ADIPS2021
SOMANZ

Virtual
23-24 July

JOINT ANNUAL SCIENTIFIC MEETING

ADIPS
Australasian Diabetes in Pregnancy Society

SOMANZ

CONFERENCE HANDBOOK

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WELCOME

The Society of Obstetric Medicine of Australia and New Zealand (SOMANZ) in conjunction with the Australasian Diabetes in Pregnancy Society (ADIPS) will hold a fully virtual Joint Scientific Meeting from 23-24 July 2021.

The program has been carefully selected to highlight the importance of multidisciplinary care in the management of complex maternal medical conditions in pregnancy, and will attract obstetricians, obstetric medicine physicians, endocrinologists, diabetes educators, dietitians, other medical physicians and allied health professionals and general practitioners from around the country. Key themes from the 2021 program include:

- The management of epilepsy and other neurological conditions in pregnancy, including treatment recommendations
- Diabetes in pregnancy and technology – Practical tips
- Maternal mental health and specific treatment, during pregnancy and postpartum
- Emerging technologies in diabetes in pregnancy – improving outcomes in the offspring
- Respiratory diseases, such as cystic fibrosis and severe asthma complicating pregnancy
- TOBOGM update
- Maternal malignancy, including haematological malignancy and other haematological conditions
- Obesity, bariatric surgery and diabetes
- Pre-analytical glucose handling considerations

ADIPS SOMANZ 2021 ORGANISING COMMITTE

Arianne Sweeting
Sarah Price
Bethany Crinall
Suzie Neylon
Amanda Beech
Helen Barrett
Stefan Kane
Lindsay Edwards
Jade Eccles-Smith
Natalie Hannan

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INVITED SPEAKERS

Keynote Speakers

DR WILLIAM LOWE JR
ADIPS JEREMY OATS LECTURER

Dr. Lowe graduated from the University of North Carolina School of Medicine, completed Internal Medicine training at Beth Israel Hospital in Boston and clinical and research training in Endocrinology and Metabolism in the Diabetes Branch at the National Institutes of Health. In 1988, he joined the faculty of the University of Iowa and in 1993 he joined the Division of Endocrinology, Metabolism, and Molecular Medicine in the Department of Medicine at the Northwestern University Feinberg School of Medicine, where he is currently the Thomas D. Spies Professor of Genetic Metabolism. At Northwestern, he has assumed a number of leadership roles, including Program Director of the General Clinical Research Center, Vice Chair for Research of the Department of Medicine, Interim Chair of Medicine, and now Vice Dean for Academic Affairs. Dr. Lowe has also maintained an active translational research program with a longstanding interest in diabetes and metabolism. His current major area of interest is maternal metabolism during pregnancy and its impact on fetal and childhood adiposity and metabolism. To address these questions, he is using the Hyperglycemia and Adverse Pregnancy Outcome (HAPO) Study and the HAPO Follow-Up Study. Beyond examining the inter-relationship between maternal metabolism and childhood outcomes, his studies include using metabolomics and genomics to identify metabolic signatures and genetic loci important in the regulation of maternal glycemia and fetal and childhood adiposity and glucose metabolism.

DR LUCY MACKILLOP
SOMANZ KEYNOTE LECTURER

Dr Lucy Mackillop BM BCh MA (Oxon.) FRCP, FRCOG ad Eundem

Dr Mackillop is a Consultant Obstetric Physician, Oxford University Hospitals NHS Foundation Trust; Honorary Senior Clinical Lecturer, Nuffield Department of Women's and Reproductive Health, University of Oxford and President of the UK's MacDonald Obstetric Medicine Society. She is also Chief Medical Officer at Sensyne Health plc, a clinical AI company. Dr Mackillop trained in General, Renal and Obstetric Medicine in Oxford, London and Sydney before taking up her consultant post in 2008. Dr Mackillop has published over 50 peer-reviewed articles, national and international guidelines, book chapters and e-learning resources on a wide variety of medical conditions in pregnancy; including the Royal College of Obstetricians and Gynaecologists guideline Reducing the risk of VTE in pregnancy and the puerperium which is used in many countries worldwide. She co-wrote the Royal College of Physicians curriculum for a credential in Obstetric Medicine, launched in November 2020 and is an educational supervisor and external assessor for this programme. Her research interests include the role of telehealth solutions in women with medical problems in pregnancy and construction of evidence-based algorithms to predict acutely unwell women in pregnancy and the immediate puerperium.

Invited Speakers

A/PROF JANE ALSWEILER
LIGGINS INSTITUTE, UNIVERSITY OF AUCKLAND, NZ

Jane Alsweiler is an Associate Professor in the Dept. of Paediatrics: Child and Youth Health, University of Auckland and works clinically as a neonatal paediatrician in the neonatal intensive care unit at Auckland City Hospital. She is the chair of the PSANZ policy committee and the neonatal representative on the PSANZ Board. Her current research interests focus on neonatal glucose homeostasis and growth, including long-term consequences of hypo- and hyperglycaemia and late preterm birth.

PROF LUCY CHAPPELL
KING'S COLLEGE LONDON, UK

Professor Lucy Chappell is Professor in Obstetrics at King's College London, Honorary Consultant Obstetrician at Guy's and St Thomas' NHS Foundation Trust and an NIHR Senior Investigator. She runs a research programme investigating prediction and prevention of adverse pregnancy outcomes, particularly in women with pre-existing co-morbidities such as chronic hypertension and chronic kidney disease, using randomised controlled trials and observational studies. She has subspecialty training in maternal-fetal medicine and a Masters in higher education, supervising higher degree students from obstetric, nephrology, general practice and midwifery backgrounds. She is Chair of the NIHR HTA Clinical Evaluation and Trials committee, Chair of the NIHR Artificial Intelligence for Multiple Long-Term Conditions committee and Deputy Chair of the MRC/ NIHR Clinical Academic Research Partnership committee. She is national

pregnancy lead for the RECOVERY trial in COVID-19 and has been vaccine lead for the Royal College of Obstetricians and Gynaecologists up to May 2021.

PROF N WAH CHEUNG
WESTMEAD HOSPITAL, AUS

Professor Cheung is the Director of Diabetes & Endocrinology at Westmead Hospital. He has previously served as President of the Australian Diabetes Society, Chairperson of the National Association of Diabetes Centres, a board member of Diabetes Australia, and as a council member of ADIPS. Much of his clinical work and research relates to diabetes in pregnancy.

DR LARA FREEMAN
WOMENS WEIGHT LOSS SURGERY, AUS

Dr. Lara Freeman is a specialist Upper Gastrointestinal and General Surgeon with extensive experience in the most current minimally invasive techniques for both Bariatric (weight loss) and General Surgery. After completing surgical training at The Alfred Hospital in Melbourne, she further developed a particular interest in Bariatric Surgery, and completed a sub-specialist Upper GI and Bariatric Fellowship with the Australia and New Zealand Gastro-Oesophageal Surgical Association. Lara is the founder of Women's Weight Loss Surgery, a multidisciplinary team of all female specialists aimed at providing holistic care to obese patients. This team operates out of Masada, The Avenue and Holmesglen Private Hospitals. She also holds a public appointment at Sandringham Hospital, an Alfred Health affiliate.

DR MATTHEW HARE
ROYAL DARWIN HOSPITAL, AUS

Dr Hare has specialist appointments in Endocrinology and General Medicine at Royal Darwin Hospital, where he runs the diabetes telehealth service to remote communities. Matt is currently undertaking a PhD at Menzies School of Health Research focussing on intergenerational trends in diabetes and cardiometabolic health in the Northern Territory. In addition, he is principal investigator on a study of gestational diabetes screening among Aboriginal women in the remote NT and leads a Commonwealth-funded translation project, developing diabetes in pregnancy resources for Aboriginal and Torres Strait Islander women. Matt has a longstanding interest in the epidemiology, determinants and prevention of non-communicable diseases, having previously worked with the Baker Heart and Diabetes Institute in Melbourne, the School of Public Health at Monash University, and the MRC Epidemiology Unit at the University of Cambridge. He is currently a member of the NT Diabetes Network Working Group and the Antenatal and Postnatal Expert Advisory Group for the Remote Primary Health Care Manuals.

A/PROF AMANDA HENRY
SCHOOL OF WOMEN'S AND CHILDREN'S HEALTH, UNIVERSITY OF NEW SOUTH WALES AND ST GEORGE HOSPITAL, AUS

Associate Professor Amanda Henry is an academic obstetrician based at the School of Women's and Children's Health, University of New South Wales and St George Hospital in Sydney, Australia. Her current research focus is on pregnancy and noncommunicable diseases, and she holds an NHMRC Fellowship centred on improving women's cardiovascular health after hypertensive pregnancy. She is currently leading the BP2 trial examining early intervention strategies after hypertensive pregnancy, and a program of work aimed at closing the knowledge and practice gaps of women and healthcare practitioners regarding post-hypertensive pregnancy follow-up. A/Prof Henry is strongly committed to working in partnership with women, professional societies and government to improve women's ongoing health after complicated pregnancy, including as a Committee member for Australian consumer organisation Australian Action on Preeclampsia, and as a Councillor for the Society of Obstetric Medicine of Australia and New Zealand.

DR JUI HO
FLINDERS MEDICAL CENTRE, AUS

Dr Jui Ho is a Senior Staff Specialist in Endocrinology at Flinders Medical Centre (FMC). She graduated from the University of New South Wales and completed her Endocrinology training at FMC and Royal Adelaide Hospital. She holds a PhD from University of Adelaide in the field of Hypothalamic-Pituitary-Adrenal axis regulation during critical illness and high-risk pregnancy. Jui has a broad range of clinical interest including endocrine disorders in pregnancy, cancer therapy related endocrinopathies and disorders of the hypothalamic-pituitary-adrenal axis. Her current work provides her with opportunities to contribute to clinical medicine, educational and developmental projects. She chairs the thyroid multidisciplinary meeting at FMC, serves on the RACP Endocrinology Advanced Trainee Committee and is a Senior Lecturer in the Faculty of Medicine, Flinders University. She was on the expert writing panel of Therapeutic Guidelines for Bone and Metabolism, with main contributions to the chapters on endocrine and bone disorders in pregnancy.

CAMERON JOHNSON
MONASH HEALTH, AUS

Cam Johnson has been an Accredited Practising Dietitian for the past 19 years. He has worked at a number of tertiary teaching hospitals, diabetes institutes, and organisations in the role of a dietitian, health coach, and research assistant. He has been involved in research, and have delivered numerous conference presentations and workshops, as well as the training of health professionals, medical staff, and students. Cam's approach

aims to simplify dietary messages for clients and translate complex dietary messages into what to put into shopping baskets and onto plates. With a focus on eating behaviours, habits and education, his aim is to give clients confidence in managing their diabetes. Cam is a senior diabetes dietitian at Monash Health, and lead dietitian at Deconstructing Diabetes, an online telehealth service for nutritional management of diabetes.

DR GISELLE KIDSON-GERBER
PRINCE OF WALES HOSPITAL AND THE ROYAL HOSPITAL FOR WOMEN, AUS

Dr Kidson-Gerber (FRACP, FRCPA) is a consultant Haematologist at Prince of Wales Hospital and the Royal Hospital for Women, Randwick, Sydney. She subspecialises in Obstetric Haematology, working closely with obstetricians & midwives, genetics and laboratory staff on clinical and laboratory issues. She is also the Clinical Lead for the Haemoglobinopathy Service at POWH, which manages the largest cohort Transfusion-Dependent Thalassaemia patients in NSW. Dr Kidson-Gerber is involved in a range of projects and publications in obstetrics including haemoglobinopathy screening, iron deficiency, those for whom transfusion is not an option, inherited bleeding disorders, lymphoma in pregnancy and pregnancy in thalassaemia major. She was a co-author on the recently updated Australian & New Zealand Society of Blood Transfusion Guidelines for Estimation of Fetomaternal Haemorrhage. She co-founded the Haematology in Obstetrics and Women's Health (HOW) Collaborative. She is passionate about optimising women's health outcomes.

PROF JEANNETTE LECHNER SCOTT
JOHN HUNTER HOSPITAL, AU

Prof Lechner-Scott is a senior neurologist at the John Hunter Hospital and leads the MS clinic and research team in the Hunter Region. She trained in Germany and Switzerland before opening a multidisciplinary MS clinic that by now looks after over 1100 people with MS but also other neuroimmunological diseases. Her research group is not only leading internationally in the field of MS epigenetics but also modern MRI technologies. She has published 191 peer reviewed articles and has been cited over 1300 times. She is the chief editor of MS and Related Disorders, board member of MS international federation and on the board of directors of MSL. Pregnancy has always been high on her research interest list and will be the focus of the next few years.

DR DIANA MACKAY
ROYAL DARWIN HOSPITAL, AUS

Diana MacKay is a Staff Specialist Endocrinologist and Physician at Royal Darwin Hospital and is currently completing her PhD at Menzies School of Health Research. Diana graduated from the University of Queensland and trained in Endocrinology in Queensland and Darwin. Her research interests are in improving care and support for those affected by diabetes in pregnancy, particularly Aboriginal and Torres Strait Islander women and families. Her research is supported by an NHMRC Postgraduate Scholarship. Diana is also the Clinical Co-Lead for Diabetes at Royal Darwin Hospital, and is currently working to establish the Northern Territory's first public multidisciplinary Weight Management Clinic.

DR SARAH MARSHALL
MONASH UNIVERSITY, AUS

Dr Sarah Marshall is an NHMRC Early Career Fellow and head of the Maternal and Perinatal Vascular and Placental Research Group under the mentorship of Prof Euan Wallace. Dr Marshall completed her PhD at the University of Melbourne in 2017 on the vascular effects of the pregnancy hormone relaxin. She then joined The Ritchie Centre, Monash University in 2017 to continue her research into improving the vascular dysfunction of complicated pregnancy disorders. Her current research focuses on the preclinical assessment of novel antioxidant treatments for the pregnancy disorder preeclampsia and the clinical translation of the most promising therapeutics.

PROF DAVID MCINTYRE
MATER HEALTH SERVICES, UNIVERSITY OF QUEENSLAND, AUS

Professor David McIntyre trained in Endocrinology in Australia and Belgium. He works clinically as Director of Obstetric Medicine at Mater Health Services and is Head of the Mater Clinical Unit for the University of Queensland. David has published over 210 papers (>19,000 citations), primarily in the field of medical complications of pregnancy, with a particular focus on diabetes and obesity. Recent research has examined the effects of diabetes, obesity and hypertension during pregnancy on the health of Mothers and Babies, during pregnancy and with long term follow up. David is the Immediate Past Chair of the International Association of Diabetes in Pregnancy Study Groups (IADPSG). In 2016, David became the first Australian trained clinician to receive the Norbert Freinkel Award for contributions to diabetes in pregnancy from the American Diabetes Association. In 2019 he was awarded the Jørgen Pedersen Lecture by DPSG Europe and the Stream Lead Award Lecture for "Diabetes and Women" by the International Diabetes Federation.

PROF CHRIS NOLAN
CANBERRA HEALTH SERVICES, AUS

Christopher Nolan is a clinician-scientist working in the field of diabetes, including diabetes in pregnancy. He is Professor of Endocrinology (2011-) and Associate Dean of Research for the Australian National University (ANU) Medical School (2019-). He continues as a Senior Staff Specialist in Diabetes and Endocrinology for

Canberra Health Services in the Australian Capital Territory after stepping down as Director of Diabetes (2011-2018) and Endocrinology (2016-2018). He has previously been President of the Australasian Diabetes in Pregnancy Society and a Council Member of the International Association of Diabetes in Pregnancy Study Groups. He is currently a Board Member of the Australian Diabetes Society, an Advisory Board Member for Diabetologia (2020-), and Co-Chair of the Diabetes Australia Research Program Advisory Panel. His research activities traverse basic science, clinical science and public health, with particular focus on mechanisms of islet b-cell failure in type 1 and type 2 diabetes, reducing adverse pregnancy outcomes caused by diabetes and/or obesity, and preventing and screening for chronic diabetes complications.

A/PROF MEGAN REES
THE UNIVERSITY OF MELBOURNE, AUS

Megan Rees is a Respiratory and Sleep Physician at the Royal Melbourne Hospital, with an interest in respiratory infections and respiratory disorders in pregnancy. Her PhD in mycobacterial proteomics at Monash University received the 2015 CSL prize. She was awarded a VESKI fellowship to undertake a post-doctoral research project at McGill University. Currently Megan is the convenor of the Respiratory Infectious Diseases SIG of the Thoracic Society of Australia and New Zealand. She is co-chair of the RACP COVID-19 Expert Advisory Group, and deputy chair of the Disease-Modifying Treatment and Chemo-prophylaxis Panel of the National COVID - 19 Clinical Evidence Taskforce. At RMH she is developing a clinical pathway for the management of sleep disorders in pregnancy. She received an Innovation Grant from the Normal Beischer Medical Research Foundation to study sleep disordered breathing in multiple pregnancy with Dr Stephen Cole and Dr Tom Cade at the Royal Women's Hospital. Megan Rees is a Respiratory and Sleep Physician at the Royal Melbourne Hospital, with an interest in respiratory infections and respiratory disorders in pregnancy. Her PhD in mycobacterial proteomics at Monash University received the 2015 CSL prize. She was awarded a VESKI fellowship to undertake a post-doctoral research project at McGill University. Currently Megan is the convenor of the Respiratory Infectious Diseases SIG of the Thoracic Society of Australia and New Zealand. She is co-chair of the RACP COVID-19 Expert Advisory Group, and deputy chair of the Disease-Modifying Treatment and Chemo-prophylaxis Panel of the National COVID - 19 Clinical Evidence Taskforce. At RMH she is developing a clinical pathway for the management of sleep disorders in pregnancy. She received an Innovation Grant from the Normal Beischer Medical Research Foundation to study sleep disordered breathing in multiple pregnancy with Dr Stephen Cole and Dr Tom Cade at the Royal Women's Hospital.

A/PROF GLYNIS ROSS
ROYAL PRINCE ALFRED HOSPITAL, BANKSTOWN LIDCOMBE HOSPITAL, AUS

Associate Professor Glynis Ross is a Visiting Endocrinologist at Royal Prince Alfred Hospital, a Senior Staff Specialist at Bankstown-Lidcombe Hospital, and does regular outreach work in Central West NSW. She has been Lead Endocrinologist of the Diabetes and Pregnancy service at RPAH for over 30 years. Glynis was on the Australian Diabetes Society Council from 2012-2020 and is the immediate Past President. She was on the Australasian Diabetes in Pregnancy Society (ADIPS) Council for 2 x 8 year terms and was President 2008-2010. Diabetes in Pregnancy, type 1 diabetes, diabetes technology and In-patient Diabetes Management have been her major clinical interests. Glynis serves on a range of State and National diabetes working parties and is involved in the teaching programs for ADS, the Colleges of Anaesthetists, Obstetrics & Gynaecology, Physicians, General Practitioners and Midwives.

A/PROF ALEXIS SHUB
MERCY HOSPITAL FOR WOMEN, AUS

Assoc Prof Alexis Shub - MBBS FRANZCOG PhD CMFM. Alexis Shub is a subspecialist in Maternal Fetal Medicine and is a member of the Perinatal team caring for high risk pregnancies at Mercy Hospital for Women, Melbourne, Australia. She is lead obstetrician for the diabetes and endocrine clinic, with research interests in pregnancies complicated by diabetes and obesity. She is a council member of the Consultative Council of Perinatal Morbidity and Mortality, coordinator of Women's Health teaching for medical students at the University of Melbourne and a Council member of the Australasian Diabetes in Pregnancy Society.

PROF DAVID SIMMONS
WESTERN SYDNEY UNIVERSITY MACARTHUR CLINICAL SCHOOL, CAMPBELLTOWN HOSPITAL, DIABETES OBESITY & METABOLISM TRANSLATION UNIT (DOMTRU), AUS

Distinguished Professor David Simmons MA, MBBS, FRACP, FRCP, MD (Cantab). Distinguished Professor Simmons is Professor of Medicine at Western Sydney University Macarthur Clinical School, Head of Campbelltown Hospital Endocrinology Department and Director of the Diabetes Obesity and Metabolism Translation Unit (DOMTRU). He has worked both nationally and internationally. Foundation Chair in Rural Health at University of Melbourne (1998 – 2002.) Inaugural Professor of Medicine, University of Auckland, Waikato Clinical School New Zealand (2003-2007) and Lead Diabetes consultant at Cambridge University Hospitals NHS Foundation Trust. (2007 – 2014), joining Western Sydney University, Australia in January 2015. With over 380 refereed publications, he has won several national and international awards for his work in diabetes epidemiology, diabetes in pregnancy and diabetes service development. He is a past president of the Australasian Diabetes in Pregnancy Society (ADIPS) and was a member of the World Health Organisation technical working group on the criteria for hyperglycaemia in pregnancy. He was previously the chair of the Diabetes UK Health Professional Education Steering Group. Professor Simmons works with the University of Örebro, Sweden and is a Professorial Fellow at the University of Melbourne. Professor Simmons is the recipient of the American Diabetes Association

2020 Norbert Freinkel Award for his outstanding contributions to the understanding and treatment of diabetes in pregnancy.

PROF STEPHEN TONG
THE MERCY HOSPITAL FOR WOMEN AND THE UNIVERSITY OF MELBOURNE, AUS

Professor Stephen Tong is a clinician-scientist (specialist obstetrician) at The Mercy Hospital for Women and The University of Melbourne. He is focussed on translational research. His team has taken 5-6 laboratory concepts to international clinical trials running in United Kingdom, South Africa, New Zealand and across Australia. Working with senior researchers, he has led a translational pipeline to identify new drugs to treat preeclampsia. The pipeline begins with laboratory evaluation and extends to successive randomised clinical trials in South Africa (for the most promising drugs). Prof Tong's also co-leads research programs to develop diagnostics to prevent stillbirth, new treatments for ectopic pregnancy and epidemiology studies evaluating drug safety. He has published over 180 papers, including recent contributions in The Lancet, Nature Communication, Human Reproduction Update; and many in BMC Medicine, Hypertension, AMJOG; and others. He has received three national awards from the National Health and Medical Research Council of Australia (Achievement Awards), and holds an NHMRC Practitioner's Fellowship and Synergy Grant.

A/PROF LATA VADLAMUDI
ROYAL BRISBANE AND WOMEN'S HOSPITAL, AUS

A/Professor Lata Vadlamudi is an epileptologist in the Comprehensive Epilepsy Program and a senior staff Specialist in Neurology at the Royal Brisbane and Women's Hospital. She completed physician training in the field of Neurology in 2000. Further specialized training in epilepsy was undertaken at Westmead Hospital (Sydney), Mayo Clinic (USA) and Austin Hospital (Melbourne). She has been at the Royal Brisbane and Women's Hospital since 2012 and cosupervises the Women and Epilepsy clinic. She has a strong background in research and is the Neurosciences Theme Leader at The University of Queensland Centre for Clinical Research. Current research interests include developing a Queensland neuro-genomics service to underpin the era of precision-based medicine and using human brain organoids as a novel paradigm to personalise epilepsy management. She also has a particular interest in managing women with epilepsy and in conjunction with A/Prof Cecilie Lander have developed the "Prescribing Checklist for Valproate Use in Women and Girls"; and the "Epilepsy and Childbearing" Brochure.

	ADIPS	SOMANZ
11:00am – 11:15am	**Official Welcome (Conference / Society Chairs / Presidents) Welcome to Country** Chairs: Arianne Sweeting & Helen Barrett	
11:15am – 12:00pm	**Keynote Address** Chair: Arianne Sweeting 11:15 AM **William Lowe Jr** Gestational Diabetes and Long-Term Maternal Glycaemic Outcomes *abs# 1*	
12:00pm – 1:00pm	**Oral Abstracts (ADIPS + SOMANZ)** Chair: Arianne Sweeting 12:00 PM **David Simmons** The ADIPS Pilot National Diabetes in Pregnancy Benchmarking Programme *abs# 2* 12:10 PM **Yuanying He** Comparing IADPSG and NICE diagnostic criteria for GDM in predicting adverse pregnancy outcomes *abs# 3* 12:20 PM **Jeff Flack** Twin pregnancies in women with gestational diabetes: Retrospective review 2016-2021 *abs# 4* 12:30 PM **Angela Makris** Hyperaldosteronism in pregnancy : a case control study *abs# 5* 12:45 PM **Hannah Y Ryan** The P4 Study: Cardiovascular Health 2 years after Preeclampsia versus Normotensive Pregnancy *abs# 6*	
1:00pm – 1:45pm	**Lunch and E-Poster Viewing**	
1:45pm – 3:45pm	**Diabetes in Pregnancy and Technology – Practical Tips** Chair: Bethany Crinall 1:45 PM **Glynis Ross** Diabetes in pregnancy and technology – Practical tips *abs# 7* *Supported by* Medtronic	**Neurology in Pregnancy** Chair: Jade Eccles-Smith 1:45 PM **Lata Vadlamudi** Epilepsy in pregnancy *abs# 14* 2:15 PM **Angela Dos Santos** Stroke in pregnancy *abs# 15*

	2:45 PM **Josephine Laurie** Gestational Diabetes Mellitus (GDM) care re-imagined 1:Integration of a digital solution into a radical model of care change *abs# 8* 2:55 PM **Sarah J Davidson** Fetal ultrasound scans to guide management of gestational diabetes: improved neonatal outcomes in routine clinical practice *abs# 9* 3:05 PM **Emma Croker** Accuracy of continuous glucose monitoring during periods of predicted acute glycaemic variability in pregnancy in women with Type 1 Diabetes Mellitus in the inpatient setting: A pilot study *abs# 10* 3:15 PM **Felicia Widyaputri** Progression of diabetic retinopathy and its risk factors in pregnant women with pre-existing diabetes in Metropolitan Melbourne *abs# 11* 3:25 PM **Robyn A Barnes** Dietetic service provision for gestational diabetes mellitus in Australia: What has changed in 10 years? Findings comparing two national surveys. *abs# 12* 3:35 PM **Sarah Chalak** Maternal predictors of small for gestational age infants in gestational diabetes mellitus pregnancies *abs# 13* *Session supported by* novo nordisk®	2:45 PM **Jeanette Lechner-Scott** Pregnancy in women with MS *abs# 16* 3:15 PM **Claire Weatherburn** Foetal and maternal outcomes following pregnancy in lung transplant recipients *abs# 18* 3:30 PM **Sarah Davidson** Outcomes of pregnancies to women with cystic fibrosis in South East QLD *abs# 17*
3:45pm – 4:15pm	**Afternoon Break and E-Poster Viewing**	
4:15pm – 5:00pm	**Keynote Address** Chair: Lindsay Edwards	

	4:15 PM **Lucy Mackillop** Developing digital health technologies in obstetric practice: GDm-health – a case study *abs# 19*	
5:00pm – 6:00pm	**Obesity, Bariatric Surgery and Diabetes** Chair: Lindsay Edwards 5:00 PM **Lara Freeman** Bariatric Surgery: An Update and its Impact on Fertility *abs# 20* 5:30 PM **David McIntyre** Diagnosis and Management of Maternal Hyperglycaemia after Bariatric Surgery - Balancing Risks and Benefits *abs# 21*	**Respiratory** Chair: Josephine Laurie 5:00 PM **Megan Rees** Obstructive sleep apnoea in pregnancy *abs# 22* 5:20 PM **Lucy Chappell** COVID vaccination and equity of access in pregnancy *abs# 23*

<table>
<tr><th></th><th>ADIPS</th><th>SOMANZ</th></tr>
<tr><td>11:00am -11:45am</td><td colspan="2">ADIPS Jeremy Oats Lecture
Chair: Sarah Price
11:00 AM William Lowe Jr
Childhood Metabolic Outcomes Following Gestational Diabetes abs# 24</td></tr>
<tr><td>11:45pm – 12:15pm</td><td colspan="2">Rural / Remote and Aboriginal and Torres Strait Islander Health
Chair: Sarah Price
11:45 AM Diana MacKay
Improving care for diabetes in pregnancy in regional and remote Australia abs# 25
12:00 PM Matthew J. L. Hare
The growing challenge of intergenerational diabetes abs# 26</td></tr>
<tr><td>12:15pm – 1:00pm</td><td>ADIPS Oral Presentations
Chair: Sarah Price
12:15 PM Rebecca Monk
An opportunity for Primary Care prevention of T2DM development post Gestational Diabetes abs# 27
12:25 PM Edmund WC Khong
Determining the course of diabetic retinopathy in the postpartum in women with type 1 and type 2 diabetes in metropolitan Melbourne abs# 28
12:35 PM Emily Moroney
Type 2 diabetes in pregnancy: An analysis of 20 years’ experience of pregnancy and pregnancy outcomes abs# 29
12:45 PM Emma L Jamieson
Early pregnancy glycated haemoglobin identifies Australian Aboriginal women with high-risk of gestational diabetes mellitus and adverse perinatal outcomes abs# 30</td><td>SOMANZ Oral Presentations
Chair: Jason Waugh
12:15 PM Mary Nangrahary
Familial Hypercholesterolemia in Pregnancy: Case Series abs# 31
12:25 PM Belinda Stallard
“What do you want to know and how do you want to know about it?” Consumer perspectives of pregnancy counselling and education in women with kidney disease: a national survey. abs# 32
12:35 PM Ralley Prentice
Ustekinumab levels in pregnant women with Inflammatory Bowel Disease and neonates exposed in-utero abs# 33
12:45 PM Preeti Sandhu
Management and outcomes during pregnancy in women with Inflammatory Bowel Disease in a London tertiary hospital abs# 34</td></tr>
</table>

1:00pm – 1:30pm	**Lunch and E-Poster Viewing**	
1:30pm – 3:30pm	**Emerging Technologies in Diabetes in Pregnancy – Improving Outcomes in the Offspring** Chair: Bethany Crinall 1:30 PM **Alexis Shub** Fetal monitoring in the diabetic pregnancy *abs# 35* 2:00 PM **Jane Alsweiler** Neonatal hypoglycaemia – detecting risk, prevention and management *abs# 36* 2:30 PM **Cameron Johnson** Maternal diet *abs# 37* 3:00 PM **N Wah Cheung** Post-pregnancy intervention for the prevention of T2 Diabetes *abs# 38*	**APN (Hypertension in Pregnancy)** Chair: Natalie Hannan 1:30 PM **Jui Ho** Endocrine Causes of Hypertension in Pregnancy *abs# 39* 1:50 PM **Amanda Henry** Heartbreak after preeclampsia *abs# 40* 2:10 PM **Sarah Marshall** Advanced models for the study of vascular dysfunction in pregnancy: tales from the laboratory *abs# 41* 2:30 PM **Marloes Dekker Nitert** Probiotics supplementation increases the risk for preeclampsia *abs# 42* 2:40 PM **Virginia Su** Depression and anxiety in women 6 months after hypertensive pregnancy: a Blood Pressure Postpartum (BP^2) sub-study *abs# 43* 2:50 PM **Monica Zen** Association of Preeclampsia with Myocardial Injury Among Patients Undergoing Noncardiac Surgery: the PREECLAMPSIA-VISION study *abs# 44* 3:00 PM **Andrew Jeyaruban** Outcomes of patients with pre-pregnancy renal impairment during pregnancy in women with pre-gestational diabetes: A South Western Sydney cohort study *abs# 45*
3:30pm – 4:00pm	**Afternoon Tea and E-Poster Viewing**	
4:00pm – 4:45pm	**SOMANZ Priscilla Kincaid-Smith Lecture** Chair: Stefan Kane *Session supported by* 	

	4:00 PM **Stephen Tong** Drugs to prevent, or treat preeclampsia: Revisiting the old, discovering the new *abs# 46*	
4:45pm – 5:45pm	**Hot Topics/ADIPS Updates** Chair: Stefan Kane 4:45 PM **Christopher Nolan** OGTT – process and preanalytical issues *abs# 47* 5:15 PM **David Simmons** TOBOGM *abs# 48*	**HOW (Haematology in Pregnancy)** Chair: Briony Cutts 4:45 PM **Giselle Kidson-Gerber** Current management, recommendations and uncertainties in the detection and management of fetomaternal haemorrhage. *Abs# 49* 5:05 PM **Lisa Clarke** Bleeding Disorders in Pregnancy *abs# 50* 5:25 PM **Kiri Langford** Systematic review of the effectiveness of hydroxychloroquine and intravenous immunoglobulin to prevent cardiac neonatal lupus in offspring of women with autoantibodies to SSA/Ro & SSB/La. *abs# 51* 5:35 PM **Katherine J Creeper** Single centre, retrospective review of compliance with routine antenatal Rhesus D prophylaxis *abs# 52*
5:45pm – 6:15pm	**Conference Awards, Obstetric Medicine Certificates, ADIPS Honorary Life Membership Awards, Meeting Close** Chairs: Arianne Sweeting & Helen Barrett	

