Current practice among general practitioners for follow up care of women with prior GDM (extended to 12 months postpartum) including current knowledge and use of GDM evidenced based guidelines

Wilkinson S[1], Upham S[2], Janamian T[2], Nicholson C[1], and Jackson C[2].

1. Mater Health Services, Brisbane, Australia
2. The University of Queensland, Brisbane, Australia

A C K N O W L E D G E M E N T S

This research is a project of the Australian Primary Health Care Research Institute, which is supported by a grant from the Australian Government Department of Health. The information and opinions contained in it do not necessarily reflect the views or policy of the Australian Primary Health Care Research Institute or the Australian Government Department of Health.

The authors thank Dr Wendy Brodribb for her contribution and sharing of relevant results from the Postpartum Care in General Practice Survey 2013.

The authors also extend their thanks to the general practitioners and their practice staff who took part in this research.

C I T A T I O N

Wilkinson S, Upham S, Janamian T, Nicholson C, Jackson C. Current practice among general practitioners for follow up care of women with prior GDM (extended to 12 months postpartum) including current knowledge and use of GDM evidence based guidelines. APHCRI Centre of Research Excellence in Primary Health Care Microsystems, The University of Queensland, 2014.

APHCRI Centre of Research Excellence in Primary Health Care Microsystems

Discipline of General Practice

The University of Queensland

Level 8 Health Sciences Building, Building 16/910

Herston, QLD 4029 Australia

T 61 7 3365 5545

F 61 7 3346 5178

E t.janamian1@uq.edu.au

www.aphcricremicrosystems.org.au

CONTENTS

Background

Gestational Diabetes Mellitus (GDM) is a common pregnancy complication with a prevalence of 10-13% depending on the criteria used and population studied.[1] It is defined as any degree of carbohydrate intolerance that begins or is first recognised in pregnancy.[2] GDM is the strongest single population predictor of type 2 diabetes mellitus (T2DM). It is estimated that 20-60% of women with GDM go on to developT2DM within five to ten years in the absence of any intervention. [3] GDM and T2DM are important and escalating problems worldwide due to obesity and sedentary lifestyle. T2DM is presently the second highest contributor to the Australian burden of disease and poses an enormous economic burden projected to increase to almost A$7billion by 2033.[4] Women with a history of GDM are also at greater risk of a recurrence of GDM, cardiovascular disease and metabolic syndrome. [5] Poor health outcomes also extend to infants of mothers with GDM due to increased risk of obesity and abnormal glucose metabolism during childhood, adolescence and adulthood. [6]

A general practitioner (GP) has a key role in providing postpartum and long-term preventative health care management. [7-9] While appropriate care and preventative health approaches following childbirth provides an opportunity to improve health outcomes for mothers and infants, there are few comprehensive, evidence-based guidelines available.[10] Women with prior GDM, and their infants, are even more likely to benefit from proactive care during this period and there are a number of guidelines that cater to this group, though again none are comprehensive in their own right (Appendix A). For example, Australian Diabetes in Pregnancy Society (ADIPS) Guidelines [2](current at the time of study) recommended an oral glucose tolerance test (OGTT) within 6- 8 weeks (now 6-12 weeks) of birth for women who had GDM.[11] Although GDM usually resolves following birth, this test is important for identifying those women who have developed T2DM or have abnormal glucose tolerance so that early management can be commenced. The extent to which these guidelines are integrated into postpartum GP visits is not known but some studies suggest diabetes testing is sub optimal. Self-report surveys of Australian women indicate approximately half return for OGTTs but only a quarter in the recommended time period.[12, 13] Several international studies have also reported suboptimal screening rates and barriers to optimal care[14-19] (Appendix B).

In the Australian context beyond the timing of testing regimes, recommendations regarding lifestyle interventions to prevent T2DM progression are absent in the current Australian Diabetes in Pregnancy (ADIPS) guidelines.[11] However, the Diabetes Australia/Royal Australian College of General Practitioners (RACGP) *Diabetes Management in General Practice* [20] and *The guidelines for preventive activities in general practice* (the 'red book') [21] outline diabetes management and dietary advice for diagnosed cases of T2DM in general practice and for diabetes prevention. During a pregnancy complicated by GDM there is a major focus on tightly controlled blood glucose levels. By contrast, diabetes prevention diets have a greater focus on weight reduction and dietary quality. Awareness of the difference in approach may be limited amongst women who have had GDM and their GPs and is not clearly explained in these guidelines.

Australian and international guidelines also highlight the importance of breastfeeding, lifestyle modification, contraception and risk counselling to improve health outcomes for these women and their infants as shown in Appendix A.

Comprehensive postpartum care for women with prior GDM (weight management/ lifestyle counselling, support for breastfeeding, contraception and preconception counselling, hypertension/macro vascular assessment, risk counselling and early referral regarding prevention interventions and drug treatment) is strongly promoted in the academic medical literature. [7, 9, 22-24] However, there is currently a gap in knowledge regarding the extent to which preventative health practices are consistently integrated into postpartum GP visits in Queensland and what informs and aids the follow up care provided by GPs.

Research Aims

This research project examined general practitioners' knowledge and management practices in delivering postpartum care to women with a history of GDM (extended to 12 months postpartum) compared to evidence-based best practice guidelines. There is currently a gap in GDM research in the community up to 12 months postpartum. The research aimed to provide new knowledge in this under-researched area to benefit patients, policymakers, service providers, health care funders, other researchers, and the broader community.

The objectives of the study were to:

1. Evaluate general practitioners' awareness, perceived knowledge, and use of GDM guidelines.
2. Determine the extent to which postpartum gestational diabetes care extended to 12 months postpartum was delivered according to evidence based best practice guidelines.
3. Determine the extent and usefulness of reminder systems for patient follow up.

