nutrients early in pregnancy
- Regulation of maternal/fetal blood flow as potential co-regulator of maternal-fetal nutrient fluxes is unknown as are effects on blood flows of maternal/fetal exposures beyond diabetes
- Determinants of maturation of fetal pancreatic stimulus-secretion coupling is largely unknown in human
- Fetal brain responds to maternal exposures (OGTT), but contribution to fetal/neonatal adiposity and programming is unknown in human

Studies/research of relevance***First trimester***

- Early influences on epigenome to be considered; study effect of maternal and/or paternal obesity on epigenetic changes in distinct placental cells (1st trimester & 3rd trimester) and cord blood cells (3rd trimester)
- Early influences of different types of fertility treatments (gestagens, metformin)?
- Placenta in first trimester to be studied: transfer function, metabolism (meta-inflammation) and growth (ultrasound/placental volume, placenta/cell cycle regulation) in normal and diabetic/obese women; determine time period (gestational weeks) in early gestation, which is particularly sensitive to environmental changes
- Set up lifestyle intervention in first trimester in specific risk groups (overweight & obese women, women with early hyperglycemia determined by fasting glucose or HbA1c levels) to prevent neonatal adiposity and increased cord blood c-peptide and follow up the offspring; compare effect of diet vs. exercise; effects of diets with low glycemic index; effects of blood glucose

monitoring in overweight/obese women without diabetes; study effects of wide range of exposures including mental health, family setting, stress, climate, pollution etc.

Third trimester

- Relevance of fetal fatty acids vs glucose as precursors for excessive fetal lipogenesis in GDM/diabetes/obesity
- Role of placental a) lipolysis of lipoprotein-TGs and phospholipids, and b) fatty acid oxidation and oxidation products, for fetal fatty acid supply
- Study role of fetal brain for fetal/neonatal adiposity and programming effects
- Study maternal and fetal blood flow regulation
- Determine factors which sustain fetal hyperinsulinaemia established earlier in pregnancy

Session C.4

Congenital Malformations in Diabetic Pregnancy

Mary Loeken / Ulf Eriksson / Parri Wentzel / Marta Viana

Results from previous decade

- Several new pathways identified
- ER stress
- Nitrosative stress
- Hexosamine stress
- Apoptosis

Strategy for next decade

- Translational experimental studies
 - Testing all pathways in a single model (preferably inbred)
 - In vivo
 - In vitro
 - Evaluation gene expression, biochemical alterations, epigenetic changes
 - Adding specific inhibitors / enhancers
- Translational human studies
 - Evaluating human tissues (placenta, blood) for markers of suggested pathways

Session D – PUBLIC HEALTH ISSUES

UPDATE: Epidemiology of diabetes and obesity in pregnancy, childhood and young adults worldwide; influence of ethnicity and society, economic burden for health systems

Chairs: Donald Coustan/ Sara Meltzer / Christos Zoupas

1. Epidemiology of diabetes and obesity in pregnancy, childhood and young adults worldwide (Melzer)
 - (a) Worldwide obesity levels
 - Women
 - Children & adolescents
 - (b) Diabetes prevalence worldwide
 - Women

- Children
 - (c) Diabetes & pregnancy prevalence present knowledge
2. Influence of ethnicity and society (Coustan)
- (a) High risk ethnicities
 - Indian subcontinent
 - (b) Societies in transition
 - India
 - China
 - Other
 - (c) Multi-ethnic societies
3. Economic burden for health systems (Zoupas)
- (a) The impact of diabetes and obesity on pregnancy outcomes
 - (b) The additional economic cost of diabetes and obesity during the course of pregnancy
 - (c) The long term economic impact of diabetes and obesity after delivery (eg. neonatal care)
 - (d) The associated health care expenditure of diabetes and obesity

Session D.1

Long-term outcome of mother and child after pregnancy with diabetes – do we really have a long-term benefit for the children from treating women with diabetes? What about normosomic newborn from lean mothers with GDM? What about non-biochemical issues like autism?

Alexandra Kautzky-Willer / Cheril Clarson / Martina Persson / Lene Ringholm

Long-term outcome of mothers with GDM (Alexandra Kautzky-Willer)

Background

- Women with GDM have a higher risk to develop diabetes at follow-up than women maintaining normal glucose tolerance during pregnancy.
- Identifying women at highest risk
- Results of Diabetes Prevention Studies including women with prior GDM
- Interaction with obesity/weight gain at follow-up
- Risk of diabetic complications in women with prior GDM? in particular, cardiovascular disease
- Risk of recurrence of GDM

Management

- Specific screening tests necessary at follow-up?
- Specific recommendations at follow-up?