E-POSTER LISTING

Afternoon Break and E-Poster Viewing

Friday 23rd July, 3:45PM - 4:15PM

Rhea L Schulte
Obesity, pregnancy and lifestyle clinic: evaluation and outcomes *abs# 61*

Leanne Cummins
GDM-connect: what women want from technology when they have gestational diabetes *abs# 63*

Jessica L Phillips
Incorporation of diabetic retinopathy screening into an antenatal clinic *abs# 64*

Helen Tanner
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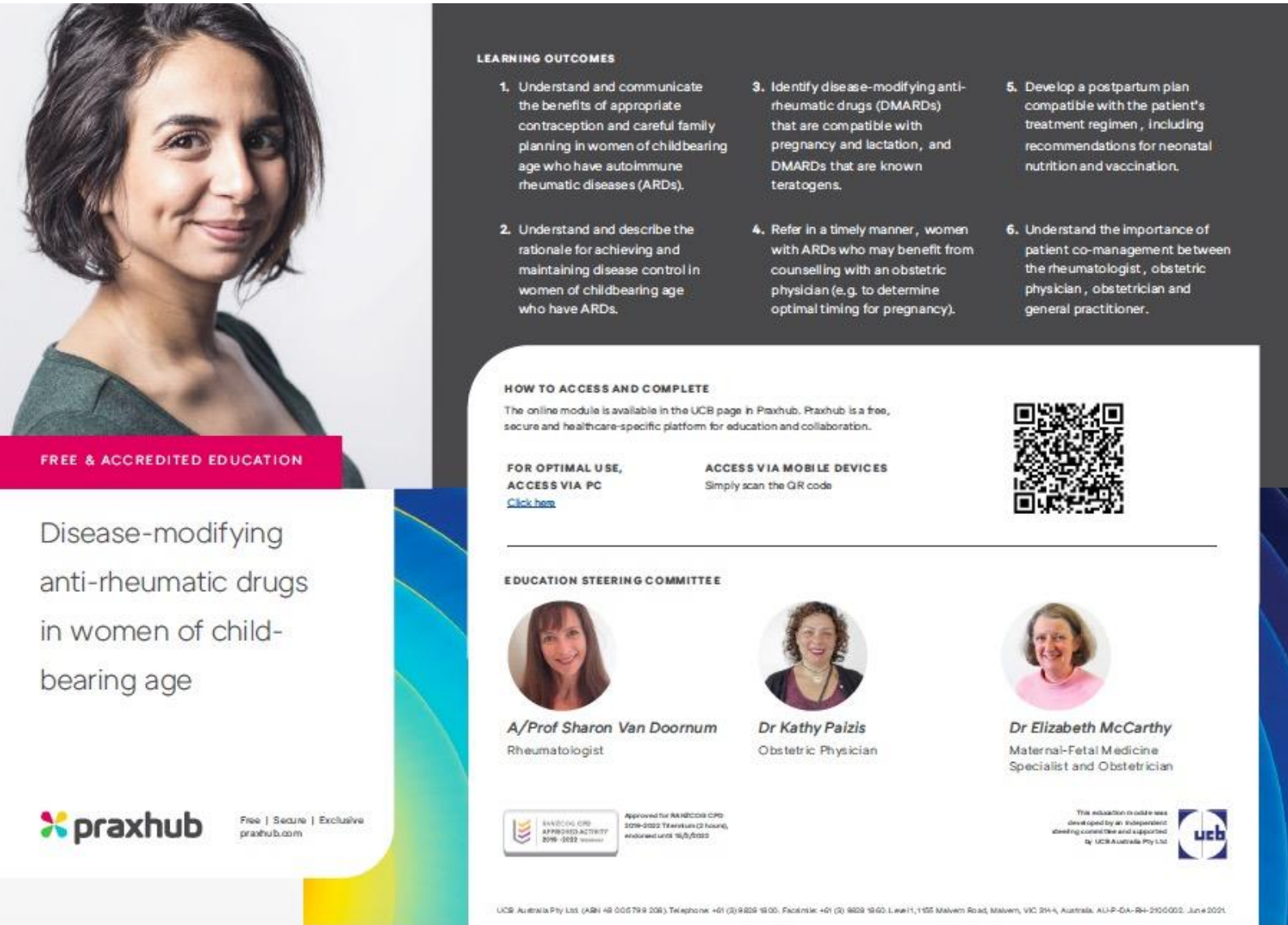

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ORAL ABSTRACTS

1

Gestational Diabetes and Long-Term Maternal Glycemic Outcomes

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Gestational diabetes mellitus (GDM) is associated with both short- and long-term adverse outcomes in mothers. Included among these adverse outcomes is a long-term risk of developing type 2 diabetes. One of the questions addressed in the Hyperglycemia and Adverse Pregnancy Outcome (HAPO) Follow-Up Study (FUS) is whether mothers diagnosed with GDM using the International Association of Diabetes and Pregnancy Study Groups (IADPSG) criteria had a similar risk 10-14 years following the HAPO pregnancy. GDM diagnosed using IADPSG criteria was associated with a 3.4-fold higher risk of developing a disorder of glucose metabolism (type 2 diabetes, impaired fasting glucose, impaired glucose tolerance) compared to women with normal glucose tolerance during pregnancy. Despite the high risk of developing a disorder of glucose metabolism following a diagnosis of GDM, postpartum follow-up of women with a history of GDM is often inadequate despite explicit recommendations for follow-up from the American Diabetes Association and other groups. Developing approaches during pregnancy for identifying women at highest risk for progression to a disorder of glucose metabolism could enhance postpartum follow-up. To address this, we used targeted metabolomics in the HAPO FUS cohort to further characterize metabolic changes at 28 weeks gestation associated with GDM. GDM was associated with broad-based metabolic changes similar those seen in type 2 diabetes. Circulating metabolites at 28 weeks gestation were also associated with maternal glucose levels and/or development of a disorder of glucose metabolism 10-14 years after the HAPO pregnancy. However, inclusion of metabolite levels at 28 weeks gestation together with maternal clinical factors did not improve prediction of development of a disorder of glucose metabolism beyond using clinical factors alone. Mediation analyses did demonstrate that a core group of metabolites at 28 weeks gestation associated with postpartum maternal glycemic traits mediated, in part, the association of GDM with development of a disorder of glucose metabolism. In summary, women with GDM diagnosed using IADPSG criteria are at risk for developing a disorder of glucose metabolism, and while metabolomics did not improve models for predicting progression to a disorder of glucose metabolism, it has helped to define the underlying pathophysiology of this process.

2

The ADIPS Pilot National Diabetes in Pregnancy Benchmarking Programme

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Background: To test the feasibility of benchmarking the care of women with pregnancies complicated by hyperglycaemia. **Methods:** A retrospective audit of volunteer diabetes services in Australia and New Zealand involving singleton pregnancies resulting in live births between 2014 and 2020. Ranges are shown and compared across services. **Results:** The audit included 10,144 pregnancies (gestational diabetes mellitus [GDM]=8696; type 1 diabetes [T1D]=435; type 2 diabetes [T2D]=1013) from 11 diabetes services. Among women with GDM, diet alone was used in 39.4%(range 28.8–57.3%), metformin alone in 18.8% (0.4-43.7%) and metformin+insulin in 10.1% (1.5-23.4%); birth was by elective (12.1%) or emergency (9.5%) caesarean delivery in 3.6-23.7% and 3.5-21.2% respectively (all $p<0.001$). Preterm birth (<37 weeks) ranged from 3.7-9.4% ($p<0.05$), large for gestational age 10.3-26.7% ($p<0.001$), admission to special care nursery 16.7-25.0% ($p < 0.001$), and neonatal hypoglycaemia (<2.6 mmol/l) 6.0-27.0% ($p<0.001$). Many women with T1D and T2D had limited pregnancy planning including first-trimester hyperglycaemia (HbA1c>6.5% (48mmol/mol)), 78.4% and 54.6% respectively ($p<0.001$). **Conclusion:** Management of maternal hyperglycaemia and pregnancy outcomes varied significantly. The maintenance and extension of this benchmarking service provide opportunities to identify policy and clinical approaches to improve pregnancy outcomes among women with hyperglycaemia in pregnancy.

3

Comparing IADPSG and NICE diagnostic criteria for GDM in predicting adverse pregnancy outcomes

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Background: The diagnostic criteria of GDM remains diverse across the world. In UK, National Institute for Health and Care Excellence (NICE) proposed a diagnostic criteria different from The International Association of the Diabetes and Pregnancy Study Groups (IADPSG) criteria which adopted by the World Health Orgnaisation (WHO) in 2013. Our objective is to compare the NICE and IADPSG criteria in discriminating adverse pregnancy outcomes.

Methods: We performed a secondary analysis of data from 6397 participants of Hyperglycemia and Adverse Pregnancy Outcomes (HAPO) study data from 5 of the 15 original study centres and compared the adverse pregnancy outcomes amongst participants who diagnosed as Group 1) normal glucose tolerance (NGT) by both the IADPSG and NICE criteria, Group 2) GDM by the IADPSG but NGT by the NICE criteria; Group 3) GDM by the NICE, but NGT by the IADPSG criteria and Group 4) GDM by both IADPSG and the NICE criteria.

Results: Among Hispanics, IADPSG criteria diagnosed more women with GDM than NICE criteria (19.5% vs 10.8 %, p<0.001) and performed better in the prediction of hypertensive disorders (gestational hypertension/pre-eclampsia), primary caesarean section, large for gestation age [LGA] (birth weight >=90th percentile), macrosomia (birth weight >=4 kg), adiposity (percentage of fat >=90th percentile) as well as neonatal hyperinsulinemia (umbilical cord serum C peptide level >=90th percentile) (Table 1).

On the other hand, among Asians, NICE criteria diagnosed more women with GDM (16.7% vs 13.8%, p<0.001) without identifying more women with adverse pregnancy outcomes. Among the Whites, IADPSG criteria can identify more women with LGA, while the NICE criteria identify more neonates with hyperinsulinemia (Table 1).

Conclusion: The result suggests that the IADPSG criteria may be more appropriate for Hispanics and Asians in the diagnosis of GDM.

Table 1 Comparisons of the incidences of adverse pregnancy outcomes by groups among Whites, Hispanics and Asians, respectively

Groups	Non-GDM by both IADPSG & NICE	GDM by IADPSG but Non-GDM by NICE	GDM by NICE but Non-GDM by IADPSG	GDM by both IADPSG & NICE	P
Whites					
Maternal adverse outcomes					
GH/PE	278 (13.7)*¥&	38 (28.1)*	28 (25.5)#	40 (22.6)¿	<0.001
Primary caesarean section	328 (17.6)*	28 (22.8)	30 (27.0)	48 (28.9)*	<0.001
Preterm delivery	107 (5.1)*	11 (7.5)	12 (9.8)	20 (10.8)*	0.002
Neonatal adverse outcomes					
LGA	188 (9.0)*	17 (11.6)	8 (6.6)#	31 (16.8)*¿	0.003
Adiposity	148 (9.0)	14 (12.8)	7 (7.5)	21 (14.7)	0.078
Macrosomia	316 (15.1)	26 (17.7)	21 (17.2)	37 (20.0)	0.283
Hypoglycaemia	21 (1.9)	1 (1.3)	1 (1.9)	2 (1.9)	0.999
Hyperinsulinemia	162 (9.6)*¿	15 (12.7)	19 (19.8)¥	31 (20.9)#	<0.001
Hispanics					
Maternal adverse outcomes					
GH/PE	250 (20.3)*¿	55 (31.1)¥	9 (20.9)	38 (30.2)#	<0.001
Primary caesarean section	116 (11.0)¥	30 (20.3)¥	6 (17.6)	17 (16.0)	0.007
Preterm delivery	70 (5.6)	10 (5.5)	3 (7.0)	14 (10.7)	0.133
Neonatal adverse outcomes					
LGA	99 (7.9)*¿	27 (14.8)¥	2 (4.7)	24 (18.3)#	<0.001
Adiposity	81 (8.3)¥	24 (17.4)¥	2 (6.1)	12 (12.2)	0.007
Macrosomia	140 (11.2)*	32 (17.5)	6 (14.0)	29 (22.1)*	<0.001
Hypoglycaemia	43 (3.8)	10 (6.0)	3 (7.5)	9 (7.6)	0.086
Hyperinsulinemia	114 (9.8)*¿	33 (18.6)¥	4 (10.0)	24 (19.4)#	<0.001
Asians					
Maternal adverse outcomes					
GH/PE	126 (9.4)	11 (20.4)	11 (10.8)	18 (10.9)	0.065
Primary caesarean section	264 (20.8)	10 (22.2)	20 (21.1)	39 (25.0)	0.691
Preterm delivery	59 (4.4)	4 (7.1)	5 (4.8)	16 (9.0)	0.052
Neonatal adverse outcomes					
LGA	112 (8.3)*	9 (16.1)	14 (13.3)	26 (14.8)*	0.006
Adiposity	99 (8.1)*	7 (14.0)	14 (14.9)	26 (17.0)*	0.001
Macrosomia	30 (2.2)	2 (3.6)	5 (4.8)	9 (5.1)	0.050
Hypoglycaemia	39 (3.2)	2 (3.9)	4 (4.3)	10 (6.5)	0.197
Hyperinsulinemia	103 (7.9)*	8 (14.5)	13 (12.6)	39 (23.1)*	<0.001

GH/PE, gestational hypertension/preeclampsia; LGA, large for gestational age. *#¿ P<0.05

4

TWIN PREGNANCIES IN WOMEN WITH GESTATIONAL DIABETES: RETROSPECTIVE REVIEW 2016-2021

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Background: Twin pregnancies occurred in 1.4% of NSW births [2014-2019]1. The Institute of Medicine [IOM 2009] has maximum weight gain recommendations for twin pregnancies2: Healthy weight 25kg; Overweight 23kg; Obese 19kg respectively.

Aim: To assess maternal characteristics, management and outcomes of twin versus singleton GDM pregnancies.

Methods: We assessed prospectively collected data for all pregnancies with GDM diagnosed by WHO 2013 criteria 1/3/2016-1/3/2021. Data analysed were: maternal age, gravida/parity, pre-gestational BMI, gestation at GDM diagnosis and delivery, OGTT results, HbA1c at GDM diagnosis, insulin therapy, caesarean birth, total maternal weight gain, neonatal hypoglycaemia and jaundice. We compared data from twin versus singleton births using t-tests and Chi-square analyses (SPSS version 24). Significance p<0.05.

Results: There were 36 twin births amongst 1932 GDM women [1.9%]. Mean total weight gained: Healthy weight(n=16) 18.0kg, Overweight(n=6) 14.8kg and Obese(n=14) 12.3kg respectively. Data in the Table are Mean+SD [Range] or percent.

	Twins[n=36]	Singleton[n=1896]	p=
Maternal Age [years]	31.1+5.7	31.3+5.4	0.83
Gravida	2.9+1.8[1-7]	2.9+1.9[1-22]	0.89
Parity	1.3+1.3[0-4]	1.4+1.4[0-10]	0.89
Pre-gestational BMI [kg/m2]	28.4+6.9	27.0+6.2	0.18
Gestation [GDM diagnosis-weeks]	22.5+5.8[10-32]	23.6+5.8[3-36]	0.25
FBGL [mmol/L]	5.4+0.7	5.1+0.7	0.73
1HourBGL [mmol/L]	10.2+2.1	9.7+1.9	0.59
2HourBGL [mmol/L]	8.2+1.7	7.7+1.9	0.75
HbA1c [GDM diagnosis-%]	5.2+0.4[4.6-7.0]	5.2+0.4[4.1-8.7]	0.59
Insulin Rx	44.4%	43.9%	1.0
Gestation [Delivery-weeks]	36.0+1.9[28-38]	38.7+1.3[28-42]	<0.0001
Exceeded IOM Weight Gain Guidelines	11.1%	38.9%	<0.001
%Caesarean	72.2%	35.0%	<0.0001
Birthweight	4748+776 2392+414 2356+426	3294+513	-
Hypoglycaemia [<2.6mmol/L]	22.2%	10.0%	<0.05
Jaundice [Phototherapy]	19.4%	4.9%	<0.01

Conclusions: Twin pregnancies occurred more commonly in GDM pregnancies than the NSW average. GDM women with twins delivered earlier and were more likely to have a caesarean delivery, neonatal hypoglycaemia and jaundice than singleton pregnancy GDM women, but far fewer exceeded IOM total pregnancy weight gain recommendations.

(1) Centre for Epidemiology and Evidence. New South Wales Mothers and Babies 2019. Sydney: NSW Ministry of Health, 2021.

(2) Institute of Medicine. Weight gain during pregnancy: re-examining the guidelines. Washington, DC: National Academies Press; 2009.

5

Hyperaldosteronism in pregnancy : a case control study

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Primary hyperaldosteronism (PHA) is an increasingly identified secondary cause of hypertension. Literature regarding pregnancies in women with PHA have demonstrated poor maternal and fetal outcomes.

We conducted a case-control study to compare the maternal and fetal outcomes of women with PHA (diagnosed pre or post index pregnancy) to matched women at a large metropolitan network of hospitals. Women with PHA were identified from a postnatal database (2015-20) and their matched (1:1) controls from a database of high risk women enrolled in a previous study (2017-19) known not to have PHA. Cases were matched for age, body mass index (BMI), booking blood pressure and where possible parity. Only women with a positive salt infusion test, singleton pregnancy and who delivered after 20 weeks gestation were included. Preeclampsia was defined by SOMANZ criteria and growth restriction as gestation adjusted fetal weight less than the 5th centile. Data analyzed with SPSS v27.

Forty women were included (20 PHA and 20 controls) with no differences in age, BMI, booking blood pressure or parity. Women with PHA took a greater number of pre-pregnancy anti-hypertensive medications (4 taking epleronone)(1 medication vs 0.5 medication,p=0.01) but were equally prophylaxed with aspirin and/or calcium for preeclampsia (95%vs70%,p=0.09). There was no difference in the overall rate, preterm or late preeclampsia (p<0.05 for all). Women with PHA delivered earlier (38vs38.5wks,p=0.02) than controls and their babies were more likely to be admitted to neonatal intensive care (50%vs15%,p=0.04). There was no difference in the women's length of stay during their delivery admission or method of delivery. Women with PHA took more antihypertensive during pregnancy and post-partum (p=0.001).

Women with PHA require more medication before, during and after pregnancy than other high risk populations. The BMI, booking blood pressure and preeclampsia prophylaxis are better predictors than the PHA for adverse maternal or fetal outcomes.

6

The P4 Study: Cardiovascular Health 2 years after Preeclampsia versus Normotensive Pregnancy

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Background: Preeclampsia (PE) increases maternal risk of hypertension and cardiovascular disease from within 10 years of the index pregnancy. However, women at increased cardiovascular risk may go undetected because data on normal blood pressure (BP) and other cardiovascular risk indices in the first 5 years postpartum is lacking. This study aims to report BP and indices of cardiovascular health in women 2 years after normotensive pregnancy (NP) versus PE, and compare these to measures from the same women at 6 months postpartum.

Methods: Prospective cohort with paired measures of 114 NP and 51 PE pregnancies 6 months and 2 years postpartum. Measures included manual, central and 24-hour ambulatory BP, radial artery applanation tonometry, HOMA-IR score, albumin-creatinine ratio (ACR), and echocardiography in a subgroup. Provisional reference intervals for normal BP at 2 years postpartum were derived from the NP group. Groups were compared using usual quantitative methods. Paired testing was used to compare 6-month and 2-year data.

Results: At 2 years postpartum, PE had significantly higher manual (111±12/72±8mmHg vs. 103±10/66±7mmHg), central (103±12/75±9mmHg vs. 96±10/68±7mmHg) and 24-hour average BP (116±9/73±8mmHg vs. 106±8/67±6mmHg) compared to NP (all $p<0.001$). There was no difference between 6 months and 2 years postpartum within each group. Two percent of PE were hypertensive at 2 years using the traditional reference range of ≥140/90mmHg for manual BP; compared to 19.6% when utilising the novel reference interval derived from the NP group. There was no difference between groups in HOMA-IR score, ACR or echocardiographic parameters at 2 years postpartum.

Conclusion: PE had higher BP at 2 years postpartum compared to NP, predicted by the 6 months findings. Utilising a normal range derived from the NP group detected hypertension in a greater proportion of PE women than traditional reference ranges, which may have implications for risk stratification in high-risk women.

7

Diabetes in pregnancy and technology – Practical tips

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Content not available at the time of publishing

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Gestational Diabetes Mellitus (GDM) care re-imagined – 1: Integration of a digital solution into a radical model of care change

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Abstract:

Introduction: The rising prevalence of gestational diabetes mellitus (GDM) continues to be a major issue in the efficient and timely provision of diabetes care at our maternity facilities. Mater Mothers' Hospital (MMH) is a large quaternary maternity centre servicing a culturally and linguistically diverse population. Local GDM frequency is approximately 16% of maternities, amounting to over 1000 women with GDM per annum. We present elements of the steps and outcomes of an iterative process for redesigning GDM care using novel strategies. This incorporates a digital solution in trial at MMH since June 2020, removing the traditional "GDM schedule" in favour of a streamlined digital review schedule.

Method: MMH, in collaboration with CSIRO, have implemented a smartphone app with Bluetooth transfer of BGLs from the woman's home glucose meter and real time BGL transmission to a clinician-facing web portal. Text messaging is used for feedback and insulin titration. The larger and more complex component of the project includes the associated model of care changes required to make the digital interface time and resource efficient.

Results: Over 1000 women have received care through the novel GDM model of care. Initial informal feedback reveals: far greater visibility of the patient cohort and early recognition of patients with highest care needs. Improved staff satisfaction for work flow, reduced requirement for initiation of insulin (40% to 30%) and improved patient satisfaction and experience. App use compliance increased from 60% to 97% in the first 6 months. Clinical outcome data is under evaluation.

Conclusion: A mobile health solution integrated into a radical model of care change demonstrates positive initial feedback and outcome data.

Keywords

GDM, Smartphone App, digital, mHealth, model of care

The authors have presented 3 inter linked abstracts for consideration;

1. **Gestational Diabetes Mellitus (GDM) care re-imagined – 1: Integration of a digital solution into a radical model of care change;**
2. **Gestational Diabetes Mellitus (GDM) care re-imagined - 2: Education and clinical review delivery to support a radical model of care change;**
3. **Insulin wastage in GDM - Is sustainability a pipe dream?**

GRANT: ADIPS- Clinical Education Research (2019)

9

Fetal ultrasound scans to guide management of gestational diabetes: improved neonatal outcomes in routine clinical practice

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Objective: At a given level of glycemic control, fetal growth is variable in gestational diabetes mellitus (GDM). Some guidelines recommend altering glycemic targets in GDM based on ultrasound measurements of fetal growth, but the impact on outcomes in clinical practice is unknown. The aim of this study was to compare the effects of ultrasound-guided and non-ultrasound-guided management on neonatal outcomes.

Methods: This was a retrospective, observational study of women with GDM and their infants. The study sample was randomly selected from all eligible women who delivered at the study hospital from August 2015 to August 2019. Outcomes were compared between those who had GDM management tailored according to fetal growth and those who did not.

Results: In the sample of 221 women, 134 had documentation of ultrasound-guided management while 87 did not. There was no significant difference in size-for-gestational age between groups. Fewer neonates in the ultrasound-guided management group were admitted to the Special Care or Intensive Care Nursery (29.1% vs. 48.3%, P = 0.004), had a prolonged hospital stay (3.7% vs. 13.8%, P = 0.006), or had hypoglycemia after birth (42.5% vs. 56.3%, P = 0.045). The reduction in admission rates and prolonged hospital stays remained significant after controlling for confounding variables.

Conclusions: Ultrasound-guided management was independently associated with reductions in Special Care Nursery and Intensive Care Nursery admissions and neonatal length of stay despite no significant differences in birthweight.

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Accuracy of continuous glucose monitoring during periods of predicted acute glycaemic variability in pregnancy in women with Type 1 Diabetes Mellitus in the inpatient setting: A pilot study

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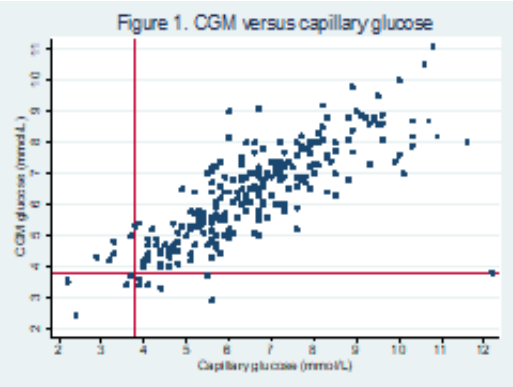
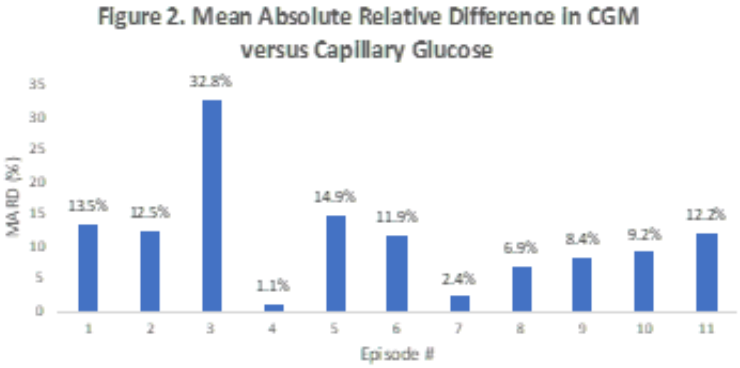
Background: Subcutaneous continuous glucose monitors (CGM) use during pregnancy in ambulant women with Type 1 diabetes mellitus (T1DM) improves glycaemic control and neonatal outcomes[1]. Women may require intensive inpatient glycaemic management during glucocorticoids, intercurrent illness or intrapartum to reduce maternal-foetal risk. CGM has the potential to enhance glycaemic monitoring during these episodes and improve maternal experience by minimising capillary glucose 'finger-prick' testing. The accuracy of CGM during episodes of acute glycaemic variability has not been evaluated in pregnancy.

Methods: Observational, retrospective study of pregnant women with T1DM using CGM whist on IV insulin infusion with 30-60minutely capillary glucose (CapG) monitoring. CapG was paired with nearest time-point CGM glucose.

Results: Data available for eleven episodes (intercurrent illness=3, intrapartum=8). Median gestation was 37 weeks; CGM Dexcom 5 (n=9) and Carelink (n=2). Pearson's correlation for CGM and CapG was 0.80 (p<0.005) for n=261 paired data points (**figure1**). Overall accuracy of CGM compared to CapG was reasonable, with mean absolute relative difference (MARD) 11.1% (SD 11.7) for n=261 data points. MARD calculated for each episode ranged from 1.1-32.8% (median 11.9%,IQR 6.59) (**figure2**). Significant positive correlation between increasing CV% of CapG and MARD (Spearman rho 0.68,p=0.02) and positive correlation between increased rate of change of CapG and increased CapG to CGM glucose (linear regression coefficient 0.69,p<0.005). No apparent correlation between MARD and number of data points or number of calibrations. In 5/10 capillary-detected hypoglycaemic events (glucose<3.8mmol/L), CGM levels lagged behind, with up to 70% difference between CGM and CapG in this range (red box, figure 1); six hypoglycaemic events occurred during one admission.

Conclusion: Capillary glucose and CGM were reasonably correlated during IVI in pregnancy. Rate of change of glucose may predict discrepancy between capillary and CGM glucose. Further study of accuracy of CGM under glycaemic extremes in pregnancy is planned in prospective studies.





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Progression of diabetic retinopathy and its risk factors in pregnant women with pre-existing diabetes in Metropolitan Melbourne

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Purpose

Diabetic Retinopathy (DR) may deteriorate during pregnancy, although findings from prior studies have been conflicting and many are outdated. Here, we report DR prevalence, progression rate and associated risk factors in pregnant women with pre-existing diabetes.

Methods

Pregnant women with type 1 (T1DM) or type 2 diabetes (T2DM) were prospectively recruited from two maternity hospitals in Melbourne (November 2017-September 2019). Eye examinations were scheduled in each trimester and 3-months postpartum. DR severity was graded from retinal photographs. At least 2 examinations (in early and late pregnancy) were required to evaluate DR change. Progression was defined as worsening of DR severity, development of diabetic macular oedema, or the need for laser treatment during pregnancy.

Results

One hundred and forty-seven from 191 eligible women were recruited. At least one eye examination was performed in 130 (88.4%). Mean age was 33.7 years (range 19-47); 62 women (47.7%) had T1DM while 68 had T2DM (median duration 16.5 and 4.0 years, respectively). DR prevalence was 20.8 (95%CI 16.3-26.1) per 100 eyes, with T1DM and higher HbA1c in early pregnancy being significant risk factors. Among the 144 eyes (72 women) with >1 eye examination, 9.7% (95%CI 5.8-15.8) progressed. Elevated systolic blood pressure (risk ratio 10.36, 95%CI 3.14-34.12) and pre-existing DR in either eye (RR 5.07, 95%CI 1.90-13.49) in early pregnancy significantly increased the risk of progression. Type of diabetes was not associated with a greater risk of progression (p=0.141). Sight-threatening disease was observed in 6 eyes (5 women).

Conclusions

Nearly 1 in 10 eyes had DR progression in pregnancy, with almost half of these developing sight-threatening disease. Risk factors included hypertension and pre-existing DR in early pregnancy. Worryingly, 1 in 5 participants did not attend any eye examinations during pregnancy, highlighting the need to address barriers to adherence given the significant risk of worsening DR.

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Dietetic service provision for gestational diabetes mellitus in Australia: What has changed in 10 years? Findings comparing two national surveys.

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Aims: Examine current Australian dietetic service provision for GDM by comparing findings to a previous survey[1] and to the American Academy of Nutrition and Dietetics Nutrition Practice Guidelines[2].

Methods: A survey of dietitians providing Medical Nutrition Therapy to women with GDM in Australia was conducted in 2009[1] and repeated in 2019. This abstract compares responses to service provision questions.

Results: A total of 149 and 220 dietitians met inclusion criteria in the 2019 and 2009 surveys respectively. Not all questions were answered by all respondents. Most respondents reported that all women attending their service with GDM were referred to a dietitian in both 2019 and 2009 respectively (83% and 77%; NS). More respondents provided group education in 2019 versus 2009 (51% versus 33%; p<0.001). Fewer respondents indicated that women received only one dietetic intervention in 2019 compared to the 2009 survey (13% versus 31%; p<0.0001). Although less than a half of dietitians provided the minimum of three dietetic visits (including group education) stipulated in the guidelines[2] in 2019, this was an increase compared to the 2009 survey (49% versus 33%; p<0.001). When respondents were asked to describe how their dietetic service is attempting to meet any increase in GDM clinical workload following uptake of the IADPSG GDM diagnostic criteria, the most common responses were: increased use of group education (25%); increased clinic time through reallocation of existing services (22%); increase in funded dietetic time (11%); and reduction or omission of individual review visits (7%). When asked whether their service provided adequate dietetic intervention for GDM, 42% in 2019 selected yes, down from 54% in 2009 (NS).

Conclusions: Dietetic service provision for GDM in Australia continues to fall short of evidence-based recommendations. Increased workload has necessitated changing models of care and made provision of adequate GDM dietetic interventions even more challenging.

1. Morrison MK, Collins CE and Lowe JM. Dietetic practice in the management of gestational diabetes Mellitus: A survey of Australian dietitians. Nutrition & Dietetics; 2011:68:189-194.

2. Duarte-Gardea MO, Gonzales-Pacheco DM, Reader DM, Thomas AM, Wang SR, Gregory RP, Piemonte TA, Thompson KL, Moloney L. Academy of Nutrition and Dietetics Gestational Diabetes Evidence-Based Nutrition Practice Guideline. J Acad Nutr Diet;2018:118(9):1719-1742.