Methods

STUDY DESIGN AND PARTICIPANTS

This study involved a survey and retrospective chart audit of GPs (GP Survey and Chart Audit) and a cross-sectional survey of Southern Queensland GPs (Postpartum Care in General Practice Survey) . The GP Survey and retrospective Chart Audit included GPs who participated in a shared care arrangement with a South East Queensland maternity hospital and their patient records for women who were provided with maternity shared-care between July 2011 and June 2012. Shared care is defined as a model care where the GP provides the majority of antenatal and postpartum care with the hospital health care professionals providing care during labour and the intra-partum period. [25]

The cross-sectional survey incorporated GPs from Metro North Brisbane Medicare Local, Darling Downs South West Queensland Medicare Local, practices in Hervey Bay, and The University of Queensland teaching practices not attached to the rural clinical school.

Data collection occurred throughout 2013.

PROCEDURE

GP Survey and Chart Audit

The 38 GPs from 35 practices who shared care for a woman with GDM (n=43) who gave birth to a baby in the year from July 2011 to June 2012 were identified from the hospital's database and invited by mail to participate in the study (Appendix C). A week after the mail out, practices were telephoned to explain the study requirements. Hard to reach or undecided practices were contacted by a GP member of the research team (some numerous times). Consenting practices were sent a survey, medical chart audit form, instructions, and a reply paid envelope. Each practice was contacted after one week to confirm receipt and reiterate the instructions. Two follow-up reminders were made to non-responding practices by telephone at two week intervals. A gift voucher valued at $100 was offered as an incentive for participation.

The GPs were asked to complete a one page self-administered survey regarding postpartum management approach of women with a history of GDM (Appendix D). Prior to distribution, the survey was pilot tested with two academic GPs independent of the study. Practice managers and/or nurses completed a one-page chart audit for each identified patient medical chart (Appendix E). The audit form was developed and revised based on a review of related literature, pilot testing at one practice and review by two GPs independent of the study. The timeframe of the audit covered a review of all GP consultations in the 12 months following the birth of the baby. The audit took approximately 10 minutes to complete. Patient names were not included on audit forms.

Postpartum Care in General Practice Survey

A 46 item self-report survey exploring provision of care by GPs to mothers and infants in the first eight weeks postpartum was distributed to 932 GPs between February and September 2013 (Appendix F). The surveys were mailed to the practice address and non-responders were followed up by telephone two weeks later.

OUTCOME MEASURES AND DATA ANALYSIS

GP Survey and Chart Audit

Outcomes in the GP survey included: awareness and usefulness of specific practice guidelines in addition to their nominated guidelines, information on use and effectiveness of postpartum reminder systems for patient follow up, and information on recommended timing and type of test for postpartum diabetes testing.

Audit outcome measures were checking and recording of preventative health indicators including: postpartum diabetes testing, weight, body mass index, blood pressure (BP), breastfeeding and mental health status. Other outcomes such as provision of advice on contraception, diet, exercise and relevant referral to specialist or allied health services was also assessed.

Survey and audit responses were entered into SPSS Statistics (version 22.0, 2013) and checked twice for accuracy. Descriptive statistics were calculated and reported as frequencies or medians and ranges.

Postpartum Care in General Practice Survey

Outcomes collected include: recommended timing of OGTT, GP's opinions on the perceived usefulness of guidelines or other self-reported approaches that guided their practice for women with GDM, receipt and usefulness of discharge summaries, whether GPs discussed various preventative healthcare indicators in the first eight weeks postpartum (diet, exercise, contraception, depression and infant feeding), and whether blood pressure (BP) and weight measures are taken within the first eight weeks postpartum. The responses to these items were nearly always, sometimes, rarely or never.

Data were entered and analysed using SPSS version 22. Descriptive statistics were calculated and reported as frequencies. Open responses to the question "What guidelines or approaches inform your care for postpartum women with gestational diabetes…" were categorised into groups using a consensus method. The research assistant coded the open responses and two other members of research team validated these.

ETHICS

Ethics approval was granted by the Mater Health Services Human Research Ethics Committee (GP Survey and Chart Audit) and the Behavioural and Social Science Ethical Review Committee at The University of Queensland (Postpartum Care in General Practice Survey).

Results

GP SURVEY AND CHART AUDIT

GP Survey

Of the 38 GPs invited to participate, 18 consented and completed the questionnaire (47.3% response rate). No other demographic information was collected from participants.

Guideline awareness

The listed guidelines that GPs were asked to rate in terms of familiarity and usefulness are shown in Table 1. All GPs were familiar with the hospital's GP maternity shared care guideline and over 80% rated it useful/very useful. Awareness and usefulness of ADIPS guidelines was low. Just over half the GPs found the hospital discharge summary to be useful/very useful. GPs had excellent knowledge of which diabetes test to order and timing of testing postpartum with 100% stating they order OGTT and all recommend testing within six to eight weeks.

Table 1. GP's ratings of their awareness and usefulness of various guidelines (n= 18) (Excluded missing responses from analysis valid percentages used).