Gestational diabetes and long term outcomes for diabetes and obesity in the offspring (Cheril Clarson)

Evidence supports increased risk for obesity and T2D in offspring of mothers with GDM compared to offspring of mothers without GDM

- Limitations
 - Most studies not originally designed for long-term follow-up of offspring
 - Insufficient data on maternal treatment with respect to the long term effects on the offspring

- Lack of follow-up time, since some studies indicate that the beneficial effect of treatment occurs at an older age
- Questions
 - Is treatment of GDM a modifiable risk factor for childhood obesity and T2D?
 - Do postnatal factors, such as diet and physical activity, overwhelm any effects of treating GDM during pregnancy?
 - How does treatment of gestational diabetes mellitus impact on health care utilization?

Gestational diabetes and risk of neurodevelopmental disorders (ASD, ADHD) in the offspring (*Martina Persson*)

Definition, prevalence and diagnosis of neurodevelopmental disorders

- Definition, prevalence and diagnosis of autism spectrum disorders (ASD) and attention deficit disorders (ADHD)

Results from previous studies

- Three meta-analyses were identified assessing risks of ASD in offspring of mothers with diabetes. However, risks are based on data from mothers with different types of diabetes and only include univariate risk estimates
- Well-designed single studies on risk of ASD or ADHD in mothers with GDM report conflicting results

Study limitations

- Risk factors for ASD/ADHD and possible confounders

Pathophysiology?

- Presentation of possible mechanisms

Conclusion and recommendation

Long term cognitive function of offspring (*Lene Ringholm*)

Studies of relevance:

Points made

- Most newborns exposed to gestational diabetes will not be significantly affected by it.
- Lower cognitive test scores in offspring of women with GDM may be explained by well-known predictors of cognitive function, not by maternal hyperglycaemia during pregnancy.

Gaps in knowledge

Limitations in studies of cognitive function in offspring exposed to GDM:

- Few and small.
- Observational cohorts, often mixed diabetes types.
- Diverging conclusions.
- Usually short follow-up time.
- Data on maternal glucose values, diabetes treatment and breastfeeding are often missing.

Open questions

- Is offspring cognitive function different after exposure to mild GDM (diet treatment) vs. insulin-treated GDM?
- Can long-term effects of GDM on cognitive function be assessed in larger population studies?
- Which cognitive tests and at what ages are appropriate to test for cognitive function, intelligence and language development in offspring exposed to GDM?

Background

- There is concern that GDM may be associated with lower intelligence, language impairment, attention weakness, impulsivity and behavioral problems in the offspring.

Session D.2**Education: weight loss before pregnancy, periconceptional care specially in Type 2 DM, nutrition education**

David McCance / Eleanor Scott

Perspectives

- Clinician: (planning/optimising control/hypoglycaemia/risks/complications)
- Patient: (ignorance/anxiety/risks/complications)

Points for Consideration

- Poor uptake: pregnancy planning, folic acid etc.
- Timing, content, frequency, duration
- Focus: (weight/glucose/lifestyle/folic acid/drugs/complications)
- Changing demography(increasing GDM, type 2 management in community)
- Changing complexity (DAFNE, pumps, increased weight)

Possible Strategies

- Increased public awareness
- Shared responsibilities
- Seizing the opportunities
- Customised interventions (pragmatic, accessible, feasible)
- Multifaceted approaches
- Appropriate use of technology

Practical examples

- Educational initiatives
- Interventions

Possibilities for the future**Session D.3****GDM detection strategies - Screening in first trimester, screening in third trimester, 50 g vs fasting vs 1 step OGTT**

David Sacks / Boyd Metzger / Peter Damm / Anne Vambergue

Background

- Issues concerning screening for GDM include:
 - Whom to screen
 - When to screen
 - With what to screen
 - Whether to screen
- Considerations in designing GDM screening strategies include:
 - Prevalence of GDM in population being tested
 - Types of diabetes in population being tested
 - Costs of different screening strategies
 - Selective vs. universal screening

- Consequences of screening or not screening for GDM:
 - For the mother
 - For the fetus/neonate

Session D.4

Microbiomics, genomics, epigenetics, metabolomics, proteomics

Tine Clausen / David Hill / Bill Lowe

For different technologies review:

- Type of data generated/use of the data
- State of the art of the technology
 - Available technologies
 - Limitations and recent advances
- Potential limitations of using these technologies
 - Power issues – need for large cohorts for some technologies
 - Identify associations – causation vs. association
 - Timing of samples
- What is known about use of the technology to date in pregnancy
- Potential of integrating omics technologies

Potential of these technologies for maternal and fetal health – precision medicine

- Prediction
 - Potential biomarkers for prediction of GDM, fetal outcomes, long-term maternal outcomes
- Prevention
 - Use of technologies for the design and application of preventive strategies
- Treatment
 - Probiotics, etc.
- Insight into the mechanism of disease
 - GDM
 - Impact of obesity and GDM on fetal growth and development
 - Impact of obesity and GDM on long-term metabolic outcomes of child
- Integration of omics technologies