13

Maternal predictors of small for gestational age infants in gestational diabetes mellitus pregnancies.

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Background: Gestational diabetes (GDM) management reduces the risk of large for gestational age infants and neonatal hypoglycaemia. Maternal risk factors for small for gestational age (SGA) within GDM populations are conflicting.

Aim: To evaluate maternal predictors for SGA in GDM pregnancies in a multiethnic GDM cohort.

Methods: Deidentified prospectively collected data were analysed from our database for singleton births in GDM women diagnosed by IADPSG criteria between years 2016-2020 at Bankstown-Lidcombe Hospital. Management included diet, with initiation of insulin if optimal targets were not achieved (fasting BGL <5.3 mmol/L; 1-hour post-prandial BGL <7.4 mmol/L; 2-hour post-prandial BGL <7.0 mmol/L.). SGA was defined as <10th centile.

Maternal characteristics assessed included: pre-pregnancy BMI, parity, weight gain by initial clinic visit, including insufficient weight gain based on Institute of Medicine recommendations, total pregnancy weight gain , ethnicity, early GDM diagnosis, FBGL on OGTT and use of insulin therapy. Pregnancy outcomes including caesarean section, early delivery (<37/40), neonatal hypoglycaemia and jaundice were assessed in SGA infants. Covariates significant on univariate analyses ($p<0.05$) were used for backward-stepwise logistic regression.

Results:

1735 GDM pregnancies were included in this analysis. Overall SGA prevalence in our cohort was 8.4%. Multivariable analysis identified insufficient weight gain at GDM presentation (aOR 1.42; 95% CI 1.02-1.97) and non-Middle Eastern ethnicity as independent positive predictors for SGA (aOR 1.66; 95% CI 1.07-2.56). Use of insulin therapy (aOR 0.55; 95% CI 0.39-0.79) was associated with a lower rate of SGA. Other assessed variables were not significant risk factors for SGA following multivariable analysis. There was more pre-term deliveries (13.1vs5.5% $p<0.001$) but no significant differences in caesarean section rate or other outcomes in SGA neonates.

Conclusions: Insufficient weight gain at initial GDM assessment was a risk factor for SGA. Women of Middle Eastern background had a significantly lower rate of SGA.

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Epilepsy in pregnancy

Lata Vadlamudi[1]

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This talk will focus on the complex management of women with epilepsy during their pregnancy, in order to optimize outcomes for both the mother and baby. The talk will focus on balancing the risks of uncontrolled seizures and the risks of anti-seizure medications. The talk will cover the risks of uncontrolled seizures; the risks of anti-seizure medication exposure to the foetus; and suggestions on management to optimize outcomes.

With regards to risks of uncontrolled seizures, the talk will focus on the maternal and fetal risks; the impact of pregnancy on seizure control; and the impact of anti-seizure medication pharmacokinetics on seizure control.

In terms of risks of anti-seizure medications, the talk will focus on effects on fetal growth; major congenital malformations; and developmental and behavioural outcomes.

Finally, the talk with discuss suggestions for management, in order to optimize outcomes during the pre-conception period, pregnancy, and the post-partum period.

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Stroke in pregnancy

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Content not available at the time of publishing

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Pregnancy in women with MS

Jeanette Lechner-Scott[1]

1. John Hunter Hospital, Dudley, NSW, Australia

Multiple Sclerosis is an autoimmune disease increasing in incidence and prevalence. It affects women 3 times more than men and is often diagnosed at childbearing age. While previously neurologists recommended their patients not to fall pregnant there is no mounting evidence that pregnancy has a positive effect on the disease course. The talk will describe which effect pregnancy has on MS and what effect MS and in particular its treatment has on fertility and pregnancy outcome.

17

Outcomes of pregnancies to women with cystic fibrosis in South East QLD

Sarah Davidson[1, 2], Megan France[3], Peter Hopkins[3], Dan Chambers[3], Scott Bell[4, 5], Lucy Burr[7, 6], Rebecca Keating[7, 6], Leonie K Callaway[1, 8], Karin Lust[1], Helen L Barrett[10, 9]

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10. Mater Research Institute - The University of QLD, Brisbane, QLD, Australia

Background: Pregnancy in women with cystic fibrosis (CF) is becoming more common and the general health of people with CF is increasing. Longer term metabolic issues such as overweight and diabetes are also rising and have potential important impacts on pregnancy outcomes.

Aim: The intention of this study was to assess the impact of diabetes on pregnancy outcome for women with cystic fibrosis.

Methods: We have undertaken a multisite retrospective chart audit of pregnancies over a ten year period 2006-2016 to women with cystic fibrosis at the two quaternary obstetric hospitals in south east Queensland who are associated with cystic fibrosis management clinics.

Results: 38 pregnancies amongst 26 women were identified. Two women had previously had lung transplant. Seventeen pregnancies were primiparous, and one a twin pregnancy. Five women had cystic fibrosis related diabetes (CFRD) diagnosed prior to pregnancy. A further twelve women had fifteen pregnancies complicated by gestational diabetes (GDM). Average gestational age of delivery was 36 weeks. CFRD and GDM were associated with higher rates of preeclampsia (CFRD 60%/GDM 0/No diabetes 0), delivery complications, prematurity (80%/60%/44%), NICU admission (80%/47%/28%), neonatal hypoglycaemia and neonatal respiratory distress.

Conclusions: Diabetes is common during pregnancy in women with cystic fibrosis and appears to impact on pregnancy outcomes. Ideally collation of data in a national cohort would allow tracking and reporting of pregnancy outcomes for this cohort of women who have high risk of adverse pregnancy outcomes.

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Foetal and maternal outcomes following pregnancy in lung transplant recipients

Claire Weatherburn[1], John Mackintosh[2], Peter Hopkins[2], Dan Chambers[2], Andreas Fiene[2], Michael Trotter[2], Chandima Divithotawela[2], Vidya Navaratnam[2], Ann-Maree Craven[1]

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2. Respiratory and Lung Transplant Department, The Prince Charles Hospital , Chermside, QLD, Australia

Introduction: Achieving a successful pregnancy post solid organ transplant is a balance between adequate immunosuppression to preserve graft function and minimizing the patient's immunosuppression to prevent harm to both the patient and fetus. There is ample data and published clinical guidelines for pregnancy post renal and other solid organ transplants, but no such guidelines exist in the literature for pregnancy in lung transplant recipients. To date, management of pregnancies in lung transplant recipients is based on small case series, the National Transplant Pregnancy Registry (NTPR) data reports and extrapolated from the outcomes and experience of other solid organ transplant recipient pregnancies. This includes pre-conception counselling of the risks involved in the pregnancy to both the mother and the fetus but makes it difficult to counsel women on the effects of pregnancy on longer-term transplant lung function, maternal and foetal outcomes.

Method: Our retrospective case series will characterise the Queensland experience of pregnancy in lung transplant recipients to improve the quality of our pre-conception counselling.

Conclusion: Results will be presented of a small, local case series of female (N=5) lung transplant recipients who have been pregnant. Lung function data in particular will be compared to a control group (N=5) female lung transplant recipients who have not been pregnant, to assess donor lung organ function during the peri partum period to evaluate whether it declines compared to a control group. Foetal and maternal data will also be evaluated to assess risk of pregnancy and improve prenatal counselling for future pregnancies.

19

Developing digital health technologies in obstetric practice: GDm-health – a case study

Lucy Mackillop[1]

1. Oxford University Hospitals NHS Foundation Trust, Oxford, UK, Oxford, OXFORDSHIRE, United Kingdom

We have been promised a revolution in healthcare with the adoption of digital technologies. So where are we with digital transformation and what are the opportunities and barriers particularly in the practice of medical problems in pregnancy? Objectives:

* To understand the speed of growth of digital health applications worldwide
* To understand drivers and barriers for digital adoption
* To use a case study to illustrate the process (trials and tribulations) of developing a digital health application
* To discuss how we can better utilize data captured as part of routine clinical care to gain insights that impact pregnancy outcome and health after pregnancy?

20

Bariatric Surgery: An Update and its Impact on Fertility

Lara Freeman[1]

1. Women's Weight Loss Surgery, Melbourne, VIC, Australia

Aim: To provide an update on local current trends in bariatric surgery as well as outline the impact of bariatric surgery on fertility and pregnancy outcomes.

Discussion: Obesity is an epidemic that is the leading cause of preventable death worldwide. It affects more that 60% of Australian adults with the majority suffering from an array of comorbidities, including infertility in both males and female. This talk will outline the different forms of weight loss surgery currently available in Australia, their indication and potential complications. It will explore the pathophysiology of infertility in the obese as well as how this is reversed with weight loss, resulting in a significant increase in both spontaneous and assisted pregnancy in this patient population. Lastly, it will address current evidence relating to pregnancy outcomes. Specifically, this will address maternal complications, fetal risks and outcomes, and recommendations in perinatal care.

Conclusion: It is hoped that this will act as a comprehensive guide to assisting obese patients, both pre- and post-surgery, with their fertility journey.

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Diagnosis and Management of Maternal Hyperglycaemia after Bariatric Surgery - Balancing Risks and Benefits

David McIntyre[1]

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Bariatric surgery is an effective and increasingly used treatment modality for severe obesity and its complications including diabetes mellitus. It is clearly more effective that intensive lifestyle interventions in achieving sustainable weight loss and is associated with >50% remission of known pre-existing diabetes. In addition to remission of diabetes, other comorbid conditions including hyperlipidaemia, hypertension and obstructive sleep apnoea are improved after bariatric surgery.

Some of the improvement in glucose metabolism following bariatric surgery occurs very rapidly, before the time of major weight loss and may relate to marked caloric restriction, improved insulin secretion and variable improvements in peripheral insulin resistance and hepatic glucose production. The function of the incretin system (GLP1 and GIP) is also enhanced following bariatric surgery.

Conventional OGTT diagnosis of gestational diabetes mellitus (GDM) is rarely feasible or useful following malabsorptive bariatric surgery and its utility after gastric sleeve procedures is debated. Major issues include variable gastric emptying, poor tolerance of the OGTT solution and hypoglycaemia during the test. A variety of bodies have produced consensus recommendations regarding diagnosis of GDM following bariatric surgery, often promoting use of HbA1c and home glucose monitoring (or continuous glucose monitoring if available) but none has a firm evidence based.

Whilst there is a clear consensus in favour of treating “diabetes level” hyperglycemia in pregnant women with previous bariatric surgery, the value of treating GDM is less clear and the potential reduction in excess fetal growth must be balanced against the risk of growth restriction.

Many aspects of the detection and treatment of hyperglycaemia during pregnancy in women with previous bariatric surgery remain contentious and further research should be a major priority.

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Obstructive sleep apnoea in pregnancy

Megan Rees[1]

1. Obstetric Medicine, Royal Womens Hospital, PARKVILLE, VICTORIA, Australia

This presentation will discuss common problems to disrupt sleep during pregnancy, and normal physiological changes in pregnancy that can affect sleep architecture and quality. There will be a review of recent studies on sleep apnoea in pregnancy including the association between OSA and pre-eclampsia and adverse effects for both mother and offspring. Treatment options for sleep apnea will be discusses.

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COVID vaccination and equity of access in pregnancy

Lucy Chappell[1]

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Content not available at the time of publishing

24

Childhood Metabolic Outcomes Following Gestational Diabetes

William Lowe Jr[1]

1. Feinberg School of Medicine - Northwestern University, Chicago, United States

There has been increasing focus on the developmental origins of long-term health and disease, with numerous examples of exposure to diabetes during pregnancy begetting obesity and more diabetes. An open question is whether exposure to lesser degrees of hyperglycemia during pregnancy are associated with adverse metabolic outcomes in children. This question was addressed in the Hyperglycemia and Adverse Pregnancy Outcome (HAPO) Follow-Up Study (FUS). Metabolic outcomes were assessed in children 10-14 years old following the HAPO pregnancy, comparing outcomes in offspring of mothers with gestational diabetes (GDM) diagnosed using International Association of Diabetes and Pregnancy Study Groups (IADPSG) criteria to those in offspring of mothers with normal glycemia during the HAPO pregnancy. Offspring of GDM mothers had a higher risk of obesity and greater adiposity. The association of GDM with childhood glucose outcomes was also examined. GDM was associated with higher levels of childhood 30-minute, 1-hour and 2-hour glucose levels during an oral glucose tolerance test as well as greater insulin resistance and a lower disposition index. Finally, GDM was associated with development of impaired glucose tolerance but not impaired fasting glucose during childhood. Similar to the linear association of maternal glucose with newborn outcomes in the HAPO Study, there was a similar linear relationship between maternal glucose levels and childhood

adiposity and glucose outcomes. Finally, given the association of maternal hyperglycemia during pregnancy with a higher risk of macrosomia, the association of size at birth with childhood glucose outcomes was examined. After adjusting for maternal glucose levels, higher birthweight and newborn sum of skinfolds was associated with lower fasting and post-load glucose values during an oral glucose tolerance test as well as lower insulin sensitivity. In conclusion, offspring of mothers with GDM diagnosed using IADPSG criteria have higher glucose levels and greater adiposity at age 10-14 years, but the interplay between maternal metabolism during pregnancy, size at birth and childhood glucose outcomes is complex.

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Improving care for diabetes in pregnancy in regional and remote Australia

Diana MacKay[1]

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Aboriginal and Torres Strait Islander women are disproportionately impacted by hyperglycaemia in pregnancy. There are multiple barriers to providing care for women with hyperglycaemia in pregnancy in regional and remote Australia, including high staff turnover, fragmentation between services, limited clinician confidence, and lack of clarity around clinician roles relating to service provision.

The Diabetes Across the Lifecourse: Northern Australia Partnership (formerly the Northern Territory and Far North Queensland Diabetes in Pregnancy Partnership) is a collaboration between researchers, clinicians and policymakers. Since 2011 in the Northern Territory and 2015 in Far North Queensland the Partnership has worked to improve systems of care for women with hyperglycaemia in pregnancy, addressing identified barriers to care and opportunities for improvement. Activities of the Partnership include clinician education, updating relevant guidelines and policies and embedding these in practice, improving of recall and reminder systems, and implementing a Diabetes in Pregnancy Clinical Register for epidemiological and quality improvement purposes. The establishment of an Indigenous Reference Group, providing an Aboriginal voice which guides priority-setting and culturally safe research practices, has been key to the Partnership's work.

The Partnership has led to improved communication between care providers and increased clinician knowledge and confidence in managing hyperglycaemia in pregnancy. Clinicians also report a greater emphasis on care being patient-centred, with more flexibility for women to choose the location of their care and clinicians placing a high priority on effective cross-cultural communication.

Currently the Partnership is working with Aboriginal and Torres Strait Islander women, families and communities to co-design improved supports for women and families impacted by hyperglycaemia in pregnancy. Additionally, on advice of the Partnership's Indigenous Reference Group, work of the Partnership has expanded to include young people with type 2 diabetes, acknowledging the intergenerational impact hyperglycaemia in pregnancy has on Aboriginal and Torres Strait Islander communities.

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The growing challenge of intergenerational diabetes

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Aboriginal and Torres Strait Islander women across Australia experience high rates of diabetes during pregnancy. In the Northern Territory, there is an epidemic of type 2 diabetes among Aboriginal people, with disease onset seen at increasingly young ages. This is accompanied by increasing rates of diabetes during pregnancy, which is impacting birth outcomes and the metabolic health of the next generation.

The growing burden of chronic disease among Aboriginal people is strongly related to the social determinants of health and numerous challenges need to be addressed in order to improve outcomes. Strategies to address the intergenerational cycle of adverse metabolic health need to be developed and implemented in partnership with Aboriginal communities, with consideration of barriers such as food insecurity, overcrowded housing and other competing priorities relating to social disadvantage.

Qualitative research into Aboriginal women's experiences of diabetes in pregnancy has highlighted the need for culturally and linguistically appropriate health information, the value of pregnancy as a motivator for behaviour change and the importance of culturally safe, family-centred care, underpinned by respectful relationships with consistent clinicians. In research focussed on the post-partum period, enablers for improving health included strong connections to family, community and country.

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An opportunity for Primary Care prevention of T2DM development post Gestational Diabetes

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Background: The Goulburn Valley (GV) Diabetes Centre provides acute and subacute Diabetes care in the Goulburn Valley and surrounds, including Gestational Diabetes Mellitus (GDM) management. The current model of care at GVH is GDM management upon diagnosis with service discharge following delivery. There is no follow-up prevention program currently available for this cohort of women at significant risk of developing T2DM.This exploratory project sought to describe the changing characteristics of women attending GVH with GDM for 2010, 2015 and 2020, and identify T2DM prevention programs currently offered by Victorian public health services that could be instituted locally to provide postnatal preventative care for women in the Goulburn Valley.

Method: A literature review was conducted to benchmark current rates of T2DM post-GDM in Australia, and identify associated risk factors. A file audit was undertaken to identify demographic characteristics and pregnancy outcomes for three cohorts of women with GDM across 10 years. Descriptive statistics were undertaken to describe the cohorts and identify changes over time. Results were compared to the benchmarked literature. A simple survey regarding currently available T2DM programs post GDM were distributed to 11 Victorian healthcare facilities (8 regional and 3 metropolitan).

Results: n=386 women were included in the audit with a mean age 31.7 years at diagnosis, mean antenatal BMI 31.8kg/m2, n=89 (23%) of whom experienced a GDM recurrence. The cohort was culturally diverse with n=138 (36.1%) born overseas and n=18 (4.7%) Aboriginal or Torres Strait Islander and the majority (n=254; 66%) resided within Greater Shepparton. Over the ten years, service demand increased 74% and the number of insulin initiations increased 90%. The proportion of women with a BMI >30kg/m2 significantly increased between 2015 and 2020. Of the 64% of health services who responded to the survey 3 reported provision of a post-natal T2DM prevention program. Conclusion: A significant gap in current management of post-natal GDM in Victorian public health currently exists. There is a high need for implementation of a postnatal T2DM prevention program in Greater Shepparton. Considering the culturally diverse population serviced in the region, key consumer groups will need to be engaged in program co-design prior to implementation to optimise program reach and potential impact in preventing T2DM.

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Determining the course of diabetic retinopathy in the postpartum in women with type 1 and type 2 diabetes in metropolitan Melbourne

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Purpose: Diabetic retinopathy (DR) in the postpartum remains poorly understood. This study explores the prevalence, typical DR course and risk factors for DR progression in the postpartum.

Methods: Subgroup analysis of a prospective cohort study of pregnant women with type 1 (T1DM) or type 2 (T2DM) diabetes attending two maternity hospitals in Melbourne. Participants had ≥1 eye examination during both pregnancy and up to 12 months postpartum. DR severity was determined through grading of retinal photographs or clinical assessment when photographs were unavailable. Progression was defined as worsening by ≥1 step on the Airlie House classification, development of diabetic macula oedema or the need for laser treatment.

Results: Eighty-seven pregnancies from 86 women were included; 48 had T1DM and 38 had T2DM (median duration 18.0 and 4.0 years respectively). Mean age was 33.4 years (range 21-47). Prevalences of DR and sight-threatening DR (STDR) at 14-26 weeks postpartum were 23.1 (CI 14.5-34.6) and 14.6 (CI 7.2-27.2) per 100 eyes, respectively. Between late pregnancy and 12 months postpartum, progression occurred in 20/160 (13%) eyes while 10/160 (6%) regressed. Progression was more common in the latter 6 months postpartum and associated with existing baseline DR, T1DM (RR 5.03, 95CI 1.52-16.70) and duration of diabetes >10 years (RR 3.52, 95CI 1.38-8.21). Of 13 eyes that progressed during pregnancy, 5 (38%) regressed in the postpartum. Regression was seen in 4/5 (80%) eyes that developed new DR in pregnancy and 0/5 (0%) eyes with proliferative DR (PDR).

Conclusion: Postpartum DR and STDR prevalence was comparable to the non-pregnant diabetic population. Postpartum progression was twice as common as regression, highlighting the importance of postpartum eye screening. Existing baseline DR, T1DM and duration of diabetes >10 years were risk factors. The majority of eyes that progressed during pregnancy did not regress in the postpartum, especially eyes with PDR.

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Type 2 diabetes in pregnancy: An analysis of 20 years' experience of pregnancy and pregnancy outcomes

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Background/Aims: To explore the demographics, management and complications experienced by women with pre-existing Type 2 Diabetes Mellitus (T2DM) during pregnancy over a 20-year period.

Methods: A retrospective review of all pregnancies (n=555) of women with T2DM (n=418) who received antenatal care at Royal Women's Hospital between 2000-2019 inclusive. Data were recorded in the Diabetes in Pregnancy database, exported to excel and analysed using SPSS.

Results: Over 20 years there were 555 pregnancies in 418 women with 534 pregnancies progressing beyond 20 weeks' gestation. Maternal age increased, with the average age of pregnancy being 34 [SD+/- 9.4] years. The average BMI at initial antenatal visit was 33kg/m^2. Pre-eclampsia complicated 62 pregnancies (12%), with the incidence of pre-eclampsia increasing over the 20-year time period. Antenatal aspirin and folate use increased, with aspirin rising from 11% in 2000-2004 to 47% in 2015-2019, and antenatal folate use increasing from 43% to 74% over the same period.

Of the 534 continuing pregnancies there were 14 stillbirths and three neonatal deaths. Fifty-nine percent of deliveries were by caesarean section. Preterm delivery occurred in 133 (25%) pregnancies. The rate of SCN admission decreased over the 20-year period from 64% to 37%. Congenital malformations occurred in 53 pregnancies (10%).

Mean HbA1c decreased over the course of pregnancy (1st trimester = 7.42%, 2nd trimester = 6.4%, 3rd trimester = 5.9%), there was no difference in HbA1c over the time periods. Eighteen percent of women attended the pre-pregnancy clinic, these women had an average first trimester HbA1c of 7.0%. Antenatal metformin use increased.

Conclusions: Pregnancy in women with T2DM continues to be associated with significant complications for both women and their neonates. Despite increased use of metformin, aspirin and folate some pregnancy outcomes have not discernibly improved. Emphasis should be placed on the availability of effective pre-pregnancy care.

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Early pregnancy glycated haemoglobin identifies Australian Aboriginal women with high-risk of gestational diabetes mellitus and adverse perinatal outcomes

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OBJECTIVE: To assess whether an early pregnancy glycated haemoglobin (HbA_{1c}) can predict subsequent gestational diabetes mellitus (GDM) and adverse birth outcomes in Australian women.

RESEARCH DESIGN AND METHODS: Prospective study of women aged over 16-years, without confirmed diabetes, with first antenatal visit before 20-weeks gestation. Recruitment was from 27 primary health care sites in rural and remote Australia from 9-January 2015 to 31-May 2018. HbA_{1c} was measured with first antenatal investigations (<20-weeks gestation) and compared to routine 75 g oral glucose tolerance test (OGTT; ≥24-weeks gestation) and birth weight for gestational age. Primary outcome measure was predictive value of early HbA_{1c} for GDM and large-for-gestational-age (LGA) newborn.

RESULTS: Of 466 women with an early HbA_{1c}, 396 (129 Aboriginal) had a routine OGTT with 28.8% GDM incidence (24.0% Aboriginal). HbA_{1c} ≥5.6% (≥38 mmol/mol) was highly predictive (71.4%, 95% CI; 47.8-88.7%) for GDM in Aboriginal women, and in the total cohort increased risk for LGA newborn compared to women below this threshold and without GDM (RR 2.04, 95% CI; 1.03-4.01, *P*=0.040). There were clear differences between groups, with 16.3% of Aboriginal women having early elevated HbA_{1c} and another 12.4% developing hyperglycaemia during pregnancy, compared to only 5.2% and 29.6%, respectively for non-Aboriginal women.

CONCLUSIONS: Early pregnancy HbA_{1c} ≥5.6% (≥38 mmol/mol) appears to identify Aboriginal women who had hyperglycaemia prior to pregnancy (apparent prediabetes) and elevated risk of having an LGA newborn. Universal HbA_{1c} at first antenatal presentation could lead to earlier management of hyperglycemia and improved perinatal outcome in this high-risk population.

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Familial Hypercholesterolemia in Pregnancy: Case Series

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Hyperlipidaemia is a major contributor to cardiovascular disease. During pregnancy serum levels of cholesterol and triglyceride increase substantially. These levels are associated with an increased risk of adverse pregnancy outcomes including preeclampsia, macrosomia and preterm birth (Gallos et al., 2013, Vrijkotte et al, 2012, Catov et al., 2007). There is also evidence that maternal hyperlipidaemia may enhance atherogenesis in the offspring via accumulation of oxidised LDL in fatty streaks and by in utero gene programming (Napoli et al., 1999). Current guidelines for the management of maternal hyperlipidaemia in pregnancy recommend suspension of statins 3 months prior to pregnancy (NICE guidelines). Experience with the safety of statin therapy during pregnancy is growing.

We present a case series of 10 patients with familial hyperlipidemia. A model of care for the management of women with familial hyperlipidemia during pregnancy will be discussed.

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"What do you want to know and how do you want to know about it?" Consumer perspectives of pregnancy counselling and education in women with kidney disease: a national survey.

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Background

Knowledge about best approaches for pregnancy counselling in women with chronic kidney disease (CKD) and their experiences is currently limited.

Methods

A national survey assessing experiences and preferences was promoted to women ≥18 years with CKD of any stage via social media, patient and clinical networks (Dec 2020 to April 2021).

Results

A total of 71 women participated, 73.1% of women were aged 25 to 45, majority were from an English-speaking background (81.6%) and living in a metropolitan area (59.1%). Discussions around pregnancy were most often initiated by women themselves (57.4%) compared to their kidney specialist (27.7%). Of note, 14.8% of respondents stated they had only received pregnancy counselling after they became pregnant. Women felt very comfortable (50.7%) or comfortable (32.4%) to have pregnancy discussions, however reported discussions were stressful (66.7%). Only 13 women were very satisfied (24.1%) with their experience and only 53.7% of women reported feeling in control of their decision-making during pregnancy. Over a third of women did not receive information on contraception (39.2%), potential foetal complications (41.2%) and the safety of medications during pregnancy (41.2%). Women preferred to receive face-to-face counselling (67.6%) by their nephrologist (74.7%) but also reported handouts (52.1%), online support groups (40.9%) and pregnancy counselling websites (64.8%) would be useful.

Conclusion

Women with kidney disease have had diverse experiences of pregnancy counselling, with essential information not being conveyed and reported loss of control of health decisions. Women prefer face-to-face counselling and desire access to evidence-based resources to improve their knowledge and assist their decision making.

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Ustekinumab levels in pregnant women with Inflammatory Bowel Disease and neonates exposed in-utero

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Introduction: Ustekinumab (UST) is increasingly used in the management of inflammatory bowel disease (IBD). While UST use during pregnancy is likely to be safe(1, 2), pharmacokinetic data in pregnancy and in exposed infants are limited (1, 3, 4).

Aims/Methods: The aim was to establish the stability of UST levels antenatally, the ratio of infant to maternal UST levels at delivery and the time to clearance from the infant. Women receiving UST for IBD prior to conception or when pregnant were prospectively recruited. Maternal trough UST levels were measured in each trimester and at delivery where possible. Infant UST levels were measured from the umbilical cord at delivery and repeated between 6–9 weeks of age. In infants with detectable UST levels further testing was performed to determine time to clearance. UST levels were measured by ELISA (Theradiag).

Results: Ten participants, all with Crohn's disease, with at least two antenatal or matched infant/maternal delivery UST levels were receiving UST every 8 weeks in 7, 6 weeks in 1 and 4 weeks in 2. All were in clinical remission, but 2 had biochemical evidence of disease activity. No babies were born prematurely, with a median gestational age of 38.5 weeks (IQR 38.0-39.0). The birthweight was 3246 (2810-3480)g. One minor congenital heart defect was noted. Trough UST levels (µg/ml) were 2.3 (range 1.3-2.4) in trimester 1 (n=3), 2.2 (IQR 1.6-2.3) in trimester 2 (n=7) and 1.8 (1.6-3.3) in trimester 3 (n=4), with no significant difference over the course of pregnancy (p = 0.29) (Figure 1). Infant and non-trough maternal UST levels (µg/ml) at delivery were 4.0 (1.2-7.8) and 1.4 (0.7-4.4) respectively (n=10), with an infant:maternal ratio of 1.8 (1.4-2.6). There was a positive correlation between maternal and infant delivery levels (R= 0.76, p= 0.01). There was an inverse correlation between the number of weeks from final antenatal dose to delivery and infant UST delivery level (R = -0.84, p<0.01). 6/10 infants had follow up UST levels performed. Median time of infant UST clearance was 9 (range 8-19) weeks (n=5), clearance time being longer if UST was administered in the third trimester (n=3).

Conclusions: UST levels are stable in pregnancy. The infant:maternal ratio at birth was similar to that seen with anti-TNFs, but higher than for vedolizumab. Infants exposed in third trimester should avoid live vaccination before six months of age.

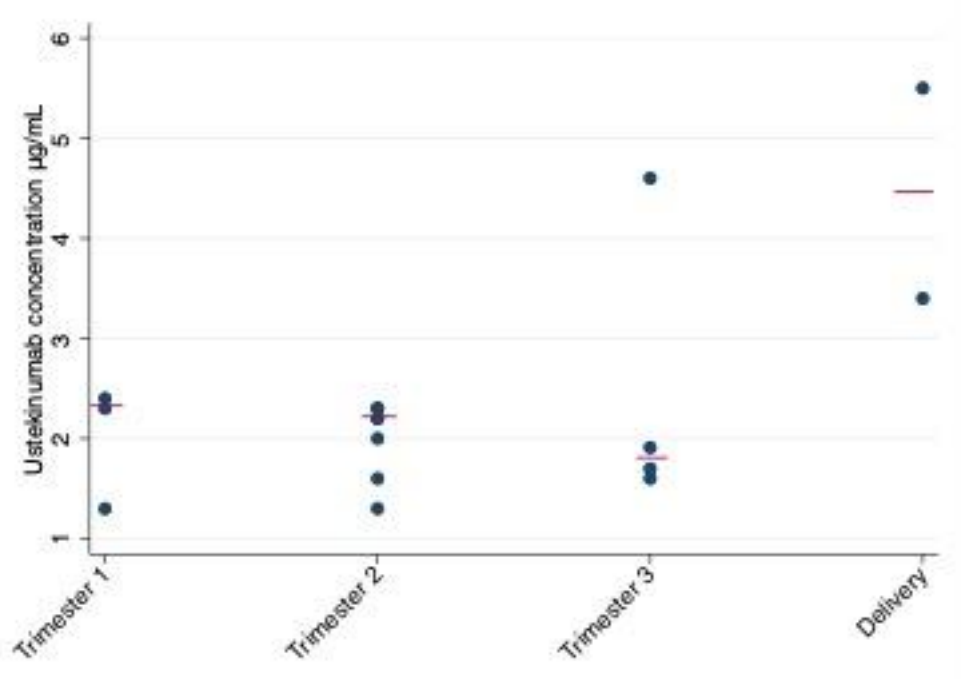

Figure 1. Individual and median UST trough levels across pregnancy

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Management and outcomes during pregnancy in women with Inflammatory Bowel Disease in a London tertiary hospital

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Introduction

Women with Inflammatory Bowel Disease (IBD) have been shown to have poorer outcomes in pregnancy[1], thus the importance of a multidisciplinary team (MDT) approach with suitable birth plans is vital during pregnancy for optimal outcomes.

Aim

To characterise IBD women attending services for obstetrics care and identify outcomes in pregnancy and areas of improvement for patient management at our institute.

Method

A retrospective analysis was conducted on women with IBD for pregnancy care in our tertiary hospital in 2019 and 2020. Of those booked in 2020, three are still to deliver. Antenatal data collected included: IBD medications, disease activity and number of appointments. Intrapartum data included: mode of delivery, complications during delivery and adverse outcomes.

Results

The number of women with IBD in our service remained stable across 2019 (n=24) and 2020 (n=20). 45% of women had Crohn's Diseases, 45% Ulcerative Colitis, and 10% were unclassified. 73% of women were on biologic medication during pregnancy. The number of flares reduced from 2019 (n=8) to 2020 so far (n=2).