	How useful were these guidelines/approaches				
Guidelines or approaches used	**Not familiar**	**Not useful**	**Some-what useful**	**Useful**	**Very useful**
Diabetes Management in General Practice: Guidelines for Type 2 diabetes 2012/13 (Diabetes Australia)[26]	12.5% (2/16)	0	31.3% (5/16)	25% (4/16)	31.3% (5/16)
Therapeutic Guidelines Endocrinology v4 (2009)[27]	87.5% (14/16)	0	0	6.3% (1/16)	6.3% (1/16)
Australian Diabetes in Pregnancy (ADIPS) Consensus Guidelines for testing and diagnosis of GDM in Australian (2013)[11]	47.1% (8/17)	0	0	23.5% (4/17)	29.4% (5/17)
Australian Diabetes in Pregnancy (ADIPS) Gestational Diabetes mellitus – management guidelines (1998; 2003)[2]	56.3% (9/16)	0	18.8% (3/16)	12.5% (2/16)	12.5% (2/16)
Hospital discharge summary	0	5.6% (1/18)	38.9% (7/18)	22.2% (4/18)	33.3% (6/18)
Hospital GP Maternity Shared Care Guideline Aug 2012	0	0	16.7% (3/18)	27.8% (5/18)	55.6% (10/18)
Other (Please specify)- Diabetes in Pregnancy: Women's Experiences and Medical Guidelines[28]	0	0	0	5.6% (1/1)	0

Reminder systems

Fifteen of the 18 GPs (83%) used reminder systems to monitor postpartum women with prior GDM with all but one GP indicated that it worked well. Aspects of the reminder system reported to work well included:

- A reminder is added to action list that can be checked at any time
- If the patient has not responded to reminder then further action can be taken to promote compliance
- The reminder is visible when doctor opens patient file and therefore acts as a reminder to doctor to monitor each patients follow up needs
- Reminder letter sent when due- timely reminder and patients respond to reminder letter or phone call.

Even though three GPs (17%) did not use a reminder system, all used record systems that had the capacity to set up reminders and recall with the most popular software being Medical Director (50%) followed by Best Practice (23%). Other software used to a lesser extent (10%<) included Monet, Clarity, Genie and GP Complete. Open responses to how the reminder system worked indicated that GPs set up the reminder system either at the time of diagnosis of GDM or at the six-week postpartum visit for annual reminders.

One GP indicated that they did not think the reminder system worked well stated it was because they had to remember to click “reminders” in the electronic medical record system as it did not come up automatically and thought it was easy to miss. Other barriers to the reminder system working efficiently included: patient non-compliance/the patient’s choice as to whether to attend their follow-up appointment as well as patients moving or attending another practice resulting in loss to follow up.

GPs described additional procedures to promote attendance for follow up care including:

- Sending a second reminder letter within a specified timeframe if no response to initial reminder letter
- Reminder phone calls by nurse if no response to reminder letter
- Including a pathology request form with the reminder letter so that the mother did not have to attend a consultation in order to obtain a pathology request form

  “Sending a request form with the reminder improved compliance as patient with a young baby doesn’t want to see GP twice”.

Chart Audit

Eighteen GPs completed one chart audit and one GP completed two. The total number of completed audits was 19 (19/43 audits). No pregnancies were recorded during the 12-month postpartum period.

Diabetes screening

The median number of times that a woman consulted her GP during the year following her pregnancy with GDM was five (range 1-14). All women visited their GP at least once in the 12 weeks following the birth. All women were offered type 2 diabetes screening by their GP (18/19) or the hospital (1/19). The most frequently ordered test was OGTT (15/19). Other tests ordered included glycosylated haemoglobin ($HbA_{1C)}$ (1/19), fasting blood glucose level including full blood count (1/19) and electrolyte and liver function tests (2/19). It was noted by one GP that the HbA_{1C} was ordered for social and clinical reasons due to an inability to attend a two-hour OGTT.

More than half (10/19) of the women had their OGTT test ordered between six and 12 weeks (9/19 ordered between 6 and 8 weeks). The test was ordered earlier than six weeks for about one third of the women (6/19) and after 12 weeks for two women. Of the women who had their OGTT performed, more than half had their OGTT between six and 12 weeks (10/19) (8/19 between 6 and 8 weeks). One woman had her test before six weeks and three after 12 weeks. Five women did not have a test result recorded in their chart.

Other preventative care

The Chart Audit indicated the number of women who had each of the additional elements of care (Table 2) recorded at least once in the 12 month period. Body mass index, weight, diet, exercise and breastfeeding status were generally checked in the first three months, but not subsequently, whilst mental health status was checked within the first three months, and often had a second follow up recorded. Blood pressure was checked regularly over the 12 months and contraception had more follow up than other elements of care. Only one woman was referred to a dietitian. None of the women had all elements of care checked during the 12 month period.

Table 2 Preventive health care indicators recorded as discussed by a general practitioner with a woman who had gestational diabetes mellitus within 12 months of birth (n = 19)

	Body mass index recorded	Weight recorded	Blood pressure recorded	Mental health assessed	Breastfeeding status recorded	Contraception discussed	Diet discussed	Exercise discussed
Number of women with health care indicator recorded	4	6	14	7	18	15	9	8
Median time of first discussion , weeks postpartum (range)	2.5 (1–6)	2.5 (1–20)	2.0 (1–37)	6.0 (1–31)	2.0 (1–13)	7.0 (1–33)	7.0 (2–27)	6.5 (2–27)
Number of women with health care indicator recorded more than once in the 12-month period	2	3	8	3	10	4	3	3

Open-ended responses indicated each consultation generally focused on presenting symptoms or requests for tests or vaccinations. The range of presenting problems included infections (such as dermatitis, sinusitis, mastitis, gastroenteritis, upper respiratory tract infections), reflux, vertigo, perforated tympanic membrane, skin lesions, neck pain, earwax, dysuria and paraesthesia.

POSTPARTUM CARE IN GENERAL PRACTICE SURVEY

The response rate to the survey was 17.5% (163/ 932). The majority of GPs who responded (95%) provide shared antenatal care. Among the respondents the age range was 28 to 75 years with a mean age of 48.2 (± 10.8 SD) years and 65.5% were female. Eighty-three percent completed their GP training in Australia, 69.4% were RACGP Fellows and 6.9% were Fellows of the Australian College of Rural and Remote Medicine.

Ninety percent of respondents recommended OGTT between six and 12 weeks.