Awards History

Jørgen Pedersen Lecture

1980	Claes Hellerström
1981	Lars Mølsted-Pedersen
1982	John Stowers
1983	Bob Schwartz
1984	Norbert Freinkel
1985	Willy Gepts
1986	Frederic Battaglia
1987	David Pyke
1988	Jørn Nerup
1989	Jessie Roth
1990	Henning Beck-Nielsen
1991	Jack Kitzmiller
1992	Bengt Persson
1993	Tom Lind
1994	Claus Kühl
1995	Boyd Metzger
1996	1st Audit Meeting - Copenhagen
1997	David Hadden
1998	None (IADPSG meeting, Cairns, Australia)
1999	Joseph Hoet - who died shortly before the DPSG meeting; Short memorial speech for Joseph Hoet, given by Lars Mølsted-Pedersen.
2000	Eleazar Shafrir
2001	Ulf Eriksson
2002	Andre Van Assche
2003	Emilio Herrera
2004	Leona Aerts
2005	Alberto de Leiva
2006	2nd Audit Meeting - Abano
2007	Lois Jovanovic
2008	Gernot Desoye
2009	Kari Teramo
2010	Peter Damm
2011	Patrick Catalano
2012	Rosa Corcoy
2013	Moshe Hod
2014	Sylvie Hauguel-de Mouzon
2015	Elisabeth Mathiesen
2016	3rd Audit Meeting - Dublin

Joseph Hoet Research Award

2003	Andrew Hattersley
2004	Andreas Plagemann
2005	Alexandra Kautzky-Willer
2006	None (Audit Meeting)
2007	Dorte Moller Jensen
2008	Jacob Friedman
2009	Davis Simmons
2010	Alicia Jawerbaum
2011	Helen Murphy
2012	Lene Ringholm
2013	Ursula Hiden
2014	Maria del Pilar Ramos Álvarez
2015	Was not awarded
2016	None (Audit Meeting)

John Stowers Research Award

2007	Alicia Jawerbaum
2008	Mary R. Loeken
2009	Parri Wentzel
2010	Emilio Herrera
2011	Kavita Kumareswaran
2012	Thomas Bouckennooghe
2013	Andreas Ejdesjo
2014	Eleanor Scott
2015	Sine Knorr
2016	None (Audit Meeting)

External Auditors

Prof. Linda Barbour, MD, MSPH

Professor of Medicine, University of Colorado, USA
Full Professor, Divisions of Endocrinology, Metabolism, and Diabetes and Maternal-Fetal Medicine
Co-Director of High Risk OB and Diabetes in Pregnancy Clinics, Dept. of Obstetrics and Gynecology

Prof. Irene Cetin, MD, PhD

Associate Professor of Obstetrics and Gynecology
Chairman, Dept. of Mother and Child, San Paolo Hospital
Head, High Risk Pregnancy Unit of the Obstetrics and Gynecology Department
Director of the Centre for Fetal Research "Giorgio Pardi", Hospital Luigi Sacco, University of Milano, Italy

Prof. David Dunger

Acting Head of the Dept. of Paediatrics
Adenbrooke's Hospital
Cambridge University Hospitals, NHS Foundation Trust
Professor of Paediatrics, University of Cambridge

Prof. Dietmar Schlembach

Associate Professor of Obstetrics and Gynecology, University of Jena
Director, Center for Perinatal Medicine, Vivantes Hospital, Berlin-Neukölln, Berlin, Germany

Attendee List 2016

Anastasiou	Eleni	McIntyre	David
Benhalima	Katrien	Mello	Giorgio
Catalano	Patrick	Meltzer	Sara
Chico	Ana	Metzger	Boyd E
Clarson	Cheril	Møller Jensen	Dorte
Corcoy	Rosa	Murphy	Helen
Coustan	Donald	Myers	Jenny
Dalfra	Maria Grazia	Napoli	Angela
Dalsgaard Clausen	Tine	Nolan	Christopher
Damm	Peter	Omori	Yasue
de Valk	Harold	Ovesen	Per
Deruelle	Philippe	Persson	Martina
Desoye	Gernot	Ramos	Maria del Pilar
Devlieger	Roland	Reinhardt Mathieson	Elisabeth
Djelmis	Josip	Renault	Kristina
Dornhorst	Anne	Ringholm	Lene
Dozio	Nicoletta	Rowan	Janet
Dunne	Fidelma	Ruas	Luisa
Egan	Aoife	Sacks	David
Eriksson	Ulf	Savona-Ventura	Charles
Fadl	Helena	Schaefer-Graf	Ute
Feig	Denice	Scott	Eleanor
Galjaard	Sander	Simmons	David
Hill	David	Sugiyama	Takashi
Jawerbaum	Alicia	Tabak	Adam
Kautzky-Willer	Alexandra	Tanvig	Mette
Kelstrup	Louise	Temple	Rosemary
Lapolla	Annunziata	Vambergue	Anne
Lauenborg	Jeannet	van Poppel	Mireille
Lepercq	Jacques	Viana	Marta
Lindsay	Robert	Vinter	Christina
Loeken	Mary	Wender-Ozegowska	Ewa
Lowe	William	Wentzel	Parri
Maresh	Michael	Zawiejska	Agnieszka
McCance	David	Zoupas	Christos



Notes



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