The rate of caesarean sections was higher than the NHS average[2], with a total of 43% (n=19) performed in women with IBD in 2019 and 2020, of which 42% (n=8) having had previous surgery for IBD and two requiring involvement of colorectal surgeons. Five (26%) of the caesarean sections performed were as emergencies. Other complications included three placental abruptions and one third degree tear with a forceps delivery. The rate of preterm birth was 16%.

The number of virtual and face-to-face appointments were also recorded to assess for differences due to the COVID-19 pandemic. There was variation in the number of clinician appointments, and overall an increase in the number of virtual obstetric medicine appointments from 2019 (n=2%) to 2020 (n=29%) as well as obstetric appointments (2019 n=3%, 2020 n=14%).

Discussion/Conclusion

This analysis has shown a high number of women with IBD delivering by caesarean section in pregnancy, including as emergencies. Birth planning during remission and management of IBD symptoms is essential in minimising adverse pregnancy outcomes. An increase in virtual appointments reflects the challenges of continuing to provide optimal care during pregnancy whilst accounting for changing healthcare provision during a pandemic. Constructing the MDT clinic with a clearer pathway and utilisation of virtual appointments is required to better streamline the service.

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Fetal monitoring in the diabetic pregnancy

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Pregnancies complicated by gestational or prepregnancy diabetes have additional risks for both the women and the fetus. The most important of these risks is stillbirth, and rates of stillbirth are substantially higher in women with prepregnancy diabetes than in the general pregnant population. The aim of fetal monitoring is to predict and prevent stillbirth by timely delivery. The role and limitations of different methods of fetal monitoring will be discussed.

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Neonatal hypoglycaemia – detecting risk, prevention and management

Jane Alsweiler[1]

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Neonatal hypoglycaemia is associated with adverse later development, particularly visuo-motor and executive function impairment. As neonatal hypoglycaemia is common and frequently asymptomatic in at-risk babies, these babies are screened for hypoglycaemia in the first 1-2 days after birth with frequent blood glucose measurements. Neonatal hypoglycaemia can be prevented and treated with buccal dextrose gel, and it is also common to treat hypoglycaemic babies with formula and intravenous dextrose. However, it is uncertain if screening, prophylaxis or treatment improves long-term outcomes of babies at risk of neonatal hypoglycaemia. This presentation will assess the latest evidence for screening, prophylaxis and treatment of babies at risk to improve long-term neurodevelopmental outcomes.

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Maternal diet

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Content not available at the time of publishing

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Post-pregnancy intervention for the prevention of T2 Diabetes

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Women with gestational diabetes (GDM) are at high risk for the future development of type 2 diabetes (T2D). The Diabetes Prevention Study has demonstrated that the risk of developing T2D can be reduced amongst women with impaired glucose tolerance who have had GDM, with an intensive lifestyle intervention. However despite the obvious need, post-pregnancy interventions have not been translated into routine care.

Our group has been trialling the use of mobile health technology to develop a post-pregnancy intervention to reduce diabetes risk following GDM. Our system utilises text messaging and activity monitors to encourage and support a healthy lifestyle post-partum. We have conducted a 60 woman pilot RCT which has demonstrated feasibility and acceptability of the program. We are currently performing a larger 180 woman RCT.

The long term aim is to implement an affordable system which is effective in reducing diabetes risk, and which can be adopted into routine care.

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Endocrine Causes of Hypertension in Pregnancy

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Hypertension is a common medical disorder in pregnancy that may predate or first appear in pregnancy. Endocrine causes of hypertension are rare in pregnancy. However, it is imperative to have a high index of suspicion because they carry much higher foetal and maternal morbidity and mortality risks. Endocrine disorders presenting as hypertension are primarily the result of autonomous production of renin, aldosterone, cortisol, or catecholamines. This presentation discusses the physiological changes in pregnancy, presentation, investigation, and management of these disorders.

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Heartbreak after preeclampsia

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Epidemiological evidence from both national and international cohorts has consistently demonstrated strong associations between preeclampsia and increased ongoing risk of cardiovascular and metabolic disease for affected women. Risks (compared to women after normotensive pregnancy) include at least doubled chance of ischaemic heart disease, cardiovascular death, and stroke, doubled rate of Type 2 diabetes even when the preeclamptic pregnancy was not complicated by gestational diabetes, and five-fold increase in end-stage renal disease. These increases in relative risk are present within 5-10 years of an affected pregnancy, continue lifelong, and persist after adjustment for confounding factors. Risks after gestational hypertension appear similar. Adverse cardiometabolic outcomes are further increased in women with preterm preeclampsia, recurrent preeclampsia, and other cardiovascular risk factors such as smoking.

Pregnancy complicated by hypertensive disorders therefore represents an important opportunity to identify young women at increased risk of cardiovascular disease and implement measures to improve their lifelong health, such as lifestyle behaviour change. However, postpartum follow-up of these women remains largely ad-hoc, and few studies have examined early intervention programs. This talk will review the evidence around health risks and how to improve women's health after hypertensive pregnancy, as well as the evidence gaps to be filled moving forwards.

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Advanced models for the study of vascular dysfunction in pregnancy: tales from the laboratory

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Preeclampsia (PE) affects 1 in 20 pregnancies and remains a leading cause of maternal and fetal morbidity and mortality worldwide. PE is characterised by hypertension after 20 weeks gestation with proteinuria, uteroplacental dysfunction and/or maternal organ dysfunction. A characteristic endpoint of PE is widespread maternal vascular dysfunction caused by placental-derived factors and oxidative stress. Novel therapeutics that can target this underlying vascular dysfunction are extremely exciting as future adjuvant therapies. This talk will detail an advanced model for replicating the vascular dysfunction of preeclampsia 'in a dish' and using the leading technique of wire myography to assess the potential of therapies to improve vascular dysfunction.

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Probiotics supplementation increases the risk for preeclampsia

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The SPRING trial aimed to prevent gestational diabetes through supplementation with probiotics. This was proven not to be successful with 18.4% (38 of 207) of women in the probiotics arm developing gestational diabetes *vs.* 12.3 % (25 of 204) women in the placebo arm (*P*=0.10) (1). SPRING was not powered for detecting potential differences in rates of preeclampsia but we reported that 9.2% (19 of 207) women in the probiotics arm and 4.9% (10 of 204) women in the placebo arm developed preeclampsia (*P*=0.09).

There are no randomized controlled trials of probiotics in the development of preeclampsia. We therefore conducted a meta-analysis of the association between probiotics and preeclampsia in all randomized controlled trials of probiotics to prevent gestational diabetes.

Of the seven RCTs, four reported on preeclampsia incidence. Each individual study showed higher incidence of preeclampsia in the probiotics group. Of the 472 women in the probiotics group in the meta-analysis, 31 developed preeclampsia (6.6%) compared with 17 out of 483 women (3.5%) in the placebo group. The risk ratio for preeclampsia in women supplemented with probiotics was 1.85 [95% CI 1.04, 3.29].

Despite evidence for the beneficial effects of *Lactobacilli* and *Bifidobacteria*-based probiotics on gut wall barrier function, immune regulation and metabolic regulation (2), unexpected interactions between the probiotics and the host occur within pregnancy increasing the risk for the development of preeclampsia. These results suggest that probiotics may have detrimental outcomes and that their classification as Generally Recognized As Safe (GRAS) should be reconsidered.

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Depression and anxiety in women 6 months after hypertensive pregnancy: a Blood Pressure Postpartum (BP^2) sub-study

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Background/Objectives:

Hypertensive disorders of pregnancy (HDP) have been associated with postpartum mental health sequelae. However, limited evidence exists on how this risk may differ between subgroups. This sub-study aimed to compare mental health (depression and anxiety) between Blood Pressure Postpartum (BP^2) subgroups at baseline (6-months postpartum).

Methods:

Sub-study of the in-progress BP^2 study, a randomised controlled trial investigating lifestyle interventions after HDP. Data obtained approximately 6-months postpartum from BP^2 pre-randomisation questionnaires, including the Edinburgh Postnatal Depression Scale (EPDS) and General Anxiety Disorder 7-item scale (GAD-7). Major subgroups compared included (a) Type of HDP (preeclampsia PE, gestational hypertension GH, chronic hypertension CH ± superimposed preeclampsia PE+CH), (b) BMI (<30, ≥30), (c) primiparous versus multiparous and (d) preterm versus term birth.

Results:

212 women (29 CH, 57 GH, 113 PE and 14 PE+CH) randomised to August 2020. In the overall cohort, 2% had a non-zero answer to Q10 (suicidal ideation) on the EPDS, 10% scored above the EPDS cut-off (>12) and 5% scored above the GAD-7 cut-off (>10) at 6-months postpartum. In comparing HDP subtypes, 22% PE+CH scored above the GAD-7 cut-off compared to 7% CH, 5% GH and 3% PE (p=0.023). A higher proportion of PE+CH (14%) expressed any suicidal ideation on the EPDS compared to 0% CH, 2% GH and 2% PE (p=0.023). Women with BMI ≥30 (18%) scored above the EPDS cut-off compared to women with BMI <30 (7%, p=0.01). No significant differences were noted by parity or term versus preterm birth.

Conclusions:

Women with previous PE+CH and/or BMI ≥30 appear more at risk of depression and anxiety than other women post-HDP. This has implications in guiding postpartum management, including increased screening and additional psychological follow-up. Further research, including examination of confounders, is needed to strengthen these conclusions.

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Association of Preeclampsia with Myocardial Injury Among Patients Undergoing Noncardiac Surgery: the PREECLAMPSIA-VISION study

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Preeclampsia complicates 2-8% of all pregnancies and is a major cause of maternal and perinatal morbidity and mortality. There is now a large body of evidence to suggest that preeclampsia is associated with long-term cardiovascular morbidity and mortality[1-3]. However, it is unknown whether preeclampsia is associated with increased post-operative cardiovascular morbidity and mortality in women. Major operations are estimated to occur at a rate of 4% of the world population per year,[4] with a worldwide estimated 234 million major surgical procedures undertaken yearly.[4] Given the large number of women worldwide undergoing surgery and the absence of studies investigating preeclampsia as a risk factor for postoperative cardiovascular morbidity and mortality, there was a need to evaluate the usefulness of preeclampsia in the perioperative assessment of surgical risk factors. We assessed whether a history of preeclampsia is an independent risk factor for myocardial injury after non-cardiac surgery (MINS) and mortality within the first 30 days after surgery. MINS was defined as prognostically relevant myocardial injury due to ischemia that occurred during or within 30 days after non-cardiac surgery.

This study was a sub-study of the VISION study, a large international multicentre cohort study of a representative sample of 40,004 patients recruited between August 2007 and November 2013. Participants were ≥45 years of age and underwent inpatient non-cardiac surgery. For our study, analyses were restricted to the 13,902 participants with a history of pregnancy. Among these women, 976 (7.0%) had a history of preeclampsia. We found that a history of preeclampsia was associated with an increased risk of MINS, with an adjusted hazard ratio of 1.26 (95% CI, 1.03-1.53; p=0.02), however preeclampsia was not significantly associated with 30-day mortality. We therefore suggest preeclampsia be considered in the pre-operative cardiovascular risk assessment of women.

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Outcomes of patients with pre-pregnancy renal impairment during pregnancy in women with pre-gestational diabetes: A South Western Sydney cohort study

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Background

Pregnant women with pre-pregnancy renal impairment are known to have worse obstetric outcomes with an increased risk of accelerated decline in renal function. This cohort study examines the pregnancy and outcomes of women with pre-gestational diabetes mellitus (PGDM) with concurrent pre-gestational renal impairment.

Method

A retrospective audit of data from pregnant women with PGDM from 2 centres in South-Western Sydney from January 2005 to June 2020 was conducted. Data were obtained from a district wide electronic database and hospital medical records. The outcomes examined were preeclampsia, pre-term delivery (less than 37 weeks) as well as progression to dialysis during and after pregnancy. Women with renal impairment were defined as having a first trimester serum creatinine of greater than 80 µmol/L whilst well.

Results:

In this cohort of 494 women with pre-gestational diabetes, 11(2.5%) women were noted to have serum creatinine of > 80µmol/L in their first antenatal review (1st or 2nd trimester). There were no significant statistical differences in the age, body mass index (BMI), pre-pregnancy HbA1c, and prophylactic aspirin or calcium use between women with and without pre-gestational renal impairment. However, women with renal impairment had a higher rate of previous preeclampsia (32(7.5%) vs 3(27.3%), p=<0.05) compared to women with no renal impairment. There was a significantly higher rate of preeclampsia (36% vs 12%, p<0.05), and preterm delivery (60% vs 24.8%, p<0.05) in women with pre-pregnancy renal impairment. Of the 11 women, 1 woman required dialysis during pregnancy and subsequently died 1 month later.

Conclusion

Women with pregestational renal impairment were observed to have worse obstetric outcomes. A larger prospective study with significant follow-up would be beneficial in determining the incidence of progression of renal disease in these women in the post-partum period.

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Drugs to prevent, or treat preeclampsia: Revisiting the old, discovering the new

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There is currently just one drug – aspirin - that clearly prevents preeclampsia (relative risk reduction for all preeclampsia of 18%). And no disease modifying drugs available to treat preeclampsia. My research has a strong focus on identifying and evaluating treatments for preeclampsia.

There appears to be a trend for increasingly liberal administration of aspirin to prevent preeclampsia and other placental disorders. There has even been commentary proposing it is universally administered to all pregnancies. The likely reason that aspirin is so freely recommended is because the drug is considered really safe. Collaborating with Swedish colleagues, our team has been revisiting the safety and efficacy of aspirin in large population epidemiological studies. In the first part of the Priscilla Kincaid Smith Lecture, I will discuss our research revisiting the safety and efficacy of aspirin.

In the second part of this lecture, I will present our program of research to discover drugs that slow disease progression of preeclampsia ie drugs with disease modifying effects. Our research is a pipeline of drug testing that starts in the laboratory and takes the most promising candidate to randomised clinical trials.

In the laboratory, research teams lead by senior scientists among the translational obstetrics group screens drugs for their potential to counter the endothelial and placental disease of preeclampsia. Drugs that appear promising are then evaluated in randomised clinical trials in South Africa, to see whether they can prolong gestation in preterm preeclampsia and possibly improve neonatal outcomes. We have completed two randomised clinical trials, with further ones planned. Our second trial (PI2 trial n=180) found that metformin may prolong pregnancies complicated by preterm preeclampsia by just over a week and reduce the length of neonatal admission post birth. If validated, metformin may be the first disease modifying drug (that is safe in pregnancy) identified for preeclampsia.

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OGTT – process and preanalytical issues?

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Pre-analytical processing of blood samples can affect plasma glucose measurement, as on-going glycolysis by cells prior to centrifugation can lower its concentration. This has important implications for GMD diagnosis. For example, after ACT Pathology changed their glucose tolerance test (OGTT) preanalytical protocol from delayed centrifugation (after collection of the 120 min sample) to early centrifugation (within 10 min of blood collection) of blood samples collected in to sodium fluoride tubes, the GDM diagnosis rate increased from 11.6% (869 of 7509 tests) to 20.6% (1007 of 4887 tests)1. In this presentation, the pros and cons of various preanalytical processing options (e.g. type of collection tube, use of ice slurry for early cooling, and time to centrifugation) will be discussed. New data on the outcomes of pregnancies with borderline GDM, missed and not treated due to delayed sample centrifugation, compared to those with mild GDM, diagnosed and treated due to early sample centrifugation, will be presented. The need to harmonise the pre-analytical blood processing

protocols for pregnancy OGTTs, whilst solving the logistical issues of performing OGTTs in different settings (e.g. rural and remote), will be discussed.

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TOBOGM

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Content not available at the time of publishing

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Current management, recommendations and uncertainties in the detection and management of fetomaternal haemorrhage.

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Detection and subsequent management of fetomaternal haemorrhage (FMH) has had a significant reduction in anti-D sensitisation with improved neonatal outcomes. Detecting FMH and estimating the volume of bleed is important in determining the appropriate dose of RhD immunoglobulin (RhD Ig) for RhD negative women following a sensitising event. FMH testing may also be used when assessing fetal welfare. Dr Kidson-Gerber will discuss the current issues in FMH detection, referring to the recently updated Australian and New Zealand Society of Blood Transfusion (ANZSBT) Guidelines for laboratory estimation of FMH; and the current recommendations in management of RhD negative women, with reference to the 2021 National Blood Authority's Prophylactic use of RhD immunoglobulin in pregnancy care.

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Bleeding Disorders in Pregnancy

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Pregnancy and childbirth pose unique haemostatic challenges. The associated risks and severity of potential bleeding complications are increased in women with inherited bleeding disorders. Local guidelines and practice will be discussed demonstrating that these women can deliver safely and receive neuraxial analgesia without complication when best practices are adhered to. PPH appears to occur at higher rates than the general population despite adequate factor levels or planned replacement. Whilst an obstetric cause was demonstrable in many are current definitions of "adequate" factor levels at the time of birth appropriate?

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Systematic review of the effectiveness of hydroxychloroquine and intravenous immunoglobulin to prevent cardiac neonatal lupus in offspring of women with autoantibodies to SSA/Ro & SSB/La.

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Introduction:

Offspring of women with autoantibodies to Anti-SSA/Ro and/or Anti-SSB/La have a 1-2% chance of developing cardiac neonatal lupus (CNL) which may lead to congenital heart block, endocardial fibroelastosis or foetal demise [1]. Hydroxychloroquine (HCQ) and intravenous immunoglobulin (IVIG) have been used during pregnancy to prevent CNL in the offspring of women with anti-SSA/Ro and Anti-SSB/La autoantibodies. We performed a systemic review of studies ascertaining the effectiveness of HCQ and IVIG taken during pregnancy in preventing CNL. A recent systemic review has demonstrated fluorinated steroids are not beneficial in reducing the risk of CNL. [2]

Methods and Analysis:

Population: Offspring of women with Anti SSA/Ro and SSB/La antibodies > 12 weeks' gestation.

Interventions: Maternal exposure to HCQ or IVIG during pregnancy

Comparison: Standard of care

Outcome: CNL

Two authors (KL & LW) searched PubMed, Ovid Embase and Medline from database inception - December 2020. One author (KL) searched CINAHL, Clinical Trials.gov, Cochrane databases from database inception (Dec 2020) and hand-searched relevant reference lists. The search strategy combined free text search terms, exploded MeSH/EMTREE terms, and all synonyms of the medical MeSH major topic terms. Women with rheumatic conditions without Anti SSA/Ro and SSB/La antibodies and pregnancy losses <12 weeks' gestation were excluded. Case reports and series were excluded. If consensus for inclusion was not reached between 2 authors (KL & LW) a third author (ML) was consulted.

Results: Two authors (KL & LW) screened 275 studies, and performed full text review for 93 studies and 18 studied met criteria for data extraction. 15 studies addressed the effectiveness of HCQ and 3 of IVIG. This systematic review suggests a benefit of HCQ during pregnancy in preventing CNL and little to no benefit of IVIG. A risk of bias assessment and separate meta-analysis of effectiveness of HCG and IVIG will be presented.

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Single centre, retrospective review of compliance with routine antenatal Rhesus D prophylaxis

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Background

Fetomaternal haemorrhage (FMH) is the loss of fetal blood cells into the maternal circulation. It occurs in approximately one third of all pregnancies and can cause haemolytic disease of the newborn. Prophylaxis with Rhesus-D immunoglobulin (anti-D) is recommended antenatally to minimise allo-antibody formation.

Objective

To review local practice and adherence to the National Blood Authority (NBA) and Australian and New Zealand Society of Blood Transfusion (ANZSBT) guidelines pertaining to the use of anti-D for the prevention of alloimmunisation in obstetric patients.

Methods

A single centre, retrospective cohort study for all Rhesus negative pregnant women between the 1st January 2019 and 30th June 2019 was performed. Maternal demographics, date of delivery, fetomaternal haemorrhage volume (mL) and data pertaining to the administration of anti-D were collated and audited against NBA and ANZSBT guidelines. Local research ethics permission was obtained.

Results

323 Rhesus negative women with a mean age of 31 years (SD 5.2 years) and a median gestation at delivery of 39 weeks (IQR 2.6) were identified. 57% (n=189) of infants were Rhesus positive. No FMH volumes > 1ml were recorded and < 2% (n =2) of mothers with a Rhesus positive infant failed to have a FMH assessment. Of the 222 women with a complete anti-D administration record, 28.4% (n=63) received at least one dose at the incorrect time. No women with a Rhesus negative infant received anti-D post-delivery. 3 women (1.6%) with Rhesus positive infants did not receive anti-D post-delivery.

Conclusion

A significant number of women did not receive prophylactic anti-D at the correct time, with a proportion receiving a dose later than recommended. This could be associated with Rhesus D alloimmunisation and increased risk of haemolytic disease of the newborn in subsequent pregnancies.

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Obesity, pregnancy and lifestyle clinic: evaluation and outcomes

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Background: Increasing numbers of women are entering pregnancy with an elevated body mass index (BMI). Elevated maternal BMI is associated with a number of adverse obstetric and neonatal outcomes, however attention to diet and lifestyle during the antenatal period has been shown to reduce the rate of many of these complications. The Obesity, Pregnancy and Lifestyle (OPAL) clinic was started at the Northern Hospital in July 2018 to provide specialised antenatal care to women with Class III obesity (BMI ≥ 40 kg/m^2).

Methods: We performed a retrospective cohort study of women with a BMI ≥ 40kg/m^2 delivering a singleton pregnancy at the Northern Hospital, Melbourne, Victoria, between January 2019 and April 2020, comparing obstetric and neonatal outcomes of women who attended the OPAL clinic (n=60) to those who received standard antenatal care (n=121). Statistical analysis performed using $\chi 2$, Fisher's Exact Test, Student's T-test and Mann-Whitney (rank sum) test with a significance level of 0.05.

Results: Compared to similar women in standard antenatal care, women who attended the OPAL clinic are more likely to be younger (mean age 29 vs 32, p=0.001), to be primiparous (OR 2.65 (1.33-5.28), p=0.005) and to be born in Australia or New Zealand (OR 0.47 (0.22-1.03), p = 0.057). OPAL women also attended a significantly higher number of antenatal appointments (9 vs 8, p=0.017) and had a lower median gestational age of delivery (38.3 vs 38.5, p=0.024).

Conclusions: These results suggest that the OPAL clinic has achieved increased engagement of women with class III obesity in antenatal care. However, significant demographic differences indicate there is a subset of women still not receiving specialist care despite best intentions, indicating clinic processes are in need of review. Future research should focus on the patient experience of women attending the OPAL clinic.

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GDM-connect: what women want from technology when they have gestational diabetes.

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Background

International evidence suggests that rates of GDM women developing T2DM is around 5 per cent within 6 months of giving birth and can be up to sixty per cent within 20 years of birth. Breastfeeding is one health promotion strategy that can reduce the incidence of Type 2 diabetes for both mothers and their babies. Unfortunately, there is a significant reduction in exclusive breastfeeding rates on discharge from hospital for women with GDM compared to women who have no diabetes. Technology may be one way we can improve this disparity.

Objective

To understand what women want in an on-line resource to help them with breastfeeding when they have GDM.

Methods

This was a mixed methods study where surveys, interviews and focus groups with women who had GDM were used to understand their experiences of breastfeeding support in a regional hospital in NSW where 15% all pregnant women are diagnosed with GDM.

Results

Women felt overwhelmed from the large amount of inconsistent information they received from the hospital when they had GDM. Participants suggested technology-based resources would improve access to evidence-based breastfeeding and diabetes information. Access to timely and relevant information via websites, phone apps, videos and on-line information sessions may help women who have GDM feel more supported to breastfeed their newborns.

Conclusions

Women with GDM feel overwhelmed and confused by fragmented education and information about their care which can impact on their breastfeeding rates on discharge from hospital. Accessing evidence-based information through technology may encourage informed conversations between a woman and their health care providers for individualised care which in turn may improve breastfeeding rates thereby limiting their risk for developing T2DM in the future.

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Incorporation of diabetic retinopathy screening into an antenatal clinic

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Background: Early recognition of diabetic retinopathy (DR) is essential to avoid irreversible vision loss. Pregnancy is an independent risk factor for progression of DR however, pregnant women with pre-gestational diabetes often fail to meet the recommended screening targets. Known barriers to screening in pregnancy include the logistical difficulties of attending multiple medical appointments and ease of access to screening facilities. Non-mydriatic retinal photography is an accepted modality for DR screening. It does not require significant training for the operator, avoids pupil dilation and creates a permanent record of retinal appearances.

Objective: to describe our experience of the introduction of a retinal camera to the multidisciplinary diabetes clinic at a tertiary maternity hospital and to compare maternal retinal screening rates before and after the camera's introduction.

Methods: A retinal camera was installed at King Edward Memorial Hospital (KEMH) in 2020. Patient characteristics, diabetic retinopathy (DR) screening and retinopathy diagnosis rates before and after camera installation were recorded for all pregnant women with pre-gestational type 1 or type 2 diabetes who received pregnancy care at KEMH from March 2020 to January 2021.

Results: A total of 174 women were included in the study. The only significant difference in baseline patient characteristics between the two groups was in glycosylated haemoglobin in the 3rd trimester. There were significantly more women who received at least one retinal screen for DR following the installation of the retinal camera (93.0% vs 54.3% p=<0.001). The identification of DR and DR progression also increased significantly in the post-retinal camera group.

Conclusion: The introduction of an onsite retinal camera to a diabetes in pregnancy clinic significantly increased the number of women receiving appropriate retinal screening, the identification of DR and of DR progression. The use of a retinal camera in similar antenatal clinics is a feasible option to improve outcomes.

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Longer gestation in women who consume a low carbohydrate diet in pregnancy

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Background: Obstetric outcomes in women consuming low carbohydrate diets have reported conflicting results. The majority of these studies have defined low carbohydrate intake by the proportion that carbohydrates contribute to overall caloric intake. We hypothesised that a low absolute carbohydrate intake affects obstetric outcomes differently than a low relative carbohydrate intake.

Methods: Detailed dietary data was collected in women enrolled in the Study of Probiotic IN Gestational diabetes (SPRING) at both 16 and 28 weeks' gestation by food frequency questionnaire. Obstetric outcomes were compared between women consuming a low carbohydrate diet (LCD) defined as carbohydrate content of less than 100 grams per day and women consuming a standard diet (SD) defined as greater than 100 grams of carbohydrate per day independent of overall energy intake.

Results: Mean gestation was increased in women consuming a LCD at 16 and/or 28 weeks' gestation, compared with women consuming a SD. The difference was greatest when women consumed a LCD at both 16 and 28 weeks' gestation (16: 39.7 vs 39.2 weeks, p = 0.02; 28: 39.9 vs 39.2 weeks, p = 0.02; 16 and 28: 40.1 vs 39.2, p = 0.0025). Gestation was not increased in women consuming a diet where carbohydrate contributed to less than 40% of overall energy intake. Birth centile was decreased in offspring of women consuming a LCD at 28 weeks' gestation, but not in women consuming a LCD at 16 or both 16 and 28 weeks' gestation. No other statistically significant differences in obstetric outcomes were observed.

Conclusion: Consumption of less than 100 grams of carbohydrate per day in pregnancy is associated with increased gestational age at delivery.

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Eclamptic seizure and maternal Alpha-1 antitrypsin deficiency: a diagnostic dilemma

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A 35-year-old primiparous woman presented at 39 weeks with first seizure on a background of alpha-1 antitrypsin deficiency (A1AD), which is associated with chronic lung and liver disease. She presented with generalised tonic seizure and intermittent word-finding difficulty. She was globally hyper-reflexic with no clonus and no other abnormal neurological findings. Urate was elevated at 0.45 but serum pathology was otherwise unremarkable. CTG and CT Brain were normal. She was treated with midazolam and magnesium sulphate for undifferentiated seizures and underwent an emergency Caesarean section with breech delivery of a well neonate. Postpartum, she was seizure-free. MRI angiogram and with gadolinium were normal and she was commenced on levetiracetam for seizure prophylaxis.

A1AD is characterised by reduced alpha 1 antitrypsin (AAT) level in plasma which can result in pulmonary emphysema and in pregnancy cause exacerbation of airways disease. More recently, however, A1AD has been associated with preeclampsia. Preeclamptic pregnancies have been associated with up to 50% lower levels of AAT when compared to normal pregnancies. In addition, AAT injection has been studied in mice with preeclampsia resulting in improved blood pressures and urine protein levels.(12)

This case poses a diagnostic dilemma due to unclear cause of seizure with possible causes including eclampsia and stroke. Although it is an atypical presentation of preeclampsia given intermittent expressive aphasia, preeclampsia was possible given onset in pregnancy, elevated urate and improvement following magnesium sulphate treatment. Conversely, it is possible that improvement was in response to levetiracetam or simply coincidental.

Seizures in pregnancy can be difficult to differentiate however require prompt management. Eclampsia should be considered in every seizure in pregnancy, even with atypical presentation. Further, there may be a relationship between preeclampsia and A1AD, however further studies are required to establish causative relationship.

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Hairy Cell Leukaemia in Pregnancy: Two cases and a review of the literature

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Hairy cell leukaemia (HCL) is a rare haematological malignancy characterised by abnormal B cell lymphocytes causing pancytopenia and splenomegaly. It is uncommon in the general population, accounting for 1-2% of all leukaemias. It is particularly rare in young females, therefore there are limited cases reported in the literature of HCL affecting pregnancy. This review will discuss two cases seen at a tertiary maternity hospital over the past four years. We will detail their presentation eventuating to diagnosis, the investigations carried out and the management during the antenatal, intrapartum and postpartum periods. Although rare, it is important to review these cases and the management initiated in order to optimise outcomes for future pregnancies affected by this disease.

First and second line treatment for HCL are medications that would usually be avoided in pregnancy: purine analogues and biological therapies. These are classified by the Australian Therapeutic Goods Administration as category D and C drugs respectively. Given these classifications, it is optimal to delay their use in pregnancy until after delivery has been achieved. A review of the literature revealed twelve articles relating to HCL in pregnancy. All detailed treatment with purine analogues, interferons and/or splenectomy. This case review is important as it avoided the use of potential teratogens during the antenatal period. Successful supportive therapy (e.g. blood transfusions and prophylactic antibiotics) was instead initiated, and achieved term delivery in both cases.

Patient A had a diagnosis of relapsing HCL at the time of pregnancy, and Patient B was first diagnosed during the second trimester. Although both patients had low total white cell counts (normal neutrophil counts) antenatally, only Patient B was initiated on oral prophylactic antibiotics. Both patients delivered at term: Patient A had an elective caesarean section and Patient B had a vaginal birth. The patients received differing antibiotic regimes at delivery: patient A received cefazolin and metronidazole compared to Patient B who received piperacillin/ tazobactam. The rationale for this management is unclear; both patients remained afebrile, no risk factors for peripartum infection were identified and their white cell counts remained stable. There does not appear to be a standardised protocol to guide antibiotic therapy in patients who are at risk of developing neutropenia in the antenatal, intrapartum or postpartum period. This is an area that requires further research in order to standardise antibiotic therapy. This would allow optimisation of patient care and ultimately improve maternal and fetal outcomes.

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Gestational Diabetes Mellitus (GDM) care re-imagined - 2: Education and clinical review delivery to support a radical model of care change

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Introduction: We present the key steps from the implementation of a multifaceted digital solution in our busy and under-resourced GDM service.

Method: Collaborative design led by Obstetric Medicine, including Dietetics, Diabetes Education, Midwifery and Obstetrics, and consultation with Administrative Services, Interpreting Services, and Pharmacy progressed this service redesign project.

Steps taken included: 1. Mapping of women's journey through the standard GDM model of care, 2. Identification of barriers to service access, occasions of variations in care delivered, duplication of processes, and inefficient use of time and/or resources and 3. Review of profession-specific appointment scheduling guidelines.

Innovations and process changes aimed to overcome identified barriers and included a co-creation process with women from four common interpreted languages. Appointment attendances, video views, adherence and clinical outcomes have been monitored to assess model of care adoption and acceptance.

Results:

The new model of care was introduced in stages between June and November 2020. It involved:

1. Changes to results acknowledgement of an abnormal GTT (timing; process; staff responsibility);
2. Initial 'education' contact (via email; delivery of URLs to two instructional videos);
3. Courier of glucometer to women, with NDSS registration;
4. Smartphone app to enable asynchronous BGL sharing, monitoring, and clinician feedback;
5. Standardised 'introduction to GDM' video in six languages, with culturally-appropriate dietary advice; and
6. Joint dietitian and diabetes educator appointments for first two face-to-face clinic visits at day 7 and 14 post diagnosis.
7. Removal of "GDM schedule" with increased access to urgent dietitian and insulin commencement appointments.