Sixty-one percent (n= 99) did not respond to the question regarding what guidelines or approaches inform their postpartum care of women with prior GDM. Respondents (n=64) had the option of providing up to three guidelines of which 75% provided one, 17% provided two and 8% provided three. All 81 responses (from 64 respondents) were combined and coded into seven categories as shown in Table 3. The hospital was the most frequently identified source of guidance followed by a medical profession body/college.

A third of participants reported that they nearly always received a discharge summary before they first saw the mother/infant and nearly a quarter never or rarely received a timely discharge summary. Just over half found them somewhat useful.

With regard to preventative follow up care, Table 4 shows that surveyed GPs regularly checked weight, BP, and infant feeding practices. Mental health status and diet and exercise were discussed less often.

Table 3. Participants' responses to the question of source of guideline or approach that informed their practice.

Guideline/ approach (n)	**Subcategory (n)**
1.Specialist Health Care provider (4)	Endocrinologist (1)
	Obstetrician (1)
	Treating doctor (1)
	Specialist (1)
2.Hospital (22)	Hospital (general/ recommendation) (13)
	Hospital discharge summary (3)
	Hospital guideline (2)
	Hospital shared care guideline (4)
3. Medical Profession Body/ College (18)	RANZCOG (10)
	RACGP (6)
	Australian Diabetes Society (2)
4. National Diabetes Organisation (12)	Diabetes Australia/ Diabetes QLD (8)
	Australian Diabetes Council (1)
	NDSS (3)
5. Specific recognised guideline (12)	Diabetes Management in General Practice (5)
	ADIPS Consensus statement/guideline (5)
	RED Book: Preventative Activities in General Practice (2)
6. Other (9)	
7. No guideline used(4)	

Table 4. Reported frequency of measuring or discussing preventative health care indicators by GPs from a Postpartum Care Survey

	How often GPs reported measuring or discussing health outcome measures (%)			
Preventative measure (n responses)	Never	Rarely	Sometimes	Always
Weight checked (161)	4.3	20.5	35.4	39.8
Blood pressure checked (161)	0	3.7	13.7	82.6
Screening postpartum depression (n161)	0	3.7	31.7	64.6
Infant feeding discussed (162)	0.6	1.2	3.1	95.1
Contraception discussed (161)		1.9	5.0	93.2
Exercise discussed (161)	3.7	32.9	49.1	14.3
Diet discussed (161)	0.6	18.6	41.0	39.8

Discussion

GENERAL PRACTITIONERS AWARENESS AND KNOWLEDGE OF GUIDELINES

This study demonstrated that Southern Queensland GPs, particularly those who had completed a shared maternity care CPD program with a major maternity hospital, had an excellent awareness of the timing and practices around ordering an OGTT for women who had GDM in a recent pregnancy consistent with best practice guidelines (OGTT between 6-12 weeks postpartum). This practice appears to be informed by a wide range of guidelines and sources including professional bodies.

GPs primarily turn to and rely on guidance from the maternity hospital with which they share care. This highlights the importance of not only the quality of shared care guidelines but equally important the timeliness of discharge summaries that should provide a clear follow up management plan for these at risk women. The Postpartum Care in General Practice Survey results raised concerns about the timeliness and usefulness of hospital discharge summaries as only a third of participants reported that they nearly always received a discharge summary before they first saw the mother/infant and nearly a quarter never or rarely received a timely discharge summary. Just over half found them somewhat useful, again suggesting that the content and or layout could be improved. Similarly only a third of the participants in the GP Survey found the hospital discharge summaries to be “very useful”. This is in accordance with a recent Queensland study of maternity hospital discharge practices and summaries, which identified deficits in content and timeliness and

highlighted the need to strengthen discharge communication processes to ensure women and their babies are satisfactorily cared for in the transition from hospital to primary care settings.[29] Therefore, consideration should be given to how the useability and timeliness of discharge summaries could be improved particularly as GPs regard them as one of their main sources of guidance.

Familiarity with guidelines other than those provided by the maternity hospital was poor with the exception of *Diabetes Management in General Practice: Guidelines for type2 Diabetes.* [26] Greater awareness of this guideline may in part be due to T2DM being a relatively common chronic disease managed by GPs compared to GDM, endorsement by peak bodies and ease of access. This guideline meets the eligibility criteria for the Practice Incentive Program (PIP) e Health Incentives program that encourages the availability of management guidelines electronically.

Of note are the low rates of familiarity with the ADIPS guidelines. This could be due to a number of factors including lack of promotion and ease of access to these guidelines. In any case, the most recent ADIPS guideline (2013) is considered controversial and has not been endorsed by the RACGP. Nor does it provide advice on other elements of postpartum care other than diabetes screening. Overall, low ratings for usefulness of guidelines possibly reflect the lack of a clear and comprehensive set of endorsed guidelines for postpartum follow up care of women with a history of GDM. Francke et al (2008) report the main barriers to the adoption of guidelines are lack of awareness, limited familiarity and lack of agreement with guidelines.[30] It is recommended that one, comprehensive, Australia wide, guideline be developed for the detection and management of GDM and T2DM prevention developed in partnership with key stakeholders and adopted by professional groups. The guideline needs to be consistent with the evidence for diabetes prevention.

EXTENT OF DELIVERY OF FOLLOW UP CARE ACCORDING TO GUIDELINES

While the GPs were knowledgeable and provided follow up care according to best practice guidelines for postpartum diabetes screening in women with prior GDM there was less consistent adherence to other preventative health care measures. Women's compliance and engagement with their primary care provider also appeared suboptimal.

Knowledge, opinions, and practices regarding other postpartum preventative health indicators also reflect behaviours previously documented in maternity patients, as well as the wider population[31, 32] with BP readings, and discussions about contraception and infant feeding/breastfeeding are more likely to be checked. However, mental health assessments and discussions occur less often and measurements and discussion around lifestyle indicators (diet and exercise) occur much less frequently. Harris et al (2012) note barriers to adoption of guidelines vary depending on the guidelines, practitioners and organisations involved.[33] Further research is needed to explore and identify locally relevant barriers, as well as enablers that facilitate implementation of clinical guidelines.

Diabetes Screening

Australian guidelines recommend that all women with prior GDM undertake a 75g OGTT between six and 12 weeks after the birth (Appendix A). Women with a history of GDM are at increased risk of developing Type 2 Diabetes. Timely testing presents opportunity to both diagnose and prevent or delay onset of T2DM by identifying those with abnormal glucose tolerance. Appropriate management including lifestyle interventions can then be commenced early. Despite the fact that all the women in this study (Chart Audit) were offered diabetes screening in accordance with guidelines over a quarter of the women did not appear to proceed with testing (test result not recorded in chart) and of those that did proceed 20% had their test outside of the recommended timeframe. Other research studies indicate barriers to screening include lack of awareness of need importance of screening, difficulty attending screening with young children, dislike of the OGTT process, being a mobile population and inconsistent advice from health care providers about

testing and lifestyle modification. [12, 13, 34] Consistent reminders, education and support for women to facilitate timely diabetes testing needs to be addressed to ensure all women receive optimal care. Adherence to preconception testing and long-term follow up screening guidelines (Appendix A) was outside the scope of this project.

Breastfeeding

The RACGP position statement on breastfeeding recommends encouragement of and support of exclusive breastfeeding until 6 months with continuation following introduction of solids till age12 months or as long as preferred.[35] While the RACGP; Diabetes Australia guidelines [20] recommend promotion of breastfeeding for women with prior GDM for its health advantages for women and their babies, there are no specific Australian guidelines for these women regarding duration of breastfeeding, though the Canadian Diabetes Association encourage breastfeeding immediately following delivery and for at least three months after.[36] Benefits include risk reduction of childhood obesity and maternal hyperglycemia (improved glucose tolerance and weight loss).[7, 24, 37, 38] Some research suggests breastfeeding reduces the risk of developing T2DM with greater protection associated with longer duration of breastfeeding. Yet, women with GDM are less likely to breastfeed (lower initiation rates and weaned earlier) and therefore need greater lactation support, in part due to increased incidence of being overweight and a higher caesarean birth rate. [7] Both the Chart Audit and Postpartum Care Survey results confirm GPs have a high level of awareness and adherence to guidelines pertaining to the importance of breastfeeding.

Contraception

ADIPS [2], National Institute for Health and Clinical Excellence(NICE) [39] and Canadian Diabetes Association (CDA)[36] recommend contraceptive advice be given in the postpartum period and women with prior GDM be counselled about preconception care and planning further pregnancies as one GDM pregnancy increases risk in subsequent pregnancies and may accelerate development of T2DM. A planned pregnancy enables diabetes testing prior to conception as impaired glucose levels at conception and early pregnancy carry a higher risk of birth defects. Family planning optimises health of both mother and baby in subsequent pregnancies. [3, 37] Other research suggests that women with a history of GDM may lack awareness of the risks of unplanned pregnancy and are unlikely to seek preconception care.[3] Both the Chart Audit and Postpartum Care Survey results confirm GPs have a high level of awareness and adherence to guidelines pertaining to discussions about contraception. The 12 month time frame of the Chart Audit was too short to comment on practices around preconception care and no pregnancies were recorded during the review period.

Cardio vascular disease (CVD) risk assessment and lifestyle advice

Women with prior GDM are at increased risk of cardiovascular disease. Risk is associated with raised BP, obesity, physical inactivity and poor diet. Most of these risk factors are modifiable through lifestyle changes.[21] Other risk factors included depression, social isolation and lack of support, which further supports the need to monitor mental health status. Monitoring hypertension, weight and BMI are therefore an important component of comprehensive care as is provision of lifestyle advice and referral to appropriate allied health in preventing CVD and T2DM.

RACGP[20, 21] provides guidelines for assessing those at increased risk of CVD. The ADIPS[2], American Diabetes Association (ADA) [40] and CDA [36] guidelines specifically recommend macro/cardio vascular risk assessment for women with prior GDM. The majority of guidelines (Appendix A) recommend women be counselled on lifestyle modification (diet and exercise) not only because of cardiovascular risk but also because of the increased risk of developing T2DM. Lifestyle modification is critical in both preventing and delaying the onset of diabetes.[3]

There are many challenges in facilitating lifestyle change as it can be difficult to implement diet / exercise changes in women with small children.[38, 41] Women with prior GDM have lower levels of physical activity than women of similar age in general population.[42, 43] They also consume diets higher in fat and lower in carbohydrates compared to women without GDM. [44, 45]

Both the Chart Audit and Postpartum Care Survey indicate that blood pressure is frequently checked. In contrast, BMI, weight and discussion about diet and particularly exercise are less likely to be checked or discussed compared to other indicators of care. There are a number of possible reasons for this including a lack of time in the consultation to address lifestyle change. This study found that women generally present for another reason rather than a post GDM check-up. Limited consulting time with emphasis on episodic care and the current remuneration system act against discussion of preventive health care measures.[31, 46] Such discussions are often opportunistic rather than part of a systematic approach. Varying degrees of knowledge and confidence in the provision of lifestyle advice may also be a factor.[31, 47]

Further research is needed to better understand the barriers to implementing guidelines particularly around lifestyle advice and how these can be overcome.