GDM clinic attendance rate has increased from 60 to 95%. Average views of the videos have been 120/month (but one group has been viewed 250/month) since release.

Conclusion: A multifaceted digital solution integrated into a radical model of care change demonstrates positive initial feedback and process outcomes.

The authors have presented 3 inter linked abstracts for review;

1. **Gestational Diabetes Mellitus (GDM) care re-imagined – 1: Integration of a digital solution into a radical model of care change**
2. **Gestational Diabetes Mellitus (GDM) care re-imagined - 2: Education and clinical review delivery to support a radical model of care change**
3. **Insulin wastage in GDM - Is sustainability a pipe dream?**

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Pituitary haemorrhage following dural puncture

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Introduction: Intracranial haemorrhage, predominantly subdural haematoma, is an uncommon complication of dural puncture. Pituitary haemorrhage (pituitary apoplexy) is rare.

Case presentation: A 23 year old G5P4 Australian Indigenous woman presented in spontaneous labour at uncertain gestation having had no antenatal care. Three attempts at epidural anaesthesia were unsuccessful, and the woman proceeded to vaginal delivery of a 3574g male with estimated blood less during delivery of 150mls, the lowest recorded maternal blood pressure of 110/68mmHg. Seven hours post-delivery the woman complained of a postural headache typical for post-dural puncture headache (PDPH). Transient relief was obtained following epidural blood patch however headache recurred with increasing intensity. Magnetic resonance imaging disclosed pituitary haemorrhage with bulging into the suprasellar cistern and elevation of the optic chiasm without an underlying pituitary adenoma, with pachymeningeal thickening, distension of the intracranial and intercavernous venous sinuses and drooping of the brainstem consistent with intracranial hypotension. Serum cortisol and computer visual fields were normal.

Discussion : Twenty-one (81%) of the 26 reported cases of post-partum acute pituitary haemorrhage were associated with significant maternal blood loss or anaemia. Of the remaining 5 reports, one was associated with severe hypotension at the time of epidural anaesthesia, and another with a PDPH with an underlying pituitary macroadenoma. No obvious precipitant for pituitary haemorrhage occurred in 3 cases other than PDPH.

The pituitary is more vulnerable to injury during pregnancy as a result of the 20-36% increase in volume, which reaches its maximum in the first 3 postpartum days. The importance lies in the potential for life threatening hypothalamic-pituitary-adrenal axis insufficiency, visual compromise, and cranial nerve injury. The possibility of pituitary haemorrhage should be considered in any woman with PDPH which is severe and unrelieved by EBP, or where agalactia, hypotension or visual symptoms are present.

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Clinical characteristics and sequelae of intrapartum hypertension – a retrospective review

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Background: In a significant proportion of women, elevated blood pressure (BP) may first present during delivery. Intrapartum hypertension (IH) is often overlooked as BP during delivery may be affected by pain, analgesic agents and haemodynamic changes. This study sought to define the prevalence of IH in previously normotensive women, identify associated clinical characteristics, and its impact on maternofetal outcomes.

Methods: In this single-centre retrospective cohort study, all available partograms were reviewed over a 1-month period at Campbelltown Hospital. Women with pre-existing hypertensive disorders of pregnancy (HDP) were excluded. IH was defined as systolic BP (SBP) ⩾140 mmHg or diastolic BP (DBP) ⩾90 mmHg during delivery. Baseline characteristics, intrapartum factors, and maternofetal outcomes were collected.

Results: Of 300 partograms, 18 women with pre-existing HDP and 53 partograms without BP measurements were excluded. Amongst 229 deliveries, 91 (39.7%) had IH. Eighty-two women (35.8%) had SBP ⩾140mmHg, 12 (5.2%) had SBP ⩾160mmHg, and 44 (19.2%) had DBP ⩾90mmHg. A higher BMI (p=0.02) and higher booking SBP (p=0.04) were associated with IH. Women who had any labour onset were less likely to have IH (p<0.01). A longer second stage of labour (p=0.03), intrapartum non-steroidal anti-inflammatory medications (p<0.01) and epidural anaesthesia (p<0.01) were associated with IH, while IV syntocin for labour induction was not. Women with IH had a longer inpatient admission following delivery (p<0.01), and elevated postpartum BP (p<0.01) with discharge on regular antihypertensive medications (p=0.01). IH was also associated with APGAR scores <9 at 1 and 5 minutes (p=0.03; p=0.02), neonatal birthweight <10th centile (p<0.01), and need for high-level neonatal care (p=0.02).

Conclusion: Almost 40% of previously normotensive women developed IH, which was associated with longer maternal admission, elevated postpartum BP, and discharge with regular antihypertensive medications. Fetal outcomes were also poorer, with lower APGAR scores, more neonatal birthweight <10th centile and an increased need for high-level neonatal care.

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Imaging of headaches in pregnancy and the puerperium

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Background: Headache disorders are common and typically affect women of childbearing age.(1) Most of these could be attributed to primary headaches, such as tension headaches or vascular headaches, and are often diagnosed and managed clinically without the need for definitive brain imaging.(2) Nonetheless, pregnancy can exacerbate a pre-existing neurological condition, or can increase the risk of pathological vascular processes such as pre-eclampsia, reversible cerebral vasoconstriction syndrome, cerebral venous thrombosis, subarachnoid haemorrhage, idiopathic intracranial hypertension and certain pituitary disorders (Sheehan's syndrome) necessitating work-up for these diagnosis in appropriate circumstances.(3,4) Determining which headaches are worrisome and require further imaging is guided by neurological symptoms and signs. However, given symptoms can be non-specific it can be challenging to diagnose on clinical grounds alone. Computed tomography (CT) and magnetic resonance (MR) imaging are the modalities utilised in the evaluation of neurological conditions in pregnancy and the puerperium. Increasingly, these modalities are being utilised in the diagnosis and management of headaches in pregnancy and the puerperium. Interestingly, there are no universally accepted guidelines or risk stratification tools to determine need for imaging in headaches during pregnancy and the puerperium.(5,6)

Objectives: The purpose of our retrospective clinical audit is to determine the incidence of headaches in our local health district. Our local health district has a higher incidence of obesity and with this we suspect an increased risk of neurological conditions in pregnancy. We also want to determine the yield of imaging studies and determine if there are clinical predictors for abnormalities in our patient group. We aim to develop risk stratification tools to determine the need for imaging for headaches in pregnancy and the puerperiem.

Methods*:* Retrospective cohort study *to* evaluate headaches in pregnancy over a six-month period from 1st July 2020 to 31 December 2020.

Results and Conclusion: will be presented at the conference.

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The Ferinject referral form: Does a structured request form improve compliance with hospital guidelines for iron infusions?

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Iron deficiency is one of the most common problems encountered in antenatal care, with approximately 18% of pregnancies experiencing iron deficiency without anaemia[1], and 38% experiencing iron deficiency anaemia[2]. Iron is known to be critical for both maternal, foetal and neonatal morbidity and mortality, with foetal/neonatal iron deficiency influencing long term neurological outcomes.[3] The two treatment modalities for iron deficiency are oral and parenteral, both of which have a role in the management of iron deficiency in pregnancy. Oral therapy is the mainstay of treatment. Parenteral iron reserved for patients who do not respond to oral therapy, or are inappropriate for oral therapy. This study aims to determine the efficacy of a structured request form to increase compliance with hospital iron therapy guidelines, and decrease inappropriate iron infusions. A two month period of iron infusions were audited against the hospital iron therapy guidelines to determine baseline compliance. Only 35% of iron infusions met the hospital guidelines. Prior to iron infusion only 44% of patients received an adequate trial of oral iron. Of those patients commenced on oral iron, only 53% had been compliant. The ferinject referral form was implemented in March 2021, with some preliminary evidence of improved guideline compliance. Complete results will be presented at SOMANZ.

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Maple Syrup Urine Disease in Pregnancy: A case review of a grand multiparous couple who are carriers for the disease

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Introduction:

Maple syrup urine disease (MSUD) is an autosomal recessive amino acid disorder, affecting approximately 1 in 220 000 live births [1]. MSUD is caused by aberrancy of the branched-chain alpha-ketoacid dehydrogenase complex enzyme, thus disabling branched chain amino acid (BRAA) metabolism. Toxic accumulation of BRAA, especially leucine, may cause a metabolic crisis, including weight loss, lethargy, seizures and death, especially in early infancy. The risk of a metabolic crisis persists throughout the affected individual's life and can be exacerbated by physiological stress. We present a case of a grand-multiparous woman and her partner who are carriers for MSUD.

Case presentation:

A 33-year-old woman and her consanguineous partner are carriers for MSUD. Her second and third child died at 20 days of life due to MSUD whilst living in Lybia. In Australia, her 4th pregnancy was terminated due to MSUD-affected foetus. Her 5th child was diagnosed with MSUD at birth as she did not have genetic testing in early pregnancy. The infant required intensive care at birth but is alive and well. Our care for her 6th pregnancy included chorionic villus sampling at 13 weeks demonstrating a heterozygous genotype. Post-partum, the infant underwent paediatric review at delivery and at 6 weeks and remains well.

Discussion:

Due to advances in management of inherited metabolic conditions, more women affected by or carriers of previously fatal diseases are able to thrive and build families of their own.

Women with MSUD present a challenge to pregnancy care providers as the physiological state of pregnancy can have a significant impact on the affected woman and the gestate. Pregnancy is an anabolic state, thus women require careful titration of protein intake and monitoring of their plasma leucine levels by multidisciplinary teams. Delivery should be planned prudently, as the catabolic stress of labour can trigger a crisis, as can surgical intervention, especially if they are to remain nil by mouth. Furthermore, protein turnover during breastfeeding require caloric and protein optimization for these women.

Pre-conception counselling for all women and/or partners who have MSUD or are carriers for the gene is ideal. Pre-implantation or early pregnancy genetic testing should be offered with counselling targeted at patient's values and needs.

Conclusion:

MSUD is a rare metabolic, inherited disease. Women who are affected or carriers require close surveillance and multi-disciplinary input. Prenatal and early pregnancy counselling should be individualized and targeted by the patient's needs and available resources.

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Masquerades in the delayed presentation of HELLP Syndrome

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Introduction

Preëclampsia is diagnosed by raised blood pressure occurring after 20 weeks' gestation, and involvement of one or more organ systems, including renal, haematological, hepatic and neurological; also, the developing fetus[1]. Preëclampsia in Australia, affects ~3% of pregnancies[2]. It increases maternal and perinatal mortality and morbidity, with HELLP Syndrome, a well-documented sequela of severe preëclampsia.

Case Description

Miss M, a 16y.o G1P1, Aboriginal girl at 39 weeks with confirmed preeclampsia, diagnosed by hypertension and urine protein creatinine ratio of 483, prompting induction of labour. This resulted in an emergency caesarean section, whilst on magnesium sulfate for signs of neurological involvement and systolic blood pressures >160, for failure to progress at 4cm. Miss M was transferred from her regional facility

on day 4 postpartum in a stable condition, after routine preeclampsia monitoring and treatment, to her local rural facility for mother crafting and ongoing blood pressure monitoring. On day 5 she developed lethargy, pyrexia, tachycardia, worsening hypertension and a unilateral swollen face. Given the limited resources available, investigations conducted with biochemistry, being available the following day revealed anaemia, thrombocytopaenia, elevated creatinine and mild elevated transaminases. A clinical suspicion of postpartum HELLP syndrome was made. The high mortality and morbidity of this condition and potential for rapid deterioration necessitated her transfer back to the regional centre for observation, investigation, diagnosis and treatment.

Discussion

This case vignette highlights the diagnostic and logistical dilemmas, especially for rural patients dealing with delayed results, minimal resource setting and inter-hospital transfer of a serious obstetric medical complication. The disease spectrum resulting from severe preëclampsia with HELLP syndrome shows overlap with other diseases that can threaten the lives of both mother and foetus, if not yet delivered. These include thrombotic thrombocytopenic purpura, haemolytic uraemic syndrome (secondary or atypical), acute fatty liver of pregnancy, systemic lupus erythematosus and antiphospholipid syndrome[3,4]. Therefore, an accurate diagnosis is important, for prompt management while avoiding delays.

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Shear wave placental elastography in women with pre-existing diabetes and other 'high-risk' pregnancies.

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Background:

Women with type 1 and type 2 diabetes are at high risk of pregnancy complications including gestational hypertension, pre-eclampsia and intra-uterine growth restriction (IUGR) with the placenta mediating many of these outcomes. Structural changes in the placenta have been assessed with ex-vivo tissue sampling, histopathological examination and immunohistochemistry. More recently, in-vivo assessment of placental change has been studied using ultrasound-based shear wave elastography (a routine diagnostic tool to estimate fibrosis in chronic liver disease). We aimed to investigate the role of placental elastography in women at very "high risk" - those with type 1 or type 2 diabetes prior to conception.

Methods:

We conducted two distinct literature searches to broadly capture all relevant published data. Our first search was to summarize the known histopathologic changes in placentas of women with type 1 or type 2 diabetes. Our search terms included "Diabetes mellitus" AND "placenta" AND "histopathology". Our second search used the terms, "(elastography OR stiffness OR Elasticity OR kpa OR kilopascals) AND placenta" to capture and summarize structural placental changes detectable by elastography. To estimate the increasing stiffness with 'high risk' pregnancies, we conducted a meta-analysis of 16 relevant studies that reported stiffness in metres per second (m/s) OR kilopascals (kPa).

Results:

After screening, we identified 57 studies for full text review of histopathology in women with type 1 or type 2 diabetes published between 1969 and 2017. There is a wide variety of histopathologic changes described in women with diabetes, however none are considered pathognomonic, and indeed some may be shared common processes with other conditions such as hypertension or IUGR. Broadly, histopathological changes are divided into categories based on presumed aetiology including maternal malperfusion, fetal malperfusion, infectious/inflammatory.

After screening, we identified 16 relevant studies (with reports of stiffness values) to be included in meta-analysis. In-vivo placental elastography may detect a difference in stiffness scores for many women with a "high-risk" pregnancy. The mean difference for maternal-derived pathologies was 4.5kPa (95% CI 3.16 - 5.87) and for fetal-derived pathologies 6.5kPa (95% CI 1.08 – 11.86). Very few of these studies included women with pre-existing diabetes (we identified less than 10 participants with pre-existing type 1 and/or type 2 diabetes across the 16 studies).

Conclusion:

Placental stiffness measurements may provide an in-vivo approximation of placental histopathology in women with diabetes. Placental elastography might be useful in studying whether diabetes, pre-eclampsia and IUGR share common pathways to structural placental changes.

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Attitudes toward antibiotic use in pregnancy and after birth – a survey of Australian women.

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Background: Peripartum antibiotics are commonly prescribed. This survey aimed to evaluate the attitudes of Australian women toward antibiotic use during the peripartum period and determine if they were aware they had received antibiotics.

Methods: Women who delivered by any mode at the Royal Brisbane and Women's Hospital provided consent and completed a post-partum survey. Survey responses were recorded on 5-point Likert scales. Participant characteristics, delivery details and antibiotics administered 48 hours either side of delivery were obtained from the medical record.

Results: Between December 2020 and March 2021, the survey was offered to 298 women and completed by 248 (response rate 83%). The mean (SD) age was 30.9 (4.9) years and the median (IQR) gestation was 39 weeks (38-40) and 154 (62%) had a vaginal delivery. Pre-delivery antibiotics were administered to 129 (52%) women and only 54 (41.9%) were aware they received them. Post-delivery antibiotics were administered to 40 (16%) women and 29 (73%) were aware. 159 (65%) had concerns about the effects of pre-pregnancy antibiotics on their baby and 127 (52%) had concerns about the effect on their own microbiome. Concerns were expressed about at least one side effect in 152 (51%) women, with 96 (39%) worried about candidiasis (thrush) and 68 (28%) concerned about an allergic reaction. 163 (67%) women indicated a preference to not take any antibiotics whilst breastfeeding.

Conclusion: Women in the peripartum period were generally not aware of receiving peripartum antibiotics, despite most having concerns about unwanted side effects. Clinicians should communicate the indication and potential side effects of antibiotics at the time of administration to allow shared decision-making and optimise patient-centred care.

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T2DM is associated with Impaired Lactogenesis (Secretory Activation) Manifested by a Delayed Citrate Concentration Rise in Early Breastmilk and Reduced Exclusive Breastfeeding at Four Months Postpartum

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The rate of successful breastfeeding (BF) establishment beyond hospital discharge in women with type two diabetes (T2DM) is poorly described, although small studies suggest it is reduced compared to both women with gestational diabetes (GDM) and women without diabetes. One postulated reason is delayed secretory activation (SA), which is the onset of copious milk production, or milk 'coming in', that normally occurs between 24 and 72 hours postpartum. SA can be measured by examining changes in milk constituents that occur at the time copious milk secretion begins, including citrate and lactose whose concentrations rapidly increase. We examined the change in breastmilk citrate concentration in women with T2DM, control women matched for age-, body mass index (BMI)-and parity, and control women matched for age and parity but with normal BMI (18.5-25). Women with T2DM had a delay in SA, compared to both BMI-matched and normal BMI controls. This was manifest by a slower rise in citrate and a lower mean plateau value, both results suggesting early breastmilk volume may be lower in women with T2DM. Higher insulin dose per/kg in women with T2DM was associated with increased time to predetermined citrate values and provides further evidence for the role of insulin resistance in impaired milk production. Exclusive breastfeeding at four months postpartum was lower in both women with T2DM and BMI-matched controls; however, it remains unclear to what extent delayed SA (and potential supplemental feeding) influence successful establishment of breastfeeding in women with T2DM and/or higher BMI.

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A rare case of postpartum diabetes insipidus

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Aim: We present a rare case of central diabetes insipidus (DI) occurring during the postpartum period in a previously well 35 year old woman.

Clinical description: The patient developed clinical and biochemical features consistent with central DI on day 2 postpartum. She was stabilized on desmopressin 100mcg per oral twice daily and continues to require desmopressin at more than 4 weeks postpartum. The pregnancy was uncomplicated, but delivery was via emergency caesarean section at 40+3 weeks in the context of fetal distress and placental abruption resulting in severe postpartum haemorrhage. Lactation was normal postpartum. MRI of the pituitary (with contrast) demonstrated normal enhancement of the pituitary gland with no focal pituitary lesion identified, and there were no features to suggest hypophysitis. Early morning serum cortisol was normal at 412 nmol/L (reference range 170-500), with nil evidence of anterior pituitary insufficiency. Copeptin level was 1.6 pmol/L when the corresponding serum sodium was 149mmol/L (reference range 135-145), serum osmolality was 312 mmol/kg, and urine osmolality was 153 mmol/kg.

Discussion: Sheehan's syndrome, pituitary apoplexy with underlying adenoma, IgG4-related hypophysitis, and lymphocytic hypophysitis were considered unlikely in this case given the normal lactation, lack of anterior pituitary insufficiency, and normal appearance of the pituitary on high quality MRI scan. Abnormal blood supply to the posterior pituitary has been associated with cases of what would have traditionally been considered "idiopathic central DI".(1) Abnormal blood flow to the posterior pituitary secondary to severe postpartum haemorrhage may have contributed to central DI in this patient. Another important consideration is gestational DI which is mostly attributed to excessive vasopressinase activity(2). The causative mechanism in this patient was likely multifactorial and will be discussed in detail in the presentation. We will also discuss the challenges in the diagnosis and multidisciplinary management of postpartum central DI.

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The coronavirus pandemic and the postpartum mother

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Aims: To investigate postpartum maternal mental health, wellbeing, physical activity, dietary, and sleep patterns during the coronavirus (COVID-19) social distancing restrictions.

Methods: 130 women residing in Australia in their first year postpartum were invited to complete an online survey during level 3 and 4 social distancing restrictions and again once restrictions had been lifted. Maternal mental health was assessed using the Depression, Anxiety, Stress Scale. Physical activity was assessed using the Godin-Shephard Leisure Score and accelerometry. Dietary patterns were

assessed using an adapted food frequency questionnaire. Sleep and values for general health were assessed using non-validated Likert scales. Data was analysed using an ANOVA.

Results: Data from 45 participants (33 ± 4 y, 6 ± 4 months postpartum; BMI: 26 ± 4 kg.m^{-2}) are presented. Mean depression, anxiety, and stress scores were significantly lower after COVID-19 compared to during restrictions (all $p < 0.04$). Similarly, maternal wellbeing was significantly improved after COVID-19 restrictions had lifted for social functioning, role limitations due to emotional health, and mental health (all $p < 0.03$). Interestingly, women increased their legume intake after COVID-19 restrictions had been lifted ($p = 0.04$). No differences were seen in the values upheld by women for their general health, sleep, relationships, weight, or physical activity (all $p > 0.05$).

Discussion: Data shows women in their first year postpartum during COVID-19 social distancing restrictions and though subsequent effects on sleep, diet, and physical activity remains to be determined following the analysis of food diaries and accelerometers. Data during the COVID-19 pandemic suggests whilst women were impacted by the social distancing restrictions, they do not compare to similar studies published internationally of women in the same demographic. This data will serve to provide further information for the necessary support women during the postpartum require in times of social isolation and pandemic environments.

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Health coaching embedded into routine antenatal care: effect on gestational weight gain in women with gestational diabetes mellitus (GDM)

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Introduction

GDM complicates ~16% of pregnancies. Health coaching is a recognized approach to promoting lifestyle change in type 2 diabetes, but its role in preventing excessive gestational weight gain in GDM is uncertain.

Method

Women with BMI ≥30 kg/m^2, GDM diagnosed at ≤30 weeks gestation were randomized to usual care (multidisciplinary clinic) or usual care plus weekly health coaching by specifically-trained midwives, provided by telephone, email or at routine clinic visits. Data were collected on weight, psychological wellbeing [Edinburgh Depression Scale (EDS); State-Trait Anxiety Inventory (STAI-6); Problem Areas in Diabetes (PAID)], and obstetric/neonatal outcomes.

Results

Women in Usual Care group (*n*=22) were diagnosed with GDM at gestation 11 ± 6 weeks (mean ± SD), BMI at booking 36.2 ± 6.2 kg/m^2. Women in Intervention group (*n*=21) had GDM diagnosed at 12 ± 7 weeks, BMI 38.3 ± 7.3 kg/m^2. Intervention group participants had 12 ± 4 contacts with a health coach.

At 36 weeks gestation, Usual Care group had gained 6.1 ± 6.2 kg compared with 2.8 ± 5.0 kg in Intervention group (*P* <0.1). In Usual Care group, 6 women exceeded RANZCOG recommendations for weight gain in pregnancy compared with 1 in Intervention group (*P* < 0.1).

Neonatal outcomes did not differ. Birthweight for term deliveries in Usual Care group was 3629 ± 344g and in Intervention group, 3447 ± 590g. The birthweight of 2 babies in each group was ≥90th centile.

EDS, STAI-6 and PAID scores did not differ between the groups.

Conclusions

Health-coached women showed a tendency to lower weight gain. Although this did not reach statistical significance, likely due to the small numbers of women enrolled, our study demonstrates that health coaching can be successfully delivered within routine antenatal care and that larger studies are warranted to investigate the potential benefits for gestational weight gain.

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The Effect Of Physical Activity On Glycaemic Control In Women With Gestational Diabetes

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Background

Exercise is important in the management of women with gestational diabetes (GDM), but there are few studies of its role in improving glucose levels. The emergence of commercial activity monitors has allowed larger volumes of data to be obtained over longer time periods than has previously been achieved by clinically validated actigraphy. This allows more extensive examination of the relationship between physical activity and glycaemic control.

Method

Women enrolled in SMART MUMS WITH SMART PHONES 2 (SMs2), a randomised controlled trial of text messaging support for women after GDM, are provided with a wrist-worn activity monitor (Garmin Vivofit 4[â]) that tracks steps in their third trimester. The women check and record their fasting and 2 hour postprandial blood glucose levels (BGLs). Of the 180 women who are planned to be recruited for SMs2,

we included those who had corresponding daily step and BGL records. Days with <1000 steps were excluded as it is likely that the activity monitor was not worn. We examined the association between steps with BGLs with a linear mixed effects model.

Results

Ten women were included in this study. The mean age was 34.0±4.0 years and BMI 26.2±4.5 kg/m^2. Amongst these women, there were 90 days with step and BGL data available.

The mean steps on the previous day was 4814.51±2574.57 and on the same day was 4798.20±2311.03. The mean fasting BGL was 5.05±0.43mmol/L, post breakfast BGL 5.86±0.57mmol/L, post lunch BGL 6.13±0.58mmol/L, post dinner BGL 6.42±0.69mmol/L and average postprandial BGL 6.10±0.47mmol/L.

There was a trend to increased steps on the previous day being associated with decreased fasting BGL, and for increased steps on the same day being associated with decreased post prandial BGL, with the highest effect after lunch. However, these trends did not meet statistical significance.

BGL	Estimated Change in BGL Per 1000 Steps (mmol/L)	(95%CI)	Linear Trend p-value
Fasting	-0.012	(-0.059, 0.035)	0.63
Post Breakfast	-0.061	(-0.195, 0.072)	0.36
Post Lunch	-0.082	(-0.191, 0.027)	0.14
Post Dinner	-0.046	(-0.228, 0.137)	0.62
Average Post Prandial	-0.044	(-0.110, 0.022)	0.19

* *Fasting glucose versus steps recorded on the previous day, all other measurements versus steps on the same day*
Table 1. Change in Glucose Per 1000 Steps

Conclusion

This study suggests a possible trend to an association between physical activity and improved glycaemia in GDM, which if sustained across the cohort would warrant a full trial of commercial activity monitors for all women with GDM.

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case description and literature review of severe asthma, steroid use and uterine scar rupture

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Back ground

Regular and high dose steroid use is needed in medical complications in pregnancy especially with acute exacerbation of severe asthma. Reported obstetrics complications include pre term birth, chorio -amnionitis and rarely uterine rupture in view of its impact on soft tissue degeneration.

uterine scar rupture has been reported as two case reports in women with previous surgical scar as well as de novo presentation in a twin pregnancy requiring early intervention

Case description

a 39 year old woman presented for medical review for concerns of an unplanned pregnancy around 21 weeks of gestation. This was her fourth pregnancy with three previous pregnancies managed with caesarean delivery for large for gestational age weight, likely cephalo-pelvic disproportion and severe uncontrolled asthma.

past medical history revealed childhood asthma with multiple hospitalisations to HDU and other wards but never needing intubation. Her triggers were viral infections, change in weather and pregnancy. she also had nocturnal symptoms and poor sleep with reflux worsened by pregnancy at present.She was managed with high dose steroids up to 90 mg daily to manage her asthma with other regular inhalers and nebulisers. during her last pregnancy she presented with TPL and early scar rupture was noted at the time of surgery. She was advised not to fall pregnant in view of recurrence of scar rupture.

We would like to discuss measures of minimising her risk of scar rupture in the current high risk pregnancy by using alternative agents for steroid sparing effect such as Monteleukast and other biological agents and review current literature of management of severe asthma in pregnancy.

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Addressing healthcare provider knowledge about the long-term disease sequelae after hypertensive disorders of pregnancy

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Background: Hypertensive disorders of pregnancy (HDP) including preeclampsia, gestational hypertension and chronic hypertension affect 5-10% of pregnancies. There are short and long-term consequences for women following HDP, with long-term effects including increased risk of cardiovascular, cerebrovascular, and renal disease, and type 2 diabetes. There is limited knowledge of potential long-term HDP

effects amongst healthcare providers (HCP)s, and there exists no guidelines on how to design an educational package. This study aimed to assess HCP requirements and recommendations for an educational package on post-HDP health.

Method: Semi-structured telephone interviews, employing a qualitative thematic approach. HCPs who had completed an online survey in 2019 were invited to participate. Interviews were completed April-May 2020 and were recorded, transcribed and analysed using thematic analysis techniques.

Results: Twenty HCPs participated; 11 midwives, 5 obstetricians, 3 general practitioners with an obstetric diploma and 1 cardiologist. Three overarching themes were noted: 'Materials' (sub-categorised into content, format and distribution of the educational package), 'Enablers' and 'Barriers' (both sub-categorised into 'Acquisition of knowledge' and 'Transmission of knowledge'). Major preferences for materials included content regarding HDP, long-term risks and recommendations on referral and long-term pathways. HCPs recommended case-based learning in a multidisciplinary format and distribution through professional bodies. 'Enablers to the acquisition of knowledge' included personal experience and ease of access to resources. 'Enablers to the transmission of knowledge' to other HCP and women involved interdisciplinary collaboration and appropriate timing of discussion. 'Barriers to the acquisition of knowledge' included obstacles to accessing resources. Perceived 'Barriers to the transmission of knowledge' included maternal health literacy and limited awareness of the importance to educate women.

Conclusion: Findings suggest that HCP education packages should address HDP's long-term risks in a case-based, multidisciplinary format distributed through professional bodies. Enablers can be accentuated, and barriers can be addressed to develop a well-tailored educational package.

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Does the administration of corticosteroids for fetal lung maturity in women with pre-existing diabetes in pregnancy, increase the risk of neonatal hypoglycaemia or respiratory distress?

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In 2017, 0.7% of women who delivered in NSW had type 1 or type 2 Diabetes Mellitus. Corticosteroids, in the form of either betamethasone or dexamethasone, have been routinely used to enhance fetal lung maturation and in women who are at risk of pre-term vaginal birth (less than 34 weeks' gestation), and in some centres also, to women who have caesarean deliveries up to 39 weeks' gestation. Administration of corticosteroids has been shown to reduce the rates of perinatal mortality, and also respiratory distress syndrome (RDS). With regards to women with pre-gestational diabetes, concerns have been expressed about the destabilising effect of corticosteroids on blood glucose level (BGL) control and the potential effect this may have on the mother and her baby. Women with pre-gestational diabetes receiving corticosteroids require admission to hospital for glycaemic management, causing anxiety for themselves and their families. Corticosteroid administration to women with poorly controlled diabetes may precipitate diabetic ketoacidosis (DKA) in the mother as well as acidosis in the fetus. Corticosteroid-induced maternal hyperglycaemia could also lead to subsequent hypoglycaemia in the neonate, and paradoxically in some studies an increased risk of RDS.

At the tertiary centre where the authors practice, we currently admit women 1 week prior to elective delivery in order to administer corticosteroids and stabilise BGLs.

We conducted a was a retrospective observational study at a tertiary centre in Sydney, in order to assess the risk of neonatal hypoglycaemia and RDS in women with pre-existing diabetes who were given Corticosteroids for fatal lung maturation.

A total of 410 cases were identified over the specified time period. The final data set consisted of 232 cases in 190 women. Antenatal corticosteroids were administered in 22.4% of the cases analysed. Comparison was made for the two main outcomes between women who were administered steroids and those who did not receive steroids prior to delivery. Paradoxically, significantly more of the women who were administered steroids gave birth to infants with respiratory distress syndrome (25.5%), compared to women who did not receive steroids prior to delivery (8.9%). Although the rate of hypoglycaemia in neonates of women who received steroids was also higher (61.5%), the comparison with women not receiving steroids (46.7%) did not achieve statistical significance.

Our results showed that the benefits of corticosteroid administration in women with pre-gestational diabetes is unclear.

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Drawing the line: The impact of border closures on maternity care, a case report

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The impact of COVID-19 in Australia reached far beyond the actual number of cases[1]. Policy restricting travel and the way patients interacted with health systems, altered the face of maternity care[2]. These effects were felt to be more profound amongst rural communities, as unpredictable and inconsistent state border closures disrupted standard processes of accessing healthcare[3,4].

In July 2020, New South Wales (NSW) closed the border to Victoria following a daily total of 124 new cases of COVID-19. At this time, our case, a 37-year-old gravida 7 para 5, was 12+5 weeks pregnant. Her pregnancy was high risk (insulin dependent gestational diabetes, IgA nephropathy and Graves' disease), therefore requiring management in a level 5 obstetric centre. The closest facility that could provide this care and offer the recommended fortnightly obstetrician review, was one 1 hour by road, across state lines in Victoria. Therefore, she was faced with the prospect of spending the remainder of her pregnancy in isolation, or, alternatively, travelling greater than 2.5 hours to access equivalent care in NSW[4].