To improve optimal care it is recommended that a systems approach be adopted by general practices to the ongoing management of women with a history of GDM using a chronic care framework as outlined in the RACGP publication, *A systems approach to the management of diabetes: A guide for general practice networks.*[48] The chronic care model incorporates the key elements of delivery system design (multidisciplinary team approach), self-management support (patient education, motivational counselling), decision support integration of evidence based guidelines into practice and reminder systems, clinical information systems (registries and feedback on performance measures), community resources (patient education classes, exercise programs) and healthcare organisation.

A review of research in this field has shown a systems approach improves both care processes and patient outcomes. Dennis et al (2008) in their review of the effectiveness of chronic disease management interventions make a number of policy recommendations for a comprehensive and coordinated strategy to improve quality of care in chronic disease that are equally relevant to the GDM context.[49] These included enhancing self-management support in primary care by education and training of health care providers in self-management support, funding systems to support the role of practice nurses, incentives to support disease registries and improve practice software with better data extraction systems for clinical audit and integration of clinical guidelines as well as increased collaboration between general practice and other allied health services.

Mental health

Whilst there are no specific guidelines concerning mental health follow-up for women with a history of GDM it is well accepted postpartum care practice to assess a women's emotional wellbeing as postpartum depression and anxiety is common. [10] Two Australian guidelines (beyondblue[50] and RACGP [21]) recommend the use of the Edinburgh Postnatal Depression Scale as part of the assessment of emotional wellbeing between six and 12 weeks postpartum. Mental distress can act against women with prior GDM engaging in healthy lifestyle behaviours. [51] This is especially important for these women as the risk of future a GDM pregnancy or developing overt diabetes can be reduced through lifestyle modification. [7, 41] The Chart Audit indicated that six of the seven women were assessed in the recommended timeframe. It is not possible to determine from the audit if all women underwent mental health screening as the audit only checked if EPDS was performed. However, the Postpartum Care Survey did indicate screening for depression was "sometimes" or "always" done by 96% of respondents. Awareness of the importance of mental distress and social support and particularly its impact on undertaking a healthy lifestyle should be an essential element of care in delivering comprehensive holistic care to these women.

REMINDER SYSTEMS

Reminder systems are one component of a systematic approach to delivery of care to women following a pregnancy affected by GDM. The reminder is usually entered at the time of diagnosis of GDM to remind the GP and the patient for need for diabetes screening as recommended by screening guidelines. This can then trigger an administrative action to notify the patient. Reminder systems are recognised as an important information management system to support clinical care[48] and are associated with higher probability of guideline use. [33]

Although all GPs who completed the GP Survey used electronic medical software with the capacity for a reminder system not all used this function. Given there is good evidence to demonstrate that proactively contacting patients is associated with higher postpartum testing rates[16, 52-54] it is recommended that all practices be encouraged to fully utilize the capacity of their information systems particularly as the feedback from those who do use reminders was positive.

Although this study only focused on the use of reminder systems, the fact that all are using computerised medical software programs indicates there is scope for establishing GDM patient registries that can assist GPs to flag when a preventative activity is offered and completed. Registries can aid delivery of proactive planned care.[48]

National Gestational Diabetes Register (NGDR)

Our research (Chart Audit) indicated that women's compliance and engagement with their primary care provider appears sub optimal. Other reminder systems that support both women and GPs include the Diabetes Australia's National Gestational Diabetes Register (NGDR) within the National Diabetes Services Scheme (NDSS), launched in 2011 as a free service to women with a Medicare card to help those who have had GDM to manage their health and prevent progression to T2DM. One function of the NGDR is to send regular reminder letters to women and their GPs regarding diabetes checks (at registration, 12 weeks postpartum and annually, thereafter). These reminder letters also include general information for the women and their families to help them continue a healthy lifestyle.

Although the NGDR does outline what testing to undertake, its potential to allow implementation and dissemination of a comprehensive, consolidated set of guidelines is perhaps under utilised. It could facilitate effective connection of women with a history of GDM with specific, effective, evidence-based lifestyle advice delivered with clinical guidance for GPs.

Limitations

The large sample size of the Postpartum Care Survey across multiple Medicare Local areas is a strength of this study. Despite only a subset of the wider survey cohort completing our included questions resulting in a smaller than usual response rate for GP surveys[55], this group were potentially more engaged with the evidence-base and population group, with most identifying as providing maternity shared care. The sample was generally representative of the wider GP population being of similar age to the wider cohort of Queensland GPs, but, containing a higher proportion of female respondents (66.5% survey vs. 41.2% Qld), with FRACGP/FACRRM qualifications (73.5% survey vs. 60.9% Qld) and Australian-trained doctors (76.1% survey vs. 72.7% Qld)

The close alignment with our targeted GP Survey and Chart Audit reaffirms the generalisability of the findings.

Despite our GP Survey and Chart Audit returning a 47.3% response rate, slightly below the return rate noted for primary care surveys[55] it can be understood in the context of the heavy workload of many practices. As noted, these findings reflect the wider Postpartum Care Survey, but gaps in the data still existed. The Chart Audit demonstrated quite clearly the concerted efforts many GPs undertake to provide best-practice care to women in the postpartum period. Another limitation of this study is capping the analysis of the provision of preventative health care at 12 months. Ideally,

a longer follow-up period would have provided a stronger insight into the delivery of care to this patient cohort.

The Chart Audit was reliant on free text in the medical record to indicate if there had been discussions on diet, exercise and contraception. It is possible there was an under reporting of some of these elements of care.

Implications for Policy

RECOMMENDATIONS

Recommendations for increasing awareness and use of guidelines for optimal care of women with prior GDM include the following:

- Development of one comprehensive Australia wide guideline for the detection and management of GDM and T2DM prevention developed in partnership with key stakeholders and adopted by professional groups. The guideline needs to be consistent with the evidence for diabetes prevention.
- Implementation of a comprehensive coordinated systems approach using a chronic care framework as described by RACGP (2010) to facilitate the preventative health care of these at risk women. System based approaches can improve the process of care and patient health outcomes. As part of a systems approach the following additional recommendations include:
- Exploration of how to improve the useability and timeliness of hospital discharge summaries as GPs regard these as one of their main sources of guidance. Strengthening the discharge communication process will also assist the satisfactory transition from hospital to primary care. Good communication and a clear pathway of care are prerequisites to optimal care and loss to follow up.
- Encouragement and incentives for GP practices to develop the capability of their electronic medical record and information management software programs to better manage and proactively follow up women with prior GDM. Increased use of reminder and decision support systems has the potential to increase women's engagement with her GP in the postpartum period and improve the process of care.
- Consistent reminders, education and support for women to facilitate timely diabetes testing.
- Expansion of Diabetes Australia's Gestational Diabetes Register within the National Diabetes Scheme (currently a reminder database) to facilitate effective connection of women with a history of GDM with systematically delivered lifestyle advice and follow up testing delivered with clinical guidelines for GPs.
- Further research to identify locally relevant barriers and enablers that facilitate the implementation of clinical guidelines. These findings could then inform the development a targeted approach to translate guidelines into practice to complement the systems approach to care. Awareness and dissemination of guidelines alone does not change practice.

References

1. Moses R, Morris G, Petocz P, San Gil F, Garg D. The impact of potential new diagnostic criteria on the prevalence of gestational diabetes mellitus in Australia. Med J Aust. 2011;194(7):338-40.

2. Hoffman L, Nolan C, Wilson JD, Oats JJN, Simmons D. Gestational diabetes mellitus - management guidelines. The Australasian Diabetes in Pregnancy Society. Med J Aust. 1998;169:93-7.

3. Buchanan T, Xiang A, Page K. Gestational diabetes mellitus: risks and management during and after pregnancy. Nat Rev Endocrinol. 2012;8(11):639-49.

4. Vos T, Goss J, Begg S, Mann N. Projection of health care expenditure by disease: a case study from Australia. Brisbane University of Queensland; 2007.

5. Tieu J, Crowther CA, Middleton P. Dietary advice in pregnancy for preventing gestational diabetes mellitus. Cochrane Database Syst Rev. 2008;Issue 2. Art. No. :CD006674

6. Metzger B. Long-term outcomes in mothers diagnosed with gestational diabetes mellitus and their offspring Clin Obstet Gynecol. 2007;50(4):972-9.

7. Mielke RT, Kaiser D, Centuolo R. Interconception care for women with prior gestational diabetes mellitus. J Midwifery Womens Health. 2013;58(3):303-12.

8. McElduff A. Shared care: gestational diabetes. Aust Fam Physician. 2003;32(3):113.

9. Gabbe SG, Landon MB, Warren-Boulton E, Fradkin J. Promoting health after gestational diabetes: a National Diabetes Education Program call to action. Obstet Gynecol. 2012;119(1):171-6.

10. Haran C, van Driel M, Mitchell B, Brodribb W. Clinical guidelines for postpartum women and infants in primary care–a systematic review. BMC Pregnancy Childbirth. 2014;14:51.

11. Nankervis A, McIntyre H, Moses R, Ross G, Callaway L, Porter C, et al. Australian Diabetes in Pregnancy Society (ADIPS) Consensus guidelines for the testing and diagnosis of gestational diabetes mellitus in Australia. Sydney: ADIPS; 2013 [cited April 2014]. Available from: http://www.adips.org/downloads/ADIPSConsensusGuidelinesGDM-03.05.13VersionACCEPTEDFINAL_000.pdf.

12. Sterne VL, Logan T, Palmer MA. Factors affecting attendance at postpartum diabetes screening in women with gestational diabetes mellitus. Prac Diab Int. 2011;28(2):64-8a.

13. Morrison M, Collins C, Lowe J. Postnatal testing for diabetes in Australian women following gestational diabetes mellitus. Aust N Z J Obstet Gynaecol. 2009;49:494- 8.

14. Tovar A, Chasan-Taber L, Eggleston E, Oken E. Postpartum screening for diabetes among women with a history of gestational diabetes mellitus. Prev Chronic Dis. 2011;8(6):A124.

15. Smirnakis KV, Chasan-Taber L, Wolf M, Markenson G, Ecker JL, Thadhani R. Postpartum diabetes screening in women with a history of gestational diabetes. Obstet Gynecol. 2005;106(6):1297-303.

16. Shah BR, Lipscombe LL, Feig DS, Lowe JM. Missed opportunities for type 2 diabetes testing following gestational diabetes: a population-based cohort study. BJOG,. 2011;118(12):1484-90.

17. Lawrence JM, Black MH, Hsu J-W, Chen W, Sacks DA. Prevalence and timing of postpartum glucose testing and sustained glucose dysregulation after gestational diabetes mellitus. Diabetes Care. 2010;33(3):569-76.

18. Kim C, Tabaei BP, Burke R, McEwen LN, Lash RW, Johnson SL, et al. Missed opportunities for type 2 diabetes mellitus screening among women with a history of gestational diabetes mellitus. Am J Public Health. 2006;96(9):1643-8.

19. Keely E. Preventing diabetes in women with gestational diabetes: An opportunity not to be missed- how do we improve postpartum screening rates for women with gestational diabetes? Diabetes Metab Res Rev. 2012;28(4):312-6.

20. Royal Australian College of General Practitioners; Diabetes Australia. Diabetes management in general practice 2014-2015. Sydney: RACGP; 2014.

21. Royal Australian College of General Practitioners. Guidelines for preventive activities in general practice (the red book) 8th Edition ed. . Melbourne: Royal Australian College of General Practitioners House.; 2012.

22. Kitzmiller J, Dang-Kilduff L, Taslimi M. Gestational diabetes after delivery. Diabetes Care. 2007;30(Supplement 2 July):S225-S35.