The relationship between rural residence, travel time and poor perinatal outcomes is well established[5]. This case demonstrates that border closures, while successful in attenuating the spread of COVID-19, have the potential to exacerbate known health inequalities by enforcing new remoteness on rural communities[3;5]. Moreover, pregnancy is a time of traditionally increased medical observation, and the psychological impact of uncertain access to antenatal care during COVID-19 has been well documented[2,3]. Changing border policies, and their variation when implemented by different governments, serves as a reminder of the vulnerability of rural populations to access health systems that were not designed around state lines[5]. Thus, we propose solutions including compassionate travel exemptions or negotiated cross-border "bubbles", which take into consideration the ongoing need for border residents to access healthcare during COVID-19 outbreaks.

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Medical nutrition therapy for gestational diabetes mellitus in Australia: What has changed in 10 years and how does current practice compare with best practice?

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Aims: To examine current Australian dietetic practice in the management of GDM by comparing findings to a 2009 survey[1]; and to the American Academy of Nutrition and Dietetics Nutrition Practice Guidelines[2]; and assess the need for Australian guidelines.

Methods: Cross-sectional surveys of dietitians providing Medical Nutrition Therapy (MNT) to women with GDM were conducted in 2009 and 2019. The current abstract compares responses to questions on MNT between surveys.

Results: A total of 220 and 149 dietitians met inclusion criteria in the 2009 and 2019 surveys respectively. Not all questions were answered by all respondents. The majority of respondents in both surveys (>60%) reported aiming for macronutrient targets consistent with a high carbohydrate (>45% energy), moderate protein (15-25% energy), moderate fat (15-30%) dietary intervention. Consistencies in key components of MNT found in 2009 continued in 2019 - such as topics covered. Inconsistencies in MNT found in 2009 also continued in 2019 including wide ranges in: target percentage of energy from carbohydrate (20-75% in 2009 versus 30-65% in 2019); and recommended minimum daily carbohydrate intake (60-300 grams in 2009 versus 40-220 grams in 2019). A minority of dietitians in both surveys (26% in 2009 versus 32% in 2019; NS) reported aiming for the recommended minimum carbohydrate intake (≥175 grams/day)[2]. Of note, significantly more dietitians in 2019 reported providing key components of MNT consistent with maternal weight gain recommendations[2] including provision of weight gain advice (59% versus 40%; $p<0.05$), and routine weighing at clinic visits (74% versus 60%; $p<0.05$) versus 2009. Most respondents felt there was a need for Dietitians Australia (DA) endorsed guidelines (89% in 2019 and 86% in 2009; NS).

Conclusions: Although most dietitians provide MNT consistent with existing guidelines there is a need for greater implementation. These findings support the need for Dietitians Australia endorsed MNT guidelines for GDM.

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Implementation of new protocol for adjustment of insulin doses for pregnant women with gestational diabetes (GDM) who have been administered celestone for fetal lung maturity

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Gestational diabetes (GDM) is becoming more prevalent, with the rate of women with GDM in NSW increasing from 8.3% in 2015, to 13.9% in 2019. There has been a simultaneous increase in number of women requiring induction of labour, and pre-term deliveries. As such, there has been a corresponding rise in the number of women who require corticosteroids for fetal lung maturity. Optimising the glycaemic control in women with GDM who receive corticosteroids can sometimes be difficult.

In the tertiary unit where the authors practice, the obstetric team have to contact the Endocrine team for advice on optimising glycaemic control. This doesn't always happen in a timely fashion due to competing demands, or minimal staffing, especially after hours and overnight. Anecdotally we have noticed that patients are currently running hyperglycaemic following steroid doses suspected due to an insufficient increase in insulin doses being charted.

In order to streamline this process and optimise glycaemic control, we implemented a protocol that can be followed by all staff members with ease. The protocol assumes that a 40-50% increase in insulin is required post Celestone administration. The required insulin doses can then be fine-tuned by the Endocrinology Registrar within office hours.

We looked at a total of 42 women who delivered between an 18 month time period. Of these women, 26 received Celestone prior to implementation of the protocol, and 16 were managed with the new protocol.

Analysis of the glycaemic control in these women suggests that the protocol was effective in treating post-prandial blood glucose levels (BGLs), but was inadequate in treating fasting BGLs. Most women reverted back to pre-Celestone glycaemic control within 72 hrs from time of 1st Celestone administered. Often instances of elevated post-prandial BGLs was because the BGL was not measured pre-meal, or a supplemental dose of insulin was not administered.

Implementation of this protocol has streamlined the process of glycaemic optimisation in women with GDM who receive Corticosteroids in our hospital. Further titration of the protocol is likely required in order to ensure BGLs within target range.

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Experiences after Hypertensive Disorders of Pregnancy (women's "post-HDP world"): a Blood Pressure Postpartum (BP^2) sub-study

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Background

Hypertensive disorders of pregnancy (HDP) not only affect pregnancy outcomes but have implications for women's ongoing health, including at least double the lifetime risk of cardiovascular disease and Type II diabetes. BP^2 is a currently recruiting, 3-arm randomised trial of follow-up and lifestyle behaviour change strategies in the first year after HDP (Optimised Usual Care with GP; Brief Education Intervention with physician/dietitian at Postpartum Clinic; Extended Lifestyle Intervention including 6 months Get Healthy Service telephone-based coaching). This qualitative sub-study within BP^2 aimed to investigate the barriers and enablers to healthy behaviours after a pregnancy complicated by HDP.

Methods

Thirty-four women from all three arms of BP^2 were interviewed March 2020-April 2021, approximately 10-12 months postpartum (4-6 months after randomisation and intervention commencement). The semi-structured interviews were conducted by telephone, transcribed verbatim prior to thematic analysis, following the methods suggested by Braun and Clarke.

Results

The interviews explored women's experiences following a HDP. Major themes included:

- Impact of a young baby on healthy lifestyles (exhaustion, limited time, costs, other priorities)
- Importance of support (partners, extended family, Get Healthy Service/BP^2 intervention)
- Awareness of HDP-related risks (varied recognition of risk of future CVD, BP^2 intervention brought greater awareness).
- Moving on (plans for return to work both negative and positive impacts, baby developing, future pregnancies, post-COVID world)

Conclusion

Interviewees outlined varying views of their post-HDP world. Some women clearly embraced the future health implications and their ability to positively influence this through lifestyle, while others appeared overwhelmed by their current parenting demands. Perceptions varied with individual circumstances including support, previous experience of healthy practices, finances and access to the full intervention. Findings support potential utility of structured post-HDP follow-up, including psychosocial supports, and postpartum lifestyle intervention. However, future interventions should recognise that timing (and degree) of women's readiness to engage shows considerable variation.

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Changes in the gut microbiota of women with gestational diabetes mellitus: a microbiome understanding in maternity sub-study

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Background: An alteration from a balanced microbial ecosystem, known as dysbiosis, has been associated with multiple metabolic disorders, including gestational diabetes mellitus (GDM). However, the role of gut dysbiosis in the aetiology of GDM remains unclear, as there is a deficit in longitudinal studies characterising microbiota signatures both before and after disease diagnosis. Thus, this study aims to explore microbiota composition across all pregnancy trimesters by GDM status, identifying changes which may be associated with disease onset.

Method: Gut microbiota profiles of 15 GDM (ADIPS consensus diagnostic criteria) and 79 normoglycemic pregnant women from the Microbiome Understanding in Maternity Study (MUMS) prospective cohort were analysed. Microbiota composition was examined via whole metagenomic shotgun sequencing of faecal samples from all pregnancy trimesters. Taxonomic profiling was conducted using MetaPhlan2, and resultant data analysed to identify differentially abundant taxa between groups.

Results: There were no significant differences in microbiota alpha or beta diversity between GDM and normoglycemic women ($P > 0.05$). However opportunistic pathogens or pathobionts of classes Gammaproteobacteria and Deltaproteobacteria, and species *Bacteroides dorei*, *Eggerthella* sp., *Escherichia coli*, *Klebsiella oxytoca, Veillonella dispar* and *Bifidobacterium catenulatum* were enriched in GDM compared to normoglycemic women ($P < 0.05$). Conversely, commensal organisms of class Clostridia and species *Barnsiella intestinihominis*, *Bifidobacterium breve and Adlercreutzia equolifaciens* were depleted in GDM compared to normoglycemic women ($P < 0.05$). With the exception of *Bifidobacterium breve* and *Klebsiella oxytoca,* all differences in the relative abundance of species were detected in the first trimester prior to GDM diagnosis, and remained differentially abundant in mid or late gestation ($P < 0.05$).

Conclusion: This study identified aberrations in the microbial composition of women with GDM, which presented prior to disease onset and persevered through pregnancy. These signatures may be further explored regarding pathophysiological role and potential as non-invasive predictive biomarkers of GDM.

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Cor triatriatum and pulmonary hypertension in pregnancy and labour: A case report and discussion of management

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Background: Cor Triatriatum Sinistrum (CTS) is a very rare condition comprising 0.1-0.4% of congenital heart disease. It is characterised by a fibromuscular septum separating the left atrium into two chambers. It can lead to arrhythmias, thrombosis, pulmonary oedema and pulmonary hypertension. The condition is usually diagnosed in infancy however haemodynamic changes associated with pregnancy can trigger decompensation in undiagnosed CTS.

Case Summary: A 24-year-old female (G8P3) presented to a regional NSW hospital at 25 weeks gestation with pulmonary oedema and a suspected viral respiratory infection. She was transferred to our tertiary facility for ongoing management. A transthoracic echocardiogram demonstrated CTS (membrane orifice < 0.5cm^2) with profoundly dilated right ventricle, severe tricuspid incompetence and severe systemic-level pulmonary hypertension. Obstetric ultrasound confirmed single live intrauterine pregnancy with normal growth and wellbeing. Prophylactic enoxaparin, metoprolol and frusemide were commenced. Post-stabilisation she was monitored closely as an outpatient. At 31 weeks gestation the patient was re-admitted and administered betamethasone for fetal lung maturation. An induction of labour (IOL) with mechanical ripening and artificial rupture of membranes was planned for 34 weeks gestation. Iloprost was administered throughout labour. Early regional anaesthesia with slow titration was instituted to minimise haemodynamic effects. Oxytocin was deliberately not utilised due to side-effect profile worsening cardiac function. Labour did not establish and the patient underwent an uncomplicated lower-segment caesarean section with invasive monitoring and postoperative transfer to ICU. Low dose metoprolol was continued throughout and estimated blood loss was 350ml. A healthy 2.5kg female infant was delivered with normal cord blood gases. CTS was managed with resection of the membrane and mitral annuloplasty 3 months post-delivery. After 4 years of follow-up the patient is well with normal cardiac function and pulmonary pressures.

Conclusion: With careful management successful delivery was possible in a patient with CTS and severe pulmonary hypertension.

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Use of intravenous fluids in labour – a single centre online survey of obstetricians' and anaesthetists' perspectives

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Background:

There is conflicting evidence regarding the benefits or harms with intrapartum intravenous fluid therapy (IVT). Our previous retrospective study investigating local IVT prescription practices in labour found 63% (136/217) of women with low risk pregnancies received a median of 2L of compound sodium lactate (CSL) solution and women who received IVT had longer and complex labours compared to those who did not[a]. A survey was conducted to explore factors influencing intrapartum IVT prescription practices.

Methods:

Obstetricians and anaesthetists at a single tertiary centre were identified via employment records. Participants were invited to complete an online survey that ran for 6 weeks. Participants' demographics, intrapartum IVT choice, and IVT prescription patterns were assessed.

Results:

177 potential participants were identified and 45 responded to the survey. 69% (n=31) were obstetricians and 93% chose CSL as their preferred IVT. 61% identified IVT as appropriate pre-emergency caesarean with the most common IVT indications cited as hypotension (40%), haemorrhage (30%) and anaesthesia (21%). Most would administer IVT boluses for hypotension (100%), non-reassuring cardiotocographs (CTG) (74%), spinal anaesthesia (66%) and tachycardia (56%). The top 3 reasons for IVT infusions were oxytocin use (96%), prolonged second stage of labour (45%) and postpartum haemorrhage (34%). All would not prescribe IVT for intravenous antibiotics.

Conclusion:

This is the first survey to investigate intrapartum IVT prescription practices of obstetricians and anaesthetists. Haemodynamic instability, haemorrhage, prolonged labour, oxytocin and anaesthesia use were identified as common IVT indications. This could explain the association in our previous study between IVT use in labour and higher rates of labour induction, augmentation, instrumental deliveries and emergency caesareans[a]. Interestingly, most would administer IVT for non-reassuring CTGs, which contradicts best practice guidelines[b]. Furthermore, none would prescribe IVT for intravenous antibiotics, which contrasts our previous finding of a positive association between intrapartum IVT and intravenous antibiotics[a]. Further studies are required to evaluate optimal IVT prescription practices in labour.

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Renal cell carcinoma in pregnancy: A case report and summary of case

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Introduction: Renal cell carcinoma (RCC) is a rare diagnosis in pregnancy. We report a case of a pregnant woman with a RCC and summarised characteristics of 37 further published case reports over the last 20 years

Our case: A 34 year old primigravid woman presented with a left solid renal mass (56x71x55mm) discovered incidentally on a dating scan at 9weeks gestation. Fine needle aspirate was suggestive of clear cell RCC. An abdominal MRI at 13weeks gestation demonstrated growth of the solid heterogeneous renal mass (80x52x47mm). Chest x-ray was normal. After discussion in a multi-disciplinary team, the patient underwent a successful laparoscopic partial nephrectomy at 23weeks gestation with post-operative ileus and chyle leak but without obstetric complication. Histopathology confirmed type 1 papillary RCC, grade 2, stage pT2aNx. She delivered a 3kg baby girl at 39^{5} weeks gestation via caesarean section due to obstructed labour. She remained recurrence free 12 months post-operatively.

Summary of cases: Women had a median age of 32 years with median gravidity of 2 and were diagnosed at a median gestation of 17weeks. Seventy-three percent were operated on antenatally at a median gestational age of 20 weeks while 27% were post-natally. Most women presented with flank, groin or abdominal pain(34%) or incidentally on antenatal imaging(34%), followed by haematuria(29%), hypertension(13%), palpable flank mass(8%) and urinary symptoms. Right sided tumours occurred more frequently(53%). Most RCCs were clear cell type(62%), followed by chromophobe(27%), papillary(8%) and cystic(3%).

Sixty-eight percent had open, while 32% had laparoscopic nephrectomies and 82% were radical while 18% were partial nephrectomies. Pregnancies reached a median gestational age of 38weeks with half delivering vaginally and one third via caesarean. There were 2 spontaneous abortions, 2 terminations and one neonatal death. Two women died from metastatic disease.

Conclusion: A database to collate additional RCC data may help inform future practice.

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Case Study: Euglycemic Diabetic Ketoacidosis Resulting in Preterm Delivery

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Case: A 31-year-old gravida 2 parity 1 presented at 33 weeks gestation with 2 days of vomiting and decreased oral intake. History was significant for schizophrenia on recently up-titrated clozapine 300mg daily and overt diabetes in pregnancy on metformin with large-for-gestational-age fetus. She was clinically dehydrated with severe metabolic acidosis (pH 7.15, HCO3 6 mmol/L) and ketosis with ketones 6.5 mmol/L (<1.5). Blood glucose was 7.7 mmol/L, lactate 1.4mmol/L (<2.0) and HbA1c 6.2%. Infectious screen was normal. Clozapine level was supratherapeutic 611ug/L (<600). Intravenous fluids were commenced for diagnosis of starvation ketosis. However after persistent ketosis, euglycaemic diabetic ketoacidosis was diagnosed, insulin dextrose infusion was commenced, and clozapine and metformin were withheld. Though ketosis improved, CTG became abnormal with no variability or accelerations. The woman underwent emergency caesarean section with no steroid cover and a live 2805g neonate was born in poor condition requiring resuscitation and respiratory support. She recovered well with cessation of the insulin infusion day one postoperatively and clozapine subsequently restarted. Post-partum glucose tolerance test was positive for diabetes and pancreatic autoantibodies for Type-1-diabetes-mellitus were negative.

Discussion: In this case, euglycaemic diabetic ketoacidosis (DKA) is the likely diagnosis with pregnancy, clozapine and reduced oral intake or infection being contributing factors. Pregnancy is associated with maternal insulin resistance and ketogenesis, progressively worsening in third trimester. DKA in pregnancy has high maternal and fetal morbidity and mortality (15% fetal mortality, 46% preterm birth)[1]. Clozapine and second generation antipsychotics can produce insulin resistance and have been associated with DKA outside pregnancy[2]. Starvation and illness can also exacerbate ketosis.

Conclusion: It is imperative that metabolic acidosis in pregnancy is investigated and managed promptly as recognition of euglycaemic DKA is vital due to the risk of maternal and fetal morbidity. Further, clozapine therapy in pregnancy warrants close observation particularly in the setting of diabetes due to the potential risk of DKA.

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When simple remedies go wrong- a rare case of severe hypercalcaemia in pregnancy

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Milk-alkali syndrome is a rare cause of hypercalcaemia characterised by the triad of hypercalcaemia, metabolic alkalosis and renal insuffiency associated with the ingestion of calcium and absorbable alkali. It is an uncommon cause of severe hypercalcaemia in pregnancy, with less than 10 cases reported in the literature. [1,2]

We report the case of a 33-year-old primigravida who presented at 33+1/40 with a 1-week history of nausea, vomiting, severely reduced oral intake, epigastric pain, reflux and constipation. Her initial bloods showed severe hypercalcaemia (corrected calcium of 3.60mmol/L), an acute kidney injury (Cr 99umol/L) and a metabolic alkalosis (pH 7.64, pCO2 39mmHg, bicarbonate of 41mmol/L). Hypochloraemia,

hypomagnesaemia and hypokalaemia were present. She had a normal calcium level a few months prior. Her background is significant for class II obesity (BMI 35.0) and gastro-oesophageal reflux disease with worsening symptoms throughout her pregnancy, particularly in the days leading to her admission. She has no history of pancreatitis, fractures, or renal calculi. There was no family history of hypercalcaemia. Her medications included pantoprazole 40mg per day and ondansetron 4mg PRN. Further history revealed the consumption of 1-1.5 litres of milk and 8-10 tablets per day of the antacid Rennie. Each tablet contains 680mg of calcium carbonate resulting in a daily intake of elemental calcium between 3,800 and 4,300mg. Subsequent investigations revealed a low but not suppressed PTH (1.3pmol/L). Her serum ACE was normal. Her 1,25 hydroxyvitamin D was low at 27g/L. Her hypercalcaemia resolved with intravenous fluids and cessation of antacids. Her electrolytes were replaced. Her corrected calcium remained normal 1 week following her discharge from hospital.

This case highlights the potential harm of using excessive doses of over-the-counter calcium containing antacids in women who suffer from reflux in their pregnancy.

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GDM and the COVID-19 pandemic – An audit of pregnancy outcomes

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Background: During the COVID-19 pandemic, the model of care for Gestational Diabetes (GDM) management at Bankstown-Lidcombe Hospital was adapted to include telehealth consultations to minimise unnecessary face to face interactions and mitigate contagion risk.

Aim: Assessment of pregnancy outcomes before and during the COVID-19 pandemic.

Methods: We analysed prospectively collected data of singleton GDM pregnancies (IADPSG/WHO2013 criteria). The pre-COVID period defined as March 2016-February 2020 and COVID period from March 2020-March 2021.

Baseline characteristics evaluated included age, ethnicity, pre-pregnancy BMI, gestational age at GDM diagnosis, diagnosis of GDM<20 weeks, HbA1c and 75g OGTT result. Outcomes assessed were need for insulin therapy, number of medical reviews, incidence of excessive weight gain(EGWG) during pregnancy(per IOM), pre-term delivery(<37 weeks) and caesarean section. Neonatal outcomes included infant gender, birthweight, small(SGA, <10th percentile) and large for gestational age(LGA, >90th percentile), shoulder dystocia, neonatal hypoglycaemia and jaundice. Independent sample t-tests and Chi-square/Fisher's exact tests were used for continuous and categorical data respectively. P<0.05 indicated statistical significance.

Results:

1896 GDM women were included in this study, 292(15.4%) during COVID and 1604(84.6%) pre-COVID. During COVID, there was lower mean 1hr glucose(p<0.0001), 2hr glucose(p<0.001), HbA1c(p<0.001), later diagnosis of GDM(p<0.001) and a lower proportion diagnosed before 20 weeks(p<0.05) compared to pre-COVID. There were no other differences in baseline characteristics.

During the COVID period, there were similar rates of insulin use(48.6vs43.0%), number of medical reviews(7.0vs6.9 episodes), rates of EGWG(39.4vs36.0%), pre-term delivery(6.2vs 6.1), caesarean section(37.0vs34.6%), SGA(8.6vs8.4%), LGA(14.4vs11.4%), shoulder dystocia(1.0vs0.2%), neonatal hypoglycaemia(9.2vs10.2%) and neonatal jaundice (3.8vs5.0%) compared to pre-COVID(all outcomes, p=NS)

Conclusions: Increased use of teleconferencing during the initial 12 months of the COVID pandemic lead to similar pregnancy outcomes compared to the pre-COVID period. A model of care involving teleconferencing is likely to be retained as the "new-normal" in a post-COVID world. Future audits will ascertain whether comparable outcomes are maintained.

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A retrospective study on patient factors in the choice between metformin and insulin for gestational diabetes

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Introduction

The use of metformin in the management of gestational diabetes mellitus (GDM) is increasing in Australia. After failing lifestyle therapy, women are often given the initial choice of metformin or insulin. We explore the characteristics of women who choose metformin compared to women who choose insulin therapy in a culturally and linguistically diverse population in Sydney, Australia

Objective

To investigate patient factors in the choice of metformin or insulin in gestational diabetes

Method

We conducted a retrospective study of singleton pregnancies delivered between 2016-2018 at Liverpool Hospital, Sydney, Australia that were complicated by gestational diabetes and who were unable to be managed on medical nutritional therapy alone. The women were given the choice of either metformin or insulin as initial pharmacologic management. Characteristics and pregnancy outcomes of each group were analysed using Chi-square and T-test.

Results

Six hundred and eighty-two women initially chose insulin compared to 263 who chose metformin. Of the 263 women who chose metformin, 75% (n=193) of them were younger than 35 years of age compared to 64% (n=432) of the insulin group (p<0.0001). In addition, women who chose insulin were more likely to have had GDM in the past (32.2% compared to 23.6%, p=0.01) and/or prior exposure to insulin therapy (20.5% compared to 9.1%, p<0.0001). There were no significant differences in the body mass index, ethnicity, gestational weight gain and pregnancy outcomes between the two groups. In particular, the risk of birthweight below 2000g was not significant between metformin or insulin (0.6%compared to 2.2%, p=0.561).

Conclusion

This study reflects real life clinical practice where women were given a choice in managing their gestational diabetes. The study helps characterise the women who are more likely to choose one therapy over the other with the metformin group more likely to be younger with no prior history of GDM or exposure to insulin administration. There were no significant differences in pregnancy outcomes between metformin or insulin, and the risk of birthweight below 2000gwas not significantly different between the 2 groups.

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Impact of pre-gestational type 1 and 2 diabetes and obesity on perinatal outcomes: a 10-year retrospective cohort study

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BACKGROUND

Prevalence of pre-gestational type 2 diabetes mellitus (T2DM) is increasing due to increasing obesity rates, sedentary lifestyle and later child-bearing ages. We compared the perinatal outcomes of women with T2DM or type 1 diabetes mellitus (T1DM) to women without diabetes.

METHODS

A retrospective cohort study was conducted for all singleton births >20 weeks' gestation at Western Health in Melbourne, Australia from 2010-2019 including women with pre-gestational diabetes and without diabetes. The control group comprised of 2 consecutive women who birthed before and after each index T1DM or T2DM case. Antenatal and birth outcomes were extracted from Birth Outcomes Systems database. Analysis using t-tests, chi-squared, univariate and multivariate logistic regression were performed.

RESULTS

Women with T2DM (n=317) were older (T2DM vs. T1DM vs. control, 33.4 vs 29.7 vs 29.5 years, p<0.001), heavier (body mass index [BMI] 34.5 vs 26.8 and 25.4 kg/m^2, p<0.001), and more likely to be multiparous (75.4% vs 55.4% and 61.1%, p<0.001). When compared to their T1DM counterparts (n=92), those with T2DM had lower earliest and latest HbA1c levels (6.6% vs 7.8%, p<0.001 and 5.9% vs 6.9%, p<0.001).

Women with T2DM and T1DM compared to controls were more likely to have a large for gestational age (LGA) baby [T2DM: aOR (95%CI): 2.64 (1.82–3.82), (T1DM: 5.14 (3.01–8.79)], neonatal hypoglycaemia [T2DM: 9.32(5.96–16.2), T1DM: 27.7(15.6–49.3)], primary caesarean section [T2DM: 1.93 (1.43–2.61), T1DM 1.98 (1.17–3.34)] and perinatal death [T2DM: 17.5 (5.2–59.6), T1DM: 12.1 (2.1–67.0)] after adjusting for BMI. BMI was a significant contributor to LGA and neonatal hypoglycaemia outcomes.

CONCLUSION

Despite advancing technologies to improve glycaemic control, there is still a disparity in perinatal outcomes between women with T1DM and T2DM compared to women without diabetes. Further studies are required to examine factors contributing to higher perinatal mortality in women with pre-gestational diabetes.

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Perinatal and Child Factors mediate the association between Preeclampsia and Offspring School Performance

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Preeclampsia complicates 2-8% of all pregnancies and is a major cause of maternal and perinatal morbidity and mortality. It is thought that preeclampsia is adversely associated with long-term neurodevelopmental and cognitive outcome in the offspring. However, there are inconsistencies in the available epidemiologic evidence exploring the association between preeclampsia and long-term neurodevelopmental, behavioral and cognitive outcomes, with unmeasured or unrecognized confounders being a particular concern in the current literature. Therefore, the aim of this study was to investigate the association between preeclampsia diagnosed in pregnancy and subsequent impact on offspring school performance, taking into account important perinatal and child factors.

We performed a population-based cohort study using record linkage of state-wide data. We evaluated a total of 341,779 liveborn singleton children born at 28+ weeks gestation in New South Wales, Australia, who had Grade 3 record-linked education outcomes via the National Assessment Program – Literacy and Numeracy (NAPLAN) between 2009 to 2014. Of these, 22,657 (6.6%) were born to mothers with preeclampsia and were compared to those without in utero exposure. Robust multivariable Poisson models were used to determine adjusted relative risks.

Crude models demonstrated increased risk of scoring Below the National Minimal Standard in all five domains (reading, writing, spelling, grammar and punctuation, and numeracy) for children exposed to preeclampsia ranging from RR 1.13 (95%CI 1.04, 1.24) for reading to 1.19 (1.09,1.30) for numeracy. However, these differences were attenuated once adjusted for perinatal and child factors, with gestational age at birth being the most important perinatal factor, followed by small for gestational age. The poorer educational performance experienced by children born to women with preeclampsia appears largely attributable to perinatal and childhood factors, suggesting an opportunity to improve school performance in children exposed to preeclampsia by optimising these perinatal factors, in particular, gestational age at birth.

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Influence of aspirin on obstetric outcomes in women with pre-gestational diabetes: A South Western Sydney cohort study.

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Background

Women with pre-gestational diabetes mellitus (PGDM) are at an increased risk of preeclampsia. Initiation of prophylactic aspirin prior to 16 weeks of gestation in these women has been shown to reduce their risk of preeclampsia. Our study, aimed to investigate the influence of prophylactic aspirin on obstetric outcomes in women with PGDM.

Method

A retrospective audit of data from pregnant women with PGDM from 2 centres in South-Western Sydney from January 2005 to June 2020 was conducted. Data were obtained from a district wide electronic database, hospital medical records and partially prospectively collected data. The outcomes examined were preeclampsia, preterm delivery (less than 37 weeks) and newborn birth weight. Early preeclampsia was defined as less than 34 weeks and late pre-eclampsia was defined as 34 weeks or greater.

Results:

Of 494 women, 124(25%) had Type 1 DM and 52(11%) women were prescribed prophylactic aspirin before 16 weeks of gestation. The dose of aspirin most commonly taken was 150mg (50%).Women who were prescribed aspirin before 16 weeks of gestation were more likely to be taking calcium but did not otherwise significantly differ compared to women not taking aspirin. Preeclampsia overall developed in 57(12%) women and was early-onset preeclampsia in 24(5%) women. In the women prescribed aspirin, 8(15%) women developed preeclampsia compared to 49(11%) in those who were not prescribed aspirin(p=0.2). Aspirin use was not associated with a statistically significant difference in birth weight percentile (57vs 63, p=0.2). A higher number of preterm deliveries (21(41%) vs 97(23%) p<0.05) was observed in women who were prescribed aspirin. This was also observed post adjustment for age, primigravida and other comorbidities.

Conclusion.

This retrospective audit demonstrated a higher rate of preterm delivery in women with pre-gestational diabetes who were prescribed aspirin. There was no difference in the rate of preeclampsia and newborn birthweight.

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Metformin use in Gestational Diabetes Mellitus; A Tertiary Hospital Experience.

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Introduction: The use of metformin in the treatment of Gestational Diabetes Mellitus (GDM) is variable across Australia and worldwide. There is strong evidence that metformin is safe and efficacious during pregnancy in the short term[1]. During the COVID -19 pandemic, Fiona Stanley Hospital (FSH) offered pregnant women metformin as an alternative to insulin where clinically appropriate to reduce the need for face-to-face consultation and decrease the risk of infection.

Aim: The aim of this study was to describe the clinical characteristics of the women receiving different treatments, and assess the efficacy and safety of metformin therapy in women with GDM.

Method: We retrospectively analysed the medical records of 157 women with GDM requiring pharmacotherapy at our site over nine months. Women were allocated to four treatment groups: metformin monotherapy(Group A), Insulin monotherapy(Group B), metformin added to Insulin(Group C), Insulin added to metformin(Group D).

Results: There was no difference in the mean age and ethnicity of the four treatment groups. 83 women with GDM were treated with metformin monotherapy upfront during the study period. However, 39.6% of them needed addition of insulin to achieve glucose control. 66% of group A reached optimal blood sugar control with less than maximum dose. 13% of the women experienced gastrointestinal side effects, however, there were no unplanned reviews or unplanned admissions noted during the study period. This group was commenced on therapy later in the pregnancy and had a shorter mean treatment duration (6.42weeks) compared to other groups (11.16,11.58 and 14.62 weeks for Groups B, C and D respectively)

Group D were able to avoid insulin for a mean duration of 3.58 weeks when on metformin alone. Women commenced on insulin therapy upfront had higher Body Mass Index(BMI) and had previous history of GDM.

Among the four groups there were no significant difference in neonatal complications, birth weight and Neonatal Intensive care Unit(NICU) admissions. However, fewer maternity complications such as Antepartum Haemorrhage(APH) and Premature Rupture of Membranes(PROM)were noted in Group A compared to Group B.

Conclusions

Lower number of maternal complications were seen in metformin group. However, 39% of women treated with metformin-required addition of insulin treatment and 13% had gastrointestinal side effects.

Reference: **Metformin versus insulin for the treatment of gestational diabetes**

Rowan, Janet A ; Hague, William M ; Gao, Wanzhen ; Battin, Malcolm R ; Moore, M Peter

The New England journal of medicine, 08 May 2008, Vol.358(19), pp.2003-15

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Influence of tight blood pressure control in women with chronic hypertension on obstetric outcomes in women with pre-gestational diabetes: A South Western Sydney cohort study

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Background:

Hypertension is associated with poorer outcomes in pregnancy. There is conflicting evidence regarding the pregnancy effects of tighter blood pressure control in the first trimester. Our study aimed to investigate associations between tight blood pressure (BP) control and pregnancy outcomes in women with chronic hypertension and pre-gestational diabetes mellitus (PGDM).

Method

A retrospective audit of data from pregnant women with PGDM from 2 centres in South-Western Sydney from January 2005 to June 2020 was conducted. Data were obtained from a district wide electronic database and hospital medical records. Women with a history of chronic hypertension were identified from this cohort. Pregnancy outcomes examined were preeclampsia, preterm delivery (<37 weeks) and birthweight percentile in women with tight BP control (≤135/85mmHg) compared to those with less tight BP control in the first trimester (>135/85mmHg).

Results

There were 494 women in the cohort and 46 had a history of pre-pregnancy chronic hypertension. Tight Bp control in the first trimester was seen in 30(65.2%) women . There were no significant differences between tight and less tight BP groups in age, number of IVF pregnancies, smoking, pre-pregnancy ACE/ARB, calcium, and aspirin use. However, women with less tight BP control had a significantly higher body mass index(BMI). There was no significant difference between the groups in birth weight percentile (Mean:50(28)vs 46(27),p=0.69), preeclampsia (26.7% vs 12.5%,p=0.24) or preterm delivery (72% vs 77%,p=0.54). On multivariate analysis there was still no association between tight BP control and preterm delivery, preeclampsia rate and birthweight percentile after controlling for age, aspirin, calcium use and comorbidities.

Conclusion. In our study, first trimester tight BP control in women with PGDM and chronic hypertension was not associated with a change in birthweight percentile, or preterm delivery. A larger prospective study would help determine the effect of first trimester BP control on pregnancy outcomes.

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It's enough to make you sick: pregnant women are commonly denied medications to treat hyperemesis gravidarum

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Background: Severe nausea and vomiting of pregnancy (NVP) and hyperemesis gravidarum (HG) are serious complications associated with significant maternal/infant morbidity and mortality. Adequate treatment is critical for optimising maternal and infant health, but data on women's experience in managing their illness with medications is largely absent.

Methods: Online, national survey of women who are currently or have previously experienced severe NVP or HG, distributed through the HG consumer groups, Hyperemesis Australia. The survey was distributed between July and September 2020, with results collected and stored using REDCap.

Results: Among 249 respondents, 242 (97%) reporting taking one or more medications to treat NVP/HG. The majority of women (195; 78%) reported receiving a formal diagnosis of HG, with 163 (65%) being admitted to hospital on at least one occasion. Approximately one in four (n=68; 27%) women reported being denied a medication by a health care professional during pregnancy. Medications most commonly denied included doxylamine (n=45) and ondansetron (n=16) and involved interactions with pharmacists (n=44) and medical practitioners (n=19). Despite presenting a prescription, eight women reported pharmacist refusal to dispense doxylamine, ondansetron, or prednisolone. Reasons for denial included being told the medications were not recommended or safe for pregnant women, or that women were not sick enough to warrant the medication.

Conclusions: Approaches towards identifying and effectively addressing barriers to the provision of effective treatments for severe NVP and HG are urgently needed, including further studies evaluating health care professional attitudes towards recommending or prescribing medications**.**

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Predictors for insulin use in gestational diabetes mellitus

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Background: Gestational diabetes mellitus (GDM) affects about 15% of pregnancies in Australia, with approximately 30% of those diagnosed with GDM requiring insulin therapy for the treatment of maternal hyperglycaemia[1]. There are severe well known risk factors for developing GDM, but there remain limited studies which show how these can be used to predict need for insulin treatment in women.

Aims: To investigate predictors of insulin therapy in women diagnosed with GDM from an oral glucose tolerance test (OGTT) performed during pregnancy.

Materials and Methods: This is a retrospective cohort study of 2048 singleton pregnancies complicated by GDM between 2016-2017 at a single, large health network in Melbourne, Australia. Data was obtained from hospital record and pathology result systems. Univariable and multivariable logistic regression models were fit to the data to obtain crude and adjusted odds ratios.

Results: In total, 31.6% of women required insulin therapy during pregnancy. Those requiring insulin had a higher fasting and 1-hour OGTT result, and were more likely to be diagnosed from their fasting result. Independent predictors of insulin use included maternal age, body mass index (BMI), being born in the South Asia region, previous pregnancy complicated by GDM, previous birthweight of greater than 90th percentile and results from the OGTT. Smoking status, conception by in vitro fertilisation, pre-existing hypertension and being of Aboriginal and Torres Strait Island background were not found to be predictors in our model. The final predictive model had a an area under the receiver-operating characteristics (ROC) curve of 0.7442 (95% CI 0.720 to 0.767) .

Conclusions: This study highlights the possible predictors of insulin use in those diagnosed with GDM, informing counselling for women who are newly diagnosed with gestational diabetes.

[1] Australian Institute of Health and Welfare 2019. Incidence of gestational diabetes in Australia. Cat. No. CVD 85. Canberra: AIWH.

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Use, experiences and perceptions of medicines for treating severe nausea and vomiting of pregnancy or hyperemesis gravidarum: an Australian consumer survey

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Background: There is little data on contemporary patterns of antiemetic use or women's experiences when using such agents in the treatment of severe nausea and vomiting of pregnancy (NVP) or hyperemesis gravidarum (HG).

Methods: Online, national survey of Australian women who are currently or have previously experienced severe NVP or HG, distributed through the HG consumer group, Hyperemesis Australia between July and September 2020.

Results: There were a total of 326 respondents with a mean age of 33, of which 39% were currently pregnant. The most commonly used anti-emetic was ondansetron (81%), followed by pyridoxine (62%), doxylamine (62%), and metoclopramide (62%). Nearly all (95%) women who reported using ondansetron commenced it within the first trimester. More than half of respondents reported using ondansetron first-line. Most women reported one or more side effects to anti-emetics, with 1 in 3 women stopping metoclopramide because of side effects, compared with 15% for ondansetron and 11% for doxylamine. When rating perceived effectiveness on a Likert scale of 1 (being not very effective) to 5 (being very effective), ondansetron (mean 3.8 ± 1.0 standard deviation), corticosteroids (3.8 ± 1.3) and doxylamine (3.6 ± 1.2) were rated much higher than metoclopramide (2.3 ± 1.2). In assessing attitudes towards medication use during pregnancy, while the vast majority of women (77%) agreed that it is better for the fetus to use medicines and get well than to have an untreated illness, 44% mentioned using less medicine than needed due to being pregnant. Notably, nearly half (46%) respondents said that they had heard of the SOMANZ guidelines for treating NVP/HG (mainly through online support groups), with 56% saying that they reassured them of the safety of medicines.

Conclusions: The study findings demonstrate large variability in antiemetic use during pregnancy, with ondansetron appearing to be increasingly utilised as first-line agent.

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Diabetes of the exocrine pancreas in pregnancy: cases series of an emerging condition

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Background: Women with diseases of the exocrine pancreas are predisposed to insulin deficiency, presenting as diabetes of the exocrine pancreas (DEP).[1-3] Pregnancy can complicate management of pre-existing DEP or unmask diabetes (DM), which may be misinterpreted as uncomplicated gestational diabetes (GDM). We describe a large series of pregnant women with DEP or GDM on a background of disease of the exocrine pancreas.

Methods: An antenatal database search identified 11 consecutive patients managed through the tertiary centre at John Hunter Hospital, Newcastle from 2012-2021.

Outcomes: Mean age was 26.5 years and 8 were primipara (**Table**). All 11 women were insulin-treated during pregnancy, five were on insulin pre-conception including one via insulin pump. Two women with pre-existing DEP, not requiring insulin preconception, commenced insulin at week 8 of pregnancy. Four women were screened and diagnosed with GDM at weeks 12, 19, 28 and 28, and commenced insulin at week 24, 19, 30 and 31 of gestation respectively. One of these four women had a negative early screen at week 12, but required insulin following steroid use for exacerbation of cystic fibrosis. Pregnancy was complicated by pre-eclampsia in two women, and one developed ketosis requiring intravenous insulin. There was a significant rate of maternal hypoglycaemia (6/11), acute presentations requiring hospital admission (6/11) and early delivery (average 36.8 weeks). Post-partum, three neonates developed hypoglycaemia and one was diagnosed with respiratory distress syndrome.

Discussion: In the general population, DEP is more common than Type 1 DM, and confers a higher risk of sub-optimal glycaemic control compared to Type 2 DM despite a need for early insulin initiation.[4] DEP may be under-represented in our database due to misclassification.[2,4] Evidence to guide antenatal management is lacking, but women are at potential risk of complications. Early diabetes screening is recommended in women with diseases of the exocrine pancreas.

Table	Pre-existing DEP (n = 7)	Disease of the exocrine pancreas with GDM (n = 4)
Age (years)	26.9 ± 5.7	25.8 ± 3.3
Primipara	5	3
Duration of DEP (years)	8.6 ± 7.4	-
Aetiology		
Cystic fibrosis	5	2
Acute necrotising pancreatitis	1	0
Recurrent pancreatitis	0	2
Total Pancreatectomy	1	0
Pancreatic enzyme replacement	6	2
Pre-conception HbA1c	8.4%	-
Pre-conception insulin therapy	5 (71.4%)	-
Gestational age at screening and diagnosis	-	12 – 28 weeks
Gestational age at insulin therapy (women commencing insulin therapy)	8 weeks (2/2)	19 – 31 weeks (4/4)
Peak insulin dose, total units	41 ± 27.5	19.3 ± 16.8
Women requiring hospital admission prior to delivery (total number of admissions)	4 (6)	2 (3)
Episodes hypoglycaemia, documented <3.3mmol/l or with insulin reduction	4	2
Antenatal corticosteroid therapy	3	1
Intrapartum intravenous insulin infusion	4	2
Gestation at delivery, weeks	36.6 ± 2.3	37.3 ± 2.0
Birth weight, g (IQR)	3183 (2960 – 3660)	2707 (2210 – 3460)

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Virtual education for Gestational diabetes mellitus during COVID-19 2020

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In 2020, with the emergence of COVID-19 pandemic and uncertainty of routine clinical care, urgent review and changes to clinical services to women with gestational diabetes mellitus (GDM) was necessitated at the JMDC. The pandemic accelerated the use of digital platforms replacing face to face education. With limited options for face to face education, a decisive quality activity resulted in development of virtual and remote education using telehealth for GDM education for blood glucose monitoring (BGL) and healthy eating.

With reference to existing practices, a flowchart was developed and revised based on Public Health advise for physical distancing and feedback from the multidisciplinary diabetes team. An education pack was created with relevant resources and patients were emailed video links explaining GDM and its management to view prior to a scheduled telehealth appointment. A demonstrative video was created for use and management of insulin during GDM. For non English speaking women with GDM, physical distance guidelines were followed for face to face education.

The virtual education via telehealth process highlighted disparities for both, clinical staff and patients with access and skills in the use of technology for education and ongoing management. It also demonstrated the financial, emotional and medical impact of the pandemic on GDM management.

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Maternal Bradycardia in a patient with preeclampsia and HELLP syndrome

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Case summary: We report a case of maternal bradycardia in a 34 year old primigravida patient with preeclampsia associated with haemolysis, elevated liver enzymes and low platelet count (HELLP) syndrome at 30^{+4} gestation. The woman's blood pressure, liver function tests and platelets initially improved following betamethasone therapy. Forty-eight hours following the second dose of betamethasone the patient complained of severe epigastric pain accompanied by abrupt fall in pulse rate from 85 to 40 beats per minute (bpm), worsening of hypertension, liver enzymes and platelet count. Electrocardiography revealed sinus bradycardia but was otherwise normal. Serum potassium, thyroid function and high sensitivity troponin were also unremarkable. The woman proceeded to have an urgent caesarean section delivering a live male of birthweight 1248g. Postpartum, in recovery, the woman's pulse had risen to 60 bpm and epigastric pain resolved. Transthoracic echocardiography was normal.

Discussion: Preeclampsia is a pregnancy specific syndrome which can affect multiple organs, including alterations in cardiovascular haemodynamics. Transient maternal bradycardia with preeclampsia and HELLP syndrome has been previously described in several case studies [1–4]. The pathophysiology of this is not understood, but postulated mechanisms include impaired cardiopulmonary baroreflex, increased vagal tone due to elevated levels of proinflammatory cytokines, and disturbance in the autonomic control of heart rate.[5]. Maternal bradycardia may be a sign of severe preeclampsia.

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Bilateral subchondral insufficiency fractures of the femoral head in a postpartum woman who presents with pregnancy and lactation associated osteoporosis

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Case description: A 40-year-old gravida 2 para 1 woman presented with atraumatic pain in her left hip and right mid foot seven days postpartum on the background of a previous subchondral insufficiency fracture (SIF) of the right femoral head diagnosed in second trimester of her pregnancy and was managed conservatively with non-weight bearing. Her medical history included previous stress fracture of the right hip in 2012. Magnetic resonance imaging (MRI) demonstrated a nondisplaced subchondral insufficiency fracture of the left femoral head with bone marrow oedema and a possible early stress fracture of the right fifth metatarsal bone. Bone mineral density (BMD) demonstrated low Z scores (Lumbar spine -1.3, Right femoral neck -2.1, left femoral neck -1.3). Screen for secondary causes of osteoporosis was unremarkable. A diagnosis of pregnancy and lactation associated osteoporosis (PLO) was made. The patient was managed conservatively with no weight bearing on her left hip. Follow up at six months postpartum showed complete resolution of her symptoms.

Discussion: PLO is a rare condition in pregnant and postpartum women and is infrequently associated with fragility fractures in sites such as the vertebrae, hips, ankle or wrist [1–4]. Its pathophysiology is poorly defined. The involvement of multiple fracture sites in our patient suggest a global process. Diagnosis is often challenging as presentation with pelvic and hip pain in pregnancy are common and often attributed to soft tissue injury, arthritic pain or symphysis pubis dysfunction. MRI is the gold standard diagnostic method. Management includes conservative approaches such as non/reduced weight bearing with regular analgesia during pregnancy, bisphosphonate therapy postpartum and surgical interventions such as reduction and internal fixation of fracture or arthroplasty.

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Reduced placental stress-response gene expression in gestational diabetic pregnancies treated with medication compared to pregnancies treated with diet alone

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Gestational diabetes (GDM) poses an immediate threat to thousands of pregnancies, and affects the ongoing health of mothers and babies. GDM may be controlled with diet, but requires medication if symptoms are severe; however, what leads to severe GDM in some at risk women but not others is unclear. The placenta is critical to maternal insulin resistance, and placental response to stress may have a role in GDM.

Aim: Determine if placental expression of stress-response related genes is altered in GDM compared to healthy pregnancies, and is distinct between mild (diet treated) and severe (medication treated) GDM pregnancies.

Placentae were collected from control (no complications), GDM diet treated (GDMD), and GDM medication treated (GDMM) pregnancies. Groups were matched for delivery mode, maternal age, maternal BMI, infant sex (male infants), and infant weight. Expression of 239 genes was measured by qPCR. Fold regulation of ±1.5 with a p-value (t-test) of ≤0.05 in any comparison (control vs. GDMD, control vs. GDMM, GDMD vs. GDMM) was considered potentially biologically meaningful.

Twenty genes had potentially biologically meaningful changes. Eight genes (HSPA12A, DNAJB6, DNAJB5, GPX1, CYP4B1, GPX2, CYP2F1, XDH) were down-regulated and four genes (PTGS2, PRDX6, DUSP1, VIMP) were up-regulated in GDM compared to control. Eight genes (CYP2C19, CYP2C9, HMOX1, ACADSB, FMO4, CAT, CRYAA, HSPD1) were up-regulated in GDMD but down-regulated in GDMM.

Genes altered in placentae from GDM compared to control pregnancies may have roles in GDM aetiology and pathophysiology. Genes with different expression between GDM groups (GDMD vs. GDMM) may represent a response to medication in the GDMM group. Alternatively, cellular stress may lead to an increased gene expression response to maintain cellular homeostasis in less severe GDMD that is not present in the more severe GDMM. Therefore, gene changes may represent a more successful adaptation to stress in GDMD compared to GDMM.

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Perinatal outcomes in women with gestational diabetes mellitus managed with diet alone versus insulin

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Background:

Gestational diabetes mellitus (GDM) is a major cause of adverse pregnancy and neonatal outcomes (1). Strict glycaemic control throughout pregnancy is an effective method to manage these adverse outcomes (2,3).

Objective:

To evaluate maternal characteristics and perinatal outcomes of pregnancies affected by GDM managed with diet alone versus requiring insulin.

Methods:

Retrospective analysis of women with GDM between January 2018 and December 2019 at Royal Women's Hospital, Victoria using medical records.

Results:

Over two years, 1748 women were diagnosed with GDM of whom 721 (41.25%) were managed with dietary changes alone and 1027 (58.75%) required additional insulin.

Maternal age was higher in women managed with diet (35.40 years vs 32.85 years, p<0.001). Maternal BMI was higher in women requiring insulin (29.22 kg/m^2 vs. 26.37 kg/m^2, p<0.001).

The occurrence of pregnancy-induced hypertension, pre-eclampsia and eclampsia were similar.

Women requiring insulin had higher rates of labour induction (55.0% vs. 41.2%, p<0.001) and elective caesarean sections (26.5% vs. 20.5%, p=0.005). Furthermore, infants of those requiring insulin demonstrated higher rates of large for gestational age (LGA) (2.8% vs. 1.1%, p=0.022) and macrosomia (3.6% vs 1.5%, p=0.014). However, gestational age at the time of induction was similar (38 weeks).

There were no significant differences in neonatal complications (Apgar scores, birth trauma, hypoglycaemia, small for gestational age, fetal growth restriction, admission to special care nursery, mortality). However, the rate of premature births was higher in women managed by diet alone (4.0% vs 2.1%, p=0.031).

Conclusions:

This study demonstrated rates of LGA, macrosomia, induction of labour and elective caesarean sections remained higher in women with GDM managed with insulin compared to diet alone, although no significant differences in neonatal complications were observed.

Pregnancies affected by GDM remain high-risk and require prospective studies to explore further interventions to improve pregnancy and neonatal outcomes in the GDM population.

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Finding a way forward- Obstetrician led pathway for women with gestational diabetes

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The model of care at Counties Manukau Diabetes in Pregnancy service is set up to offer equal access & care to women with GDM, T1 & T2 Diabetes although the patient risk is variable depending on diabetes type. This model of care is not sustainable in its current form. We see an average of a 1000 women every year.There is limited number of Physician FTE available to meet patient demand and a high proportion of time was spent on women with lower risk GDM.

An initiative called the OLGDM pathway (obstetrician led gestational diabetes management)was launched to re-prioritise resources to cope with the increasingly overburdened DiP(Diabetes In Pregnancy) service, allowing all patients to be seen and managed in a timely manner without subjecting patients to the high probability of prolonged waiting times during clinic days, resulting from the unavoidable high patient-to-endocrinologist ratio per booked clinic session. This pathway was written so that Patients receiving initial care under the OLG pathway would not be disadvantaged in any way and importantly, any patient who develops (or after initial assessment, be deemed to have) an indication to move across to usual care , can be transferred across seamlessly as indicated.

This was started in Sept 2020. Since then the demand for clinic now meets the need, there are shorter waiting times for women, physicians are able to see the higher risk women in a more timely manner and patient satisfaction with the clinic is improved.

An OLGDM guideline and pathway document was written to start this process. The referrals are triaged based on this and the initial appointment is made for obstetrician only. Training, teaching and mentoring is provided to enable obstetricians and trainees to up skill in the management of gestational diabetes including starting and titrating Metformin and starting Insulin during pregnancy when indicated.

The benefits have translated to improved confidence in Obstetricians and trainee obstetricians who are then able to use this knowledge when seeing women as inpatients and in labour and post partum.

With the population rates of diabetes and prediabetes in the predominantly Pacifika, Maori and Indian population in our catchment area it has become apparent that all clinicians need to feel comfortable in the management of diabetes in pregnancy rather than a select few. Novel models of care are needed to meet growing needs and this is one of them.

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Familial hypocalciuric hypercalcaemia in pregnancy

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Familial hypocalciuric hypercalcaemia (FHH) is an autosomal dominant condition characterised by chronic mild hypercalcaemia in association with hypocalciuria, hypermagnesaemia, and normal to mildly elevated parathyroid hormone (PTH) levels. It is caused by a mutation in the calcium sensing receptor (CASR) gene and tends to have familial association. The measurement of a 24-hour urinary calcium-to-creatinine clearance ratio (CCCR) can be used to help distinguish FHH, with confirmatory genetic testing available. Typically, patients remain asymptomatic through their lifetime and do not develop significant complications. There is no specific treatment for FHH.

During pregnancy, the most common cause of hypercalcaemia is primary hyperparathyroidism (PHPT). It is important to recognise and identify the presence of PHPT as it can be associated with miscarriage, intrauterine growth restriction, pre-eclampsia, pancreatitis and hypercalcaemic crisis. Definitive treatment of PHPT is parathyroidectomy, which is preferentially performed in the second trimester.

The assessment of hypercalcaemia during pregnancy can be complicated by physiological changes. Dilutional hypoalbuminaemia leads to reduced total calcium levels, and ionised calcium is therefore the preferred measurement in pregnancy. Hypercalciuria is also seen in pregnancy as a result of increased intestinal calcium absorption (absorptive hypercalciuria), which makes the interpretation of urinary CCCR difficult.

There are currently few case reports of FHH in pregnancy in the literature. My poster will focus on differentiating FHH and PHPT in pregnancy, and examine a case series of pregnancies in Queensland women with FHH (who have had confirmatory CASR gene testing) to investigate maternal and neonatal outcomes and compare these to women with PHPT.

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Ovarian torsion in pregnancy: a case report

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Ovarian torsion is a rare but serious complication of pregnancy, with an incidence of approximately 1-5: 10000 pregnancies. Here we present a case of ovarian torsion in pregnancy in a 35-year-old multigravida who presented at 16-weeks gestation with acute onset left iliac fossa pain and 1 episode of vomiting on the background of normal dating and first trimester screening ultrasounds with no ovarian abnormalities noted. On review, she was haemodynamically stable, not peritonitic, had a closed cervix on speculum exam, a fetal heart rate of 150bpm, and normal bloods. Transabdominal ultrasound revealed a single live pregnancy with a 12cm left ovarian dermoid cyst with very poor vascularity signal suggestive of ovarian torsion. She underwent an emergency laparotomy and left ovarian cystectomy with preservation of the left ovary. Histopathology confirmed a mature cystic teratoma, and tumour markers were normal. She proceeded to deliver a healthy full-term infant via elective caesarean section for breech presentation. As this case demonstrates, diagnosis of ovarian torsion can be challenging due to the non-specific clinical features, and the enlarged gravid uterus may limit ultrasound evaluation of the ovaries during obstetric ultrasounds. Ovarian torsion in pregnancy represents a surgical emergency, with prompt diagnosis and management important for maternal and fetal wellbeing, and it should be considered in the differential diagnosis of pregnant patients presenting with acute abdominal pain. Laparotomy is the most common treatment of ovarian torsion, and postoperative complications are uncommon.

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Acute Pancreatitis caused by Hypertriglyceridemia in Pregnancy: a multidisciplinary approach to management

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Background: Severe hypertriglyceridemia in pregnancy is a rare but potentially life-threatening entity through precipitating acute pancreatitis, hyperviscosity syndrome and/or pre-eclampsia. Triglycerides and total cholesterol increase in the third trimester in response to changes in levels of oestrogen, progesterone and human placental lactogen. This can exacerbate any pre-existing abnormalities of lipid metabolism.

Case: A 31yo lady, G2P0, with unremarkable personal or family history, presented with acute pancreatitis at 26/40. Triglycerides were grossly elevated at 87.3mmol (NR <2.5mmol/L). The patient was managed with an insulin-dextrose infusion, gemfibrozil 600mg twice a day (TGA category B3), fish oil 9g, and a low-fat moderate carbohydrate diet sufficient for the nutritional requirements of pregnancy. She was discharged when triglyceride levels were 9mmol/L then monitored with weekly lipid profile and clinical review. A pre-emptive plan for plasmapheresis was developed for consideration if triglycerides again rose above 20mmol/L. Growth scans were reassuring. Despite treatment, triglycerides rose to 14 mmol/L at 35+4/40. Induction was performed at 37+1 weeks. The baby was healthy weighing 3325g with Apgar scores of 9, 9. Genetic test results for hypertriglyceridemia associated mutations are pending.

Discussion: Severe gestational hypertriglyceridaemia is associated with significant risk of adverse fetal and maternal adverse outcomes. In this case, an insulin-dextrose infusion was effective as the mainstay of acute therapy. Dietary measures, fish oil and gemfibrozil were successful in managing the patient to term with no noted ill-effects on the fetus. Plasmapheresis is beneficial in refractory cases of hypertriglyceridaemia but was not required in our case. A multidisciplinary approach including endocrinologists, obstetricians, dieticians and haematologists assisted to achieve a successful outcome. Further research is required to determine optimal evidence-based screening, treatment and prevention. Genetic testing provides an opportunity to look for underlying defects and thus plan care for future pregnancies and screening of family members.

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Medical management of primary hyperparathyroidism in the third trimester of pregnancy: a case report

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BACKGROUND

Primary hyperparathyroidism during pregnancy is a rare condition with increased maternal and fetal risks. We report a case diagnosed at 33 weeks gestation that was managed conservatively.

CASE PRESENTATION

A 26-year-old primiparous woman was incidentally found to have a probable parathyroid adenoma on ultrasound at 33 weeks gestation, which had been performed to investigate a goitre and subclinical hyperthyroidism. She had asymptomatic hypercalcaemia, with a corrected calcium of 2.90mmol/L (albumin 29g/L, total calcium 2.64mmol/L, normal range 2.15–2.65mmol/L). Her ionised calcium and parathyroid hormone were also elevated (1.44mmol/L [1.15-1.29mmol/L], 14.8pmol/L [2.0-8.5pmol/L]). She had no family history of hypercalcaemia, hyperparathyroidism or related syndromes. Medications included cholecalciferol 2000 units/day for vitamin D deficiency (49nmol/L) and a pregnancy multivitamin.

The patient was initially managed with oral hydration as an outpatient for two weeks. At 35 weeks gestation, she was admitted due to increasing fatigue, polyuria, polydipsia (>4L/day) and persistent hypercalcaemia (correct calcium 2.86mmol/L), for intravenous and oral hydration. Intravenous saline (3L/day) in addition to oral intake (2L/day) failed to improve her ionised calcium and therefore furosemide 40mg BD was commenced on day 3 of admission, with near-normalisation of calcium levels (ionised calcium 1.31 mmol/L). Although the patient developed peripheral oedema, she did not develop hypertension, pre-eclampsia or pulmonary oedema, and will have induction-of-labour at 37 weeks with postpartum neonatal assessment for hypocalcaemia.

DISCUSSION

Primary hyperparathyroidism in pregnancy has been associated with a 3.5-fold risk of miscarriage in the first and second trimesters[1]. Parathyroid surgery is recommended in the second trimester; there is no consensus on surgery in the third trimester. Pre-eclampsia occurs in up to 30% of medically managed cases, and severe neonatal hypocalcaemia has been reported[2]. Our case is notable for the significant improvement in calcium following furosemide administration, a loop diuretic that inhibits renal paracellular reabsorption of calcium.

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Continuous Glucose Monitoring: A Cost Effective tool to reduce Pre-term Birth in women with Type 1 Diabetes.

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Objective: To investigate the cost effectiveness of continuous glucose monitoring (CGM) when compared to self-monitoring of blood glucose (SMBG) in preventing perinatal complications in women with type 1 diabetes during pregnancy.

Methods: This retrospective matched cohort study included women with type 1 diabetes referred to a state-wide tertiary obstetric centre before and after the introduction of government funded CGM in March 2019. Women using CGM were matched in a 1:1 ratio various patient characteristics with a cohort of women with type 1 diabetes who exclusively used SMBG and delivered prior to March 2019. Data regarding glycaemic control during pregnancy and pregnancy outcomes was collected by auditing medical records and standardised cost data was used to quantify cost effectiveness.

Results: A total of 98 women were included in the study, 49 who self-monitored blood glucose and 49 who used CGM throughout pregnancy. We observed a significant reduction in pre-term (RR 0.600; 95% CI 0.39 – 0.922; p=0.026) and very pre-term birth rates (RR – inverse 1.089; 95% CI 1.002-1.184; p=0.041) in the CGM group. There was a significant reduction in length of maternal antenatal inpatient hospital stay (p<0.01) and Adult Special Care Unit stay (p=0.013) and NICU admission (p=0.0262) in the continuous glucose monitoring group when compared to the self-monitoring group. Continuous glucose monitors represented a net cost saving to the health care sector of $12 063 per pregnancy where the device was used. When only accounting for the cost of devices, we calculated an incremental cost effectiveness ratio of $2185 per pre-term birth prevented.

Conclusions: Continuous glucose monitor use in pregnancy is a cost effective intervention for reducing the risk of pre-term birth in women with type 1 diabetes. As well as improving pregnancy outcomes, continuous glucose monitoring results in a net cost benefit to the health sector when compared to self-monitoring of blood glucose

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Severe hyperemesis gravidarum resulting in concealed miscarriage and Wernicke's encephalopathy

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Wernicke's encephalopathy (WE) is a serious neurological syndrome caused by severe thiamine (vitamin B1) deficiency. In pregnancy thiamine requirements are increased. If the pregnancy is complicated by hyperemesis gravidarum (HG), thiamine rapidly depletes. WE is a rare but known complication of severe HG and in non-alcoholic patients the prevalence ranges from 0.04% to 0.13%.[1] Its acute recognition and treatment are crucial to prevent long-term neurological sequelae or death.

We report the case of a 36-year-old G3P at 16+1 weeks of gestation, who presented to emergency with intractable nausea and vomiting, decreased oral intake for 11 weeks and progressive inability to mobilise. Her presentation was complicated by a concealed miscarriage

concordant with 14 weeks gestation. Investigations showed severe micro and macro nutritional deficiencies from HG associated with 24kg weight loss, microcytic anaemia (Hb 102 g/L, MCV 59fL), hypokalaemia (2.2 mmol/L), hypercalcaemia (2.75 mmol/L corrected), hypo-albuminaemia (22 g/L), TSH < 0.02 and Free T4 of 22. On assessment she was confused and slow to respond. Examination revealed mouth ulcers, oculomotor abnormalities including nystagmus and ataxia. She was in urinary retention and suffering from severe constipation.

The patient was treated symptomatically with antiemetics, intravenous fluids, thiamine, electrolyte and multi-vitamin replacement. Induction of labour for miscarriage was completed post stabilisation on day 4 of admission with mifepristone and misoprostol. An MRI brain showed T2 hyperintensity involving posteromedial aspects of the thalami bilaterally without significant associated mass effect. She was monitored closely for refeeding syndrome and did not require total parenteral nutrition (TPN).

She was managed via a multi-disciplinary team approach and remained in hospital for over three weeks and subsequently discharged to a private hospital for ongoing rehabilitation and strengthening.

This case highlights the importance of early diagnosis and treatment of WE in pregnancy and demonstrates the importance of a multi-disciplinary approach in managing such complex patients.

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Success rates of epidural extension in emergency caesarean section at a tertiary referral hospital

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Background

Epidural extension for caesarean section (CS) is anaesthetic technique used at Royal Brisbane and Women's Hospital (RBWH). We aimed to review the success rate of epidural extension for emergency CS and compare the results with a cohort audited in 2013, prior to implementation of an institutional guideline.

Methods

Ethics exemption was obtained. Data was obtained from the Anaesthesia Benchmarking System Database and the electronic medical record. Information collected included: patient characteristics, mode of delivery, urgency of the CS, epidural drugs and volumes, requirement for general anaesthesia (GA) and reasons for conversion to GA. Successful epidural extension was defined as completion of caesarean section under epidural anaesthesia with no intraoperative conversion to GA. Chi-square test was used to compare success before and after the guideline.

Results

One hundred and seventy-eight women had an epidural and proceeded to Category 1 or 2 CS between July and December 2020. Their mean (SD) age was 31 (4.9) years and 154 (87%) were nulliparous. Successful epidural extension was achieved in 165 patients (92.6%). Epidural extension failed in 4 of 14 Category 1 (29%) and 9 of 164 Category 2 cases (6%). Lignocaine was the most commonly-used local anaesthetic (156, 87%), followed by ropivacaine (14, 7%). The median (IQR) volume of local anaesthetic for top-up was 20ml (16.5-22.0). In the 2013 cohort, 132 women had an epidural inserted and 122 (92%) had successful epidural extension for CS. The median (IQR) volume of local anaesthetic used in 2013 was 15ml (10-20). There was no significant difference between epidural extension before and after guideline implementation. (p = 0.93).

Conclusion

Epidural extension success at RBWH has changed following introduction of an institutional guideline, however the median volume of local anaesthetic used has increased. Extension failure was more common in Category 1 CS.

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Spontaneous heterotopic pregnancy with subsequent ruptured ectopic pregnancy: a case study

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Heterotopic pregnancy is an uncommon and potentially life-threatening condition in which there is simultaneous occurrence of intrauterine and ectopic pregnancies. It has an incidence of approximately 1:3900 pregnancies, occurring in only 1:30000 spontaneous pregnancies. Here, we present a rare case of spontaneous heterotopic pregnancy in a 34-year-old primiparous woman who was brought in by ambulance to the emergency department following collapse at 20+1 weeks gestation after normal first trimester screening and morphology scan. She was haemodynamically unstable and fetal heart rate was 60bpm. Initial resuscitation included transfusion of 2 units packed red blood cells and 1g intravenous tranexamic acid. Bedside ultrasound revealed evidence of approximately 1000ml clot in the right upper quadrant. She underwent a diagnostic laparoscopy and washout, which proceeded to a midline exploratory laparotomy. This revealed a 2.6L haemoperitoneum and query right ectopic pregnancy with calcified areas and clot, with no other cause of bleeding identified. Right salpingectomy was performed, and pathology later confirmed ectopic pregnancy. The intrauterine pregnancy had no complications, and she delivered a healthy full-term baby. This case demonstrates that ultrasound confirmation of intrauterine pregnancy does not exclude coexisting ectopic pregnancy. Heterotopic pregnancy should be considered in any pregnant woman presenting with abdominal pain or signs of haemorrhagic shock, as prompt diagnosis and treatment is essential to minimise foetal and maternal morbidity and mortality.

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Spinal epidural abscess in pregnancy: a case report

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Introduction

Spinal epidural abscesses (SEA) are frequently misdiagnosed and the delays in diagnosis can result in significant morbidity and mortality.1 There are very few cases reported in pregnancy. We present a case of a multiparous 34-year-old woman with a complex medical and obstetric background with an SEA.

Case

A 34-year-old G6P2+1 with an obstetric history of one vaginal delivery, one elective caesarean for DCDA twins and three elective terminations presented to the Emergency Department at 30 weeks gestation with severe back pain radiating through her chest with pleuritic pain, tachycardia, fever and hypertension with an elevated white cell count ($18.6x10^9$/L) and CRP (103.9mg/L) . Her medical history included previous intravenous drug use, Hepatitis C, fatty liver disease, systemic lupus erythematosis and recent methicillin-sensitive staphylococcus aureus (MSSA) infective endocarditis with cardiomyopathy. She was treated presumptively for sepsis of unknown origin and pulmonary embolism (PE) and transferred to ICU.

VQ scan was negative for PE. MRI 4 days from admission showed posterior epidural abscess at T2-T4 level with moderate spinal canal stenosis, left T3-T4 facet joint effusion consistent with septic arthritis and adjacent soft tissue inflammation. Transoesophageal echo showed moderate LV dysfunction and incidental cephalic and internal jugular vein thrombus but did not demonstrate endocarditis. Microbiological investigations indicated an MSSA bacteraemia.

Dental assessment demonstrated grossly carious dentition. Five teeth were extracted and she was treated with 6 weeks of IV flucloxacillin and therapeutic enoxaparin and responded well. Repeat imaging showed complete resolution of the SEA and associated septic arthritis.

Elective repeat caesarean section with bilateral salpingectomy was carried out at 38+5 weeks, a male infant (2963g, 21st centile) was delivered. She was discharged on 6 weeks of oral flucloxacillin with infectious diseases follow-up, and on 12 weeks of therapeutic enoxaparin.

Discussion

This case emphasises the complexity of diagnosis of SEA in pregnancy particularly in women with multiple confounding medical comorbidities. Pregnancy may delay a diagnosis but the physiological changes may result in more complications than non- pregnant SEA.

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Per rectum bleeding in third trimester: a case report on colorectal cancer in a young woman

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Introduction

Colorectal cancer was, in 2020, the third most prevalent cancer worldwide, the second leading cause of cancer death[1] and accounted for 11% of cancer diagnoses and deaths in Australia.[2] Haemorrhoidal bleeding is not uncommon in pregnancy. We present a case of a 29-year-old multiparous woman who presented at 35+4 weeks gestation with rectal bleeding.

Case

A 29 year old female in her third trimester presented with 4 months of worsening rectal bleeding on a background of 8 years of intermittent bleeding associated with haemorrhoids. She was otherwise fit. She had been scheduled for colonoscopy which was delayed due to pregnancy. She presented to the Emergency Department three times in two weeks with worsening rectal bleeding. She was admitted on her third presentation with a haemoglobin of 98g/L, no bowel motion for 6 days and 3kg weight loss in 1 month. Decision for delivery by caesarean section was made due to persistent bleeding necessitating transfusion. A male infant was delivered at 36+5 in good condition. An intraoperative flexible sigmoidoscopy demonstrated a rectal mass 8cm from the anorectal line which was biopsied.

The patient showed no clinical signs of bowel obstruction immediately postpartum. A postpartum showed a 14cm segment of sigmoidorectal intussusception with upstream large bowel dilatation and focal soft tissue thickening within the rectum without evidence of metastatic disease. She underwent an open high anterior that day. Histopathological examination of the 34cm specimen confirmed moderately differentiated adenocarcinoma of the sigmoid colon.

The immediate postoperative recovery period was uncomplicated and the patient was discharged home 5 days following anterior resection. A follow-up genetic assessment was undertaken and testing for hereditary forms of colorectal cancer is underway.

Discussion

This case highlights the potential difficulties in diagnosis and investigation of colorectal cancer in pregnancy. It is pertinent that recurrent presentations and red flag symptoms not be ignored and that a multidisciplinary approach be utilised to appropriately investigate and manage these women.

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Pregnancy outcome in a primiparous woman with a single kidney and advanced chronic kidney disease – A rare case report

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Pregnancy in women with chronic kidney disease (CKD) continues to present a challenging clinical scenario. Over the past decade, there has been a substantial increase in data published, which has influenced the approach and management of CKD in pregnancy. However, pregnancy outcomes in women with a solitary kidney remain an under-researched phenomenon due to a scarcity of cases. Most of our knowledge stems from studies of living kidney donors, a group biased by strict selection criteria. Therefore, pregnancy outcomes in women with CKD and a solitary kidney remain an enigma, as the rarity of this unique clinical scenario has limited the opportunity for further research.

We report a case of successful pregnancy outcome in a 30-year-old primiparous woman, with stage 3b chronic kidney disease, on a background of a solitary kidney, with previous pelvic-ureteric-junction obstruction requiring pyeloplasty at the age of 15. Despite the absence of hypertension and minimal proteinuria, her risk of maternal and foetal complications was assessed as high, given her estimated Glomerular

Filtration Rate (eGFR) of 31-37ml/min (creatinine 160-180umol/L) pre-conception. Her pregnancy was complicated by significant pelvicalyceal system dilatation, which exceeded the accepted physiological changes in pregnancy, and generated concern for obstruction and the need for stent or nephrostomy insertion. Her right kidney measured 26cm longitudinally with an AP pelvis measurement of 6.6cm. Her creatinine, which had increased to 180-200umol/L in her second trimester, remained stable, suggesting that her solitary kidney was not functionally obstructed. She was, therefore, able to be managed conservatively, with regular surveillance imaging and blood tests, and invasive intervention was avoided. Both her imaging and blood tests remained stable during her pregnancy and she delivered at 36 weeks' gestation without complications. Post-partum, her hydronephrosis improved significantly with repeat imaging showing a reduction in the size of her kidney to 12cm. Her creatinine remained stable between 160-190umol/L.

This case report not only adds invaluable data to the scarce CKD-pregnancy literature but also highlights the rare underlying pathophysiology and its impact on antenatal management and outcomes in this high-risk population.

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An audit of the Early Pregnancy Assessment Service (EPAS): a retrospective cohort study

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Introduction: Miscarriage (pregnancy loss prior to the 20th week gestation) can affect up to 20% of all pregnancies. Current clinical practice streamlines early pregnancy assessment via an Early Pregnancy Assessment Service (EPAS). We conducted a retrospective study to assess the outcomes of this clinic.

Method: All women seen over a 1 year period (1/1/2018-31/12/2018) in the EPAS clinic at Liverpool Hospital were included in the study. Data was extracted from the electronic medical record and paper records of the clinic. Data collected included demographic data, background medical and pregnancy information, treatment undertaken, presentations to emergency department, units of blood administered and outcome of the EPAS assessment. Data was analyzed using SPSSv 26, and significance set at $p<0.05$.

Results: A total of 966 women were assessed at an average of 9(8-11) weeks gestation, were 32.2(28.9-37.9)yrs of age, with 40.7% of women born overseas and 25.7% from culturally and linguistically diverse (CALD) population. Women presenting for their third or more miscarriage accounted for 13.4% of EPAS presentations and occurred more likely in older women LR 1.07(1.04-1.1) and women that had undergone a previous cesarean section.

Of all EPAS presentations 63% miscarried, 30% were found to have a continuing viable pregnancy, 4.3% had an ectopic and 0.9% a molar pregnancy diagnosed. Of all miscarriages 55% (n=331) were managed conservatively, 17.4% (n=104) had a medical management and 25.3%(n=151) required surgical treatment. Medical management was successful in 72.3% of women, and conservative in 92.3% of episodes.

Conclusion: Treatment via EPAS is effective but requires significant time for assessment and follow up visits. Women with recurrent miscarriages may need improved referral for follow-up and assessment.

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Comparing the perinatal outcomes using the New Zealand oral glucose tolerance test cut-off in 2 hospitals across the Tasman

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Introduction:

Australia and New Zealand (NZ) have maintained different oral glucose tolerance test (OGTT) cutoffs to diagnose gestational diabetes (GDM). We wanted to determine whether there were different pregnancy outcomes between Liverpool Hospital (LH) in Australia and Waikato Hospital (WH) in NZ depending whether they met the NZ GDM OGTT diagnostic criteria (NZGDM).

Method:

NZGDM has higher OGTT criteria with fasting ≥5.5mmol/L, 2-hour ≥9.0mmol/L. LH followed Australian Diabetes in Pregnancy Society 1997 and 2014 GDM diagnostic criteria with lower cut-offs (fasting ≥5.5&≥5.1mmol/L;2-hour ≥8.0&≥8.5mmol/L). Two groups from LH were defined as NZGDM OGTT positive or negative. We devised a composite outcome of macrosomia, perinatal death, preterm delivery, neonatal hypoglycaemia and phototherapy.

Results:

There were 7,518 pregnancies.

GDM Grouping according to NZGDM	Waikato NZGDM positive (n=2,278)	Liverpool NZGDM positive (n=2,403)	Liverpool NZGDM negative (n-2,837)	
MATERNAL OUTCOMES				
HbA1c at diagnosis (%)	5.49(95%CI: 5.46–5.52)	5.35(95%CI: 5.37–5.41)	5.25(95%CI: 5.22–5.27)	<0.001
HbA1c during 3rd trimester(%)	5.51(95% CI: 5.49–5.54)	5.53(95%CI: 5.50–5.57)	5.47(95%CI: 5.43–5.51)	0.046
Metformin treatment	277(12.2%)	156(6.5%)	251(8.8%)	<0.001
Short-acting insulin treatment	797(35.0%)	870(36.2%)	639(22.5%)	<0.001
Long-acting insulin treatment	700(30.7%)	998(41.5%)	706(24.9%)	<0.001
Hypertension in pregnancy	85(3.7%)	143(6.0%)	123(4.3%)	<0.001

NEONATAL OUTCOMES

Delivery weeks	38.10(95%CI: 38.02–38.17)	38.59(95%CI: 38.52–38.67)	38.70(95%CI: 38.63–38.77)	<0.001
Preterm delivery(<37weeks)	214(9.4%)	211(8.8%)	229(8.1%)	0.295
Birth weight(g)	3371.8(95%CI: 3345.7–3397.1)	3318.6(95%CI: 3294.3–3343.0)	3319.5(95%CI: 3297.3–3341.7)	0.005
Macrosomia(>4500g)	62(2.7%)	42(1.7%)	28(1.0%)	<0.001
Normal vaginal delivery	1,306(57.3%)	971(40.4%)	1,218(42.9%)	<0.001
Caesarean delivery–emergency indication	415(18.2%)	269(11.2%)	301(10.6%)	<0.001
Caesarean delivery–elective indication	333(14.6%)	434(18.1%)	509(17.9%)	0.004
Neonatal intensive care admission	485(21.3%)	205(8.5%)	286(10.1%)	<0.001
Neonatal hypoglycaemia	660(29.0%)	658(27.4%)	538(19.0%)	<0.001
Major congenital abnormalities	35(1.5%)	21(0.9%)	21(0.7%)	0.034
Minor congenital abnormalities	38(1.7%)	81(3.4%)	83(2.9%)	0.002
Phototherapy for neonatal jaundice	115(5.0%)	19(0.8%)	13(0.5%)	<0.001
Perinatal death	5(0.2%)	24(1.0%)	20(0.7%)	0.008
Composite Outcome	**859(37.7%)**	**814(33.9%)**	**687(24.2%)**	
Odds Ratio	**1.00**	**0.865(95%CI: 0.752–0.995)**	**0.559(95%CI: 0.486–0.643)**	**<0.001**

Conclusions:

Women who were NZGDM negative had less pregnancy complications than NZGDM positive women. Women at LH had less pregnancy complications than women at WH in spite of comparable HbA1c in the third trimester.

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HELLP me, I'm not aHUS, I'm AIN! ***Drug-Induced Acute Interstitial Nephritis mimicking Atypical Haemolytic Uraemic Syndrome***

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We present a case of a 32 year-old female with anaemia, thrombocytopenia and acute liver injury on day 1 following an uncomplicated spontaneous vaginal delivery. Alongside a nadir haemoglobin of 71g/L and platelets of 14 x10^9/L, she was clinically jaundiced with a peak total bilirubin of 246 (178 conjugated bilirubin), coagulopathy (INR 1.7) and hypoglycaemia (formal blood glucose 3.6mmol/L). Blood pressure was normal prior to delivery, but hypertension was noted in the Intensive Care Unit postpartum with blood pressures ranging between 146-170/94-117mmHg.

Following a normal liver screen, the acute liver failure improved, however she developed a progressive oliguric acute renal failure associated with microscopic haematuria and fluid overload. A blood film confirmed microangiopathic haemolytic anaemia accompanied by a low haptoglobin, normal ADAMTS13 and negative shiga-toxin producing E. Coli which, along with an acute kidney injury, fulfilled criteria for diagnosis of atypical haemolytic uraemic syndrome (aHUS).

Consensus opinion from Obstetric Medicine, Nephrology and Haematology was that of an active and progressive thrombotic microangiopathy with a severe acute kidney injury consistent with aHUS, presumably triggered by HELLP or acute fatty liver of pregnancy. Eculizumab was commenced following PBS approval.

A renal biopsy performed to further evaluate underlying aetiology demonstrated an eosinophilic acute interstitial nephritis (AIN). This was thought to be a drug-induced phenomenon, potentially from antibiotic or non-steroidal anti-inflammatory use in the peripartum period. A short course of prednisolone was given for AIN and eculizumab was ceased after the first dose. The patient's renal and haematological parameters improved following temporary RRT on day 6 postpartum and she was discharged on day 17 of admission.

We present this diagnostic dilemma to encourage physicians to consider a renal biopsy in women with suspected aHUS and to consider medication induced acute kidney injury given the frequency of antibiotic and NSAID use in the postpartum setting.

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Audit of an Obstetric Medicine Unit: Presenting the case-mix of inpatient presentations

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Background: Obstetric Medicine is an evolving speciality and provides physician-led input to a growing number of women with medical disorders in pregnancy. The Obstetric Medicine service at the Royal Brisbane and Women's Hospital has expanded in recent years to include an obstetric medicine inpatient unit in 2017. To date, there are no studies describing the range of presentations to an obstetric medicine inpatient service.

Aim: To report on the indications for inpatient referral to the Obstetric Medicine inpatient service over a twelve-month period at a tertiary teaching hospital.

Methodology: A retrospective audit of all women admitted to the obstetric medicine inpatient unit or referred to the obstetric medicine team's consultation service at the Royal Brisbane and Women's Hospital between October 2017 and October 2018.

Results: The obstetric medicine team reviewed 553 presentations in 430 women. 427 initial reviews were provided as a consultative service and 126 reviews were patient admissions to the obstetric medicine inpatient unit. The most frequent reasons for obstetric medicine team referral included gestational diabetes mellitus (125/553, 22.6%), pre-eclampsia (101/553, 18.3%) and cardiovascular issues (81/553, 14.6%). 91 re-admissions required obstetric medicine review. Hypertensive disorders of pregnancy 24/91 (26%), cardiovascular pathology 18/91 (20%) and neurological diagnoses 11/91 (12%) were the most common obstetric medicine issues on re-admission.

Conclusion: This audit provides data regarding the inpatient case-mix for an obstetric medicine service in an Australian tertiary hospital.

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Interactive blood glucose management platform for women with gestational diabetes: a pilot study

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Background:

Gestational diabetes (GDM) affects 12-14% of pregnancies in Australia. It is associated with excess risk for mother and baby. Outcomes improve with close monitoring and treatment of blood glucose levels (BGLs). This is associated with a significant treatment burden for women and threatens to overwhelm limited health care resources. Innovative care models are needed.

Aims:

To determine the feasibility, safety, user satisfaction and impact on resource utilisation of a smartphone based, remote BGL monitoring platform in women with GDM compared with a historical control group treated using the standard model of care.

Methods:

This pre-post intervention study prospectively enrolled women with GDM diagnosed between 24-30 weeks gestation to the use of a smartphone based BGL management platform and compared them to historical control group of women diagnosed with GDM prior to the introduction of the app.

The NET-Health smartphone app allowed automatic, real time upload of BGLs to a central secure server where NET Health software scans the number and value of levels to determine if they were outside a prespecified range and prompt notification of the healthcare provider (HCP).

Demographic data was collected at the time of enrolment. Occasions of service (OOS) and maternal and neonatal outcomes were recorded for comparison to previously collected historical data

Women completed a semi-quantitative validated satisfaction questionnaire post-delivery.

Results:

A total of 192 women were included- 98 prospectively enrolled and 94 in the historical control group. The groups were well matched with no significant differences at enrolment apart from a higher number of women with a pre pregnancy BMI >30 in the intervention group.

There were no significant differences in maternal or neonatal outcomes.

In the intervention group, the mean number of BGLs submitted via the app was 205 ± 7.7 (95% CI 190 – 220). Women who submitted three or more BGLs per day were more likely to be on GDM medication (OR 3.6; 95%CI 1.4 – 9.2)

A reduction in OOS occurred in the intervention group (6.3) versus the historical control group (8.4). We are further analysing HCP time spent based on type of OOS.

A total of 51 women (53%) answered the survey with high satisfaction across all questions asked (median score either 4-5/5).

Conclusions:

Use of a smartphone based, remote BGL monitoring platform in women with GDM is feasible, safe, has a high rate of patient satisfaction and results in a reduction in resource utilisation without compromising outcomes.

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The Impact of COVID-19 on Diet and Lifestyle Behaviours for Pregnant Women with Diabetes

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Background/Aims

Many women do not meet nutritional guidelines for pregnancy, including women with diabetes in pregnancy. During COVID-19 lockdown restrictions in New Zealand, women faced significant external stressors and lifestyle changes: such as food availability, reduced physical activity, and financial uncertainty. We were concerned that nutrition may have been further compromised by these restrictions. A self-reported online survey was performed to investigate the immediate effect of COVID-19 lockdown restrictions on dietary intake and lifestyle behaviours among pregnant women with diabetes.

Subjects/Methods

The survey was sent to 82 pregnant women who had Type 1, Type 2, or Gestational Diabetes, and attended the Diabetes in Pregnancy Clinic in Wellington, New Zealand in May 2020, while the most restrictive COVID-19 measures were in place. All women received standard pregnancy nutrition advice provided by a dietitian and monitored blood glucose levels with nursing support.

Results

Fifty women (61%) responded to the survey. There was no evidence of differences in dietary intake during, compared to before the restrictions, for most food items. There was evidence women consumed more bread OR (95% CI): 0.39 (0.18 to 0.83) $p = 0.02$; less battered fish: 3.11 (1.20 to 8.05) $p = 0.02$; and less hot chips/fries: 6.32 (2.67 to 14.93) $p < 0.0001$, during the restrictions. During lockdown women consumed more meals at home: 0.05 (0.14 to 0.15) $p < 0.0001$; less takeaways: 3.63 (1.54 to 7.34) $p = 0.003$; and less restaurant and café meals: 15.05 (6.03 to 37.59) $p < 0.0001$, when the services reopened. There was no evidence that restrictions had an impact on perceived glycaemic control or portion sizes.

Conclusions

The nutrition of pregnant women with diabetes was not compromised during COVID-19 lockdown restrictions. The role of the Dietitian may be crucial during pandemics, or times of uncertainty, to support women to adhere to dietary guidelines.

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Examining maternal attitudes towards medicines for treating severe nausea and vomiting of pregnancy or hyperemesis gravidarum: an Australian consumer survey

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Background: Few studies have examined critical factors involved in decision making regarding the treatment of severe nausea and vomiting of pregnancy (NVP) or hyperemesis gravidarum (HG).

Methods: Online, national survey of Australian women who are currently or have previously experienced severe NVP or HG distributed through the HG consumer group, Hyperemesis Australia, between July and September 2020. We asked women about use of information sources and their perceived helpfulness, attitudes towards medicines use during pregnancy, as well as perceived safety of treatments to the mother and baby.

Results: A total of 326 responses were received. The most common information sources included GP's (83%), Ob/Gyn (65%), midwives (56%), ED doctors (55%), internet (47%), social media (43%) and community pharmacists (42%). The mean number of information sources used was 6 (range 1-16). Information sources rated as being the most helpful included Specialist doctors (e.g. Obstetric Medicine), Ob/Gyn, social media and blogs, while the least helpful included community pharmacists, naturopaths, and family/friends. Positive attitudes towards taking medicines and getting better rather than exposing the fetus to untreated illness were more common among those who reported seeking information from social media (87% vs. 69%) or a specialist (87% vs. 73%). Notably, women were more likely to report choosing to refrain from using medicines for NVP just to be safe if they sought information from a community pharmacist (16% vs. 8%). Maternal attitudes towards medicines correlated with perceptions of safety. That is, women who reported attitudes towards avoiding or using less medicines than needed during pregnancy perceived treatments as being riskier.

Conclusions: The study findings demonstrate that women use a variety of information sources to support decision making regarding the treatment of NVP/HG and that a clear relationship exists between attitudes towards medicines use in pregnancy, the perceived safety of medicines, and use of information sources.

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Case Report: Intrauterine fetal death of fetus with congenital Dandy-Walker malformation secondary to the teratogenic effects of warfarin exposure in the first trimester

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Introduction: Warfarin exposure exhibits teratogenic effects most during six to 12 weeks of gestation. Dandy-Walker Malformation is a rare central nervous system (CNS) complication of a fetus exposed to warfarin in the first trimester. It has scarcely been reported on in literature, overshadowed by the more common warfarin embryopathy of bone and cartilage in first trimester or the CNS effects of exposure in later trimesters as a result of fetal haemorrhages.

Case presentation: This case describes a 36-year-old multigravida woman of Cook Islander origin with five previous spontaneous vaginal deliveries who had an unplanned pregnancy, incidentally detected at 11+5 weeks of gestation on pelvic ultrasound. She has a significant cardiac history - rheumatic heart disease with mechanical aortic valve replacement, mitral valve repair and tricuspid valve annuloplasty – which she is on lifelong warfarin therapy. She previously had suffered a right middle cerebral artery infarct in the setting of ceasing anticoagulation for an elective haemorrhoidectomy. The morphology scan detected severe hydrocephalous, and a subsequent tertiary morphology scan at 23+1 weeks of gestation diagnosed the fetus with Dandy-Walker malformation with associated severe hydrocephalus and secondary perforation across the anterior midline. Fetal demise was confirmed on USS at 31+1 weeks of gestation with suspected fetal haemorrhages. The woman was transferred to a tertiary hospital for delivery and anticoagulation management during planned induction of labour under Maternal Fetal Medicine with cardiology input.

Conclusion: This case report provides evidence that warfarin exposure in the first trimester has a direct teratogenic effect on CNS morphogenesis, and can result in Dander-Walker malformation. This case demonstrates that pregnant women with significant cardiac history on therapeutic anticoagulation require meticulous and multidisciplinary approach to therapeutic anticoagulation management at preconception, during pregnancy, intrapartum and post-partum to ensure effects to mother and fetus are recognised and minimised.

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Severe physiological hyperventilation in pregnancy

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Introduction:
Physiological hyperventilation and dyspnoea in pregnancy is well-established and mild dyspnoea begins in the first or second trimester. We report the case of a 35-year-old female with severe physiological hyperventilation of pregnancy from 18 weeks' gestation until delivery.

Case:
A 35-year-old (G4P3) presented at 18 weeks' gestation with profound dyspnoea, presyncope, upper limb paraesthesia and limited exercise tolerance to 20m.
Examination revealed tachypnoea at 24 breaths per minute, increased work of breathing and ability to speak in short sentences. Oxygen saturations were 100% on room air, blood pressure was 116/66mmHg and pulse rate 80 beats per minute. Arterial blood gas demonstrated a chronic respiratory alkalosis with partial metabolic compensation. Extensive brain, cardiac and pulmonary investigations were unremarkable.

Discussion
Hyperventilation and dyspnoea occur during pregnancy secondary to physiological adaptations. Respiratory rate increases approximately 40% towards the end of the third trimester. (1) Importantly, this increase is associated with a higher tidal volume, while respiratory rate remains unchanged. (2) Our patient had a persistent and sustained tachypnoea ranging from 22-26 breaths per minute from 18 weeks' gestation to term.
Progesterone-induced hyperventilation is considered a key driver in increasing ventilation during pregnancy to meet metabolic demands. (3) Progesterone increases the sensitivity of the respiratory centre to carbon dioxide via an estrogen-dependent progesterone-receptor mediated facilitation of central neural mechanisms, independent of hydrogen and the respiratory chemoreflexes. (4, 5)

Hyperventilation with respiratory alkalosis is secondary to more complex interactions than simply hormonal-induced changes in setting of a complex interplay between acid-base balance, wakefulness drives breathe, increased metabolism and decreased cerebral blood flow. (4) This in combination with this case demonstrates while there has been advances in the understanding of respiratory adaptations in pregnancy, the complete underlying pathophysiology is not entirely clear.

Conclusion:
This case highlights a rare case of severe tachypnoea and dyspnoea secondary to exaggerated physiological hyperventilation in pregnancy. Since physiological dyspnoea in pregnancy remains a diagnosis of exclusion, it remains vital to ensure underlying pathological dyspnoea is excluded.

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Women with gestational diabetes mellitus and neonatal outcomes at the Northern Beaches Hospital after one year of operation

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Background

Good control of maternal hyperglycaemia in gestational diabetes (GDM) is associated with improved neonatal outcomes. Amongst the logistical challenges of opening a new large public hospital, it is important to ensure that patient outcomes are maintained at a high standard.

Aims

To compare the demographics and neonatal outcomes of women and babies with GDM seen at Northern Beaches Hospital (NBH) in its first year of operation (2019) with those seen at Manly Hospital in 2015 and 2012.

Methods

A retrospective audit was conducted of all women presenting to NBH with GDM in 2019 and compared to previously available data from Manly Hospital. Data were compared with unpaired *t*- and X^2-tests.

Results

135 women were treated for GDM at NBH in 2019 compared to 160 at Manly in 2015 and 109 in 2012. The characteristics of the women treated were not significantly different, and the proportion treated with insulin was not different. Timing and mode of delivery as well as rates of macrosomia and shoulder dystocia were not significantly different in 2019, but there was a significant increase in rate of neonatal respiratory distress (21% in 2019 vs 13% in 2015), hypoglycaemia (30% in 2019 vs 5% in 2015) and jaundice (12% in 2019 vs 3.5% in 2015). Antenatal expression of breastmilk, a new intervention introduced in 2015 which was correlated with reduced rates of neonatal hypoglycaemia, wasn't performed at the same rate at NBH (43% in 2019 vs 85% in 2015).

Conclusion

Short-term morbidity for infants of mothers treated for GDM at NBH has increased compared to those treated at Manly Hospital. We have re-invigorated our focus on educating and assisting women with antenatal expression of breastmilk, and will closely examine how trends improve now the hospital is more well established.

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Gestational diabetes mellitus is associated with changes in the microRNA expression in extracellular vesicles and potential role of miR-92a-3p in skeletal muscle insulin sensitivity

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Extracellular vesicles (EVs) play important roles in cell communication in physiological and pathological contexts. The aim of this study was to identify the role of circulating small EVs (sEVs) in the regulation of maternal insulin sensitivity in Gestational Diabetes Mellitus (GDM). sEVs were isolated from maternal plasma obtained at early, mid and late gestation (GDM=8, Normal Glucose Tolerant (NGT)=14) and a panel of miRNAs were quantified by real-time PCR. The potential targets of the miRNAs were identified and effect on skeletal muscle insulin sensitivity was analyzed by glucose uptake assay. We identified that six miRNAs namely miR-16-2-3p, miR-16-5p, miR-1910-5p, miR-423-5p, miR-92a-3p, and miR-92b-3p were differentially expressed in GDM compared to NGT pregnancies. On bioinformatic analysis these miRNAs were targeting the pathways associated with glucose homeostasis particularly the insulin response and JAK/STAT pathway. We analyzed the specific pattern of expression of these miRNAs across gestation. Interestingly, miR-92a-3p expression was higher in GDM than NGT in the second trimester, whereas it in the third trimester the expression is lower in GDM than NGT. Using a PCR array, we identified that miR-92a-3p induces the expression of SOCS (Suppressor of Cytokine Signaling)-2 and suppress the expression of NOS (Nitric Oxide Synthase)-2 in the JAK/STAT signaling pathway in skeletal muscle cells. Also, in the glucose uptake assay, miR-92a-3p increased the insulin-stimulated glucose uptake compared to negative miRNA in primary skeletal muscle cells. Together, the pattern of expression of miR-92a-3p in circulating sEVs in GDM and its impact on skeletal muscle insulin response indicate a protective mechanism of this miRNA to reduce the hyperglycemia in GDM. This study shows that sEV-associated miRNAs may contribute the pathophysiology of insulin resistance and maternal metabolic changes in GDM. Finally, we identify that miR-92a-3p in circulating EVs in GDM can target JAK/STAT signaling and regulate insulin sensitivity in skeletal muscle cells.

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Insulin wastage in GDM - Is sustainability a pipe dream?

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Introduction: Gestational Diabetes Mellitus (GDM) management continues to evolve; however few studies have evaluated drug utilisation to improve sustainability. We aimed to determine the total requirement of women commenced on isophane insulin, to reduce resource wastage in the GDM setting.

Method: We conducted a retrospective antenatal audit of women diagnosed with GDM at Mater Mothers' Hospital, Brisbane between 1/01/2018 and 01/10/2020 and prescribed isophane insulin (Protophane®). Mater Mothers' Hospital is a large quaternary centre servicing a culturally diverse community. Antenatal records were reviewed to determine their actual insulin usage. Those diagnosed prior to week 24 were grouped separately to reduce confounding. Primary outcome was the average insulin requirement at term compared with insulin supplied.

Results: For 1,981 identified women, 604 met the inclusion criteria. Of this group, 86 women were excluded due to incomplete records: interhospital transfer or moving interstate. The remaining 518 women were stratified, with the 386 diagnosed at/post-week 24 having a mean insulin requirement at term of 26iu daily (median 22iu) versus 132 women pre- week 24 with a mean final insulin requirement at term of 40iu daily (median 34iu). An isophane insulin requirement of 45iu was found to service the needs of 88% of the GDM population requiring isophane insulin. The outpatient supply of insulin was largely serviced by community providers with only 16% having their prescription filled onsite.

Conclusion: Our results strongly indicate that the current practice of supplying 5x5 pens of isophane insulin (current PBS maximum supply) is a gross patient oversupply. Supplying patients with 3x5 pens would meet the majority of insulin needs and greatly reduce the cost burden to the PBS, with an estimated national savings of $812,736 based on Australian Bureau of Statistics data. We plan to pilot a programme of staged dispensing to address this issue, reducing the pharmaceutical footprint of GDM management.

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