23. Kapustin J. Postpartum management for gestational diabetes mellitus: Policy and practice implications. J Am Acad Nurse Pract. 2008;20:547-54.

24. Buchanan TA, Xiang AH, Page KA. Gestational diabetes mellitus: risks and management during and after pregnancy. Nat Rev Endocrinol. 2012;8(11):639-49.

25. Queensland Maternity and Neonatal Clinical Guidelines Program. Maternity shared care. Brisbane: Queensland Health; 2011.

26. Diabetes Australia and Royal Australian College of General Practitioners. Diabetes Management in General Practice 2011-12. Sydney: Royal Australian College of General Practitioners; 2011.

27. Therapeutic guidelines: endocrinology. Version 4 Melbourne: Therapeutic Guidelines Limited; 2009.

28. Nankervis A, Costa J, editors. Diabetes and pregnancy: a woman's experiences and medical guidelines. Melbourne: Miranova; 2000.

29. Jenkinson B, Young K, Kruske S. Maternity services and the discharge process: A review of practice in Queensland. Women and Birth. 2014;27(2):114-20.

30. Francke AL, Smit MC, de VAJ, Mistiaen P. Factors influencing the implementation of clinical guidelines for health care professionals: a systematic meta-review. BMC Med Inform Decis Mak. 2008;8:38.

31. Harris M. The role of primary health care in preventing the onset of chronic disease, with a particular focus on the lifestyle risk factors of obesity, tobacco and alcohol.2008 [cited 2014 21 Oct]. Available from:

http://www.preventativehealth.org.au/internet/preventativehealth/publishing.nsf/Content/0FBE203C1C547A82CA257529000231BF/$File/commpaper-primary-hlth-care-harris.pdf.

32. Gunn J, Lumley J, Young D. The role of the general practitioner in postnatal care: a survey from Australian general practice. Br J Gen Pract. 1998;48:1570-4.

33. Harris MF, Lloyd J, Krastev Y, Fanaian M, Davies GP, Zwar N, et al. Routine use of clinical management guidelines in Australian general practice. Aust J Prim Health. 2012.

34. Lie M, Hayes L, Lewis-Barned N, May C, White M, Bell R. Preventing type 2 diabetes after gestational diabetes: women's experiences and implications for diabetes prevention interventions. Diabet Med. 2013;30:986-93.

35. The Royal Australian College of General Practitioners (RACGP) position statement on breastfeeding: RACGP; 2007 [cited 2014 21 Oct]. Available from: http://www.racgp.org.au/download/documents/Policies/Clinical/breastfeeding_position_statement.pdf.

36. Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. Can J Diabetes. 2013;37(Suppl 1):S1-S216.

37. Kim C. Managing women with gestational diabetes mellitus in the postnatal period. Diabetes Obes Metab. 2010;12:20-5.

38. Feig D. Preventing diabetes in women with gestational diabetes. Diabetes Metab Res Rev. 2012;28(4):305-6.

39. National Institute for Health and Clinical Excellence. Diabetes in Pregnancy: management of diabetes and its complications from pre conception to the postnatal period London: National Institute for Health and Clinical Excellence. www.nice.org.uk/CG063; 2008 [cited 2014 21 Oct]. Available from: http://www.nice.org.uk/nicemedia/pdf/CG063Guidance.pdf.

40. American Diabetes Association. Standards of medical care in diabetes-2013. Diabetes Care. 2013;36 Suppl 1:S11-66.

41. Kim C. Gestational diabetes: risks, management, and treatment options. Int J Womens Health. 2010;2:339-51.

42. Smith BJ, Cheung NW, Bauman AE, Zehle K, McLean M. Postpartum physical activity and related psychosocial factors among women with recent gestational diabetes mellitus. Diabetes Care. 2005;28(11):2650-4.

43. Koh D, Miller YD, Marshall AL, Brown WJ, McIntyre D. Health-enhancing physical activity behaviour and related factors in postpartum women with recent gestational diabetes mellitus. J Sci Med Sport. 2010;13(1):42-5.

44. Zehle K, Smith BJ, Chey T, McLean M, Bauman AE, Cheung NW. Psychosocial factors related to diet among women with recent gestational diabetes: opportunities for intervention. The Diabetes Educ. 2008;34(5):807-14.

45. Morrison M, Koh D, Lowe J, Miller Y, Marshall A, Colyvas K, et al. Postpartum diet quality in Australian women following a gestational diabetes pregnancy. Eur J Clin Nutr. 2012;66:1160-5.

46. Proudfoot J, Andrews A, Liaw S-T, Crimmins J, Arguel A, Coiera E, et al. Which Bundles of Features in a Web-Based Personally Controlled Health Management System Are Associated With Consumer Help-Seeking Behaviors for Physical and Emotional Well-Being? J Med Internet Res. 2013;15(5):1-7.

47. Ball L, Hughes R, Desbrow B, Leveritt M. Patients' perceptions of nutrition care provided by general practitioners: focus on Type 2 diabetes. Fam Pract. 2012;29(6):719-25.

48. The Royal Australian College of General Practitioners. A systems approach to the management of diabetes:A guide for general practice networks. South Melbourne: RACGP, 2010.

49. Dennis SM, Zwar N, Griffiths R, Roland M, Hasan I, Davies GP, et al. Chronic disease management in primary care: from evidence to policy. Med J Aust. 2008;188(8):S53-S6.

50. beyondblue. Clinical Practice Guidelines for Depression and Related Disorders-Anxiety, Bipolar Disorder and Puerperal Psychosis- in the Perinatal Period. A Guideline for Primary Care Health Professionals. Melbourne: 2011.

51. Razee H, van dPHP, Blignault I, Smith BJ, Bauman AE, McLean M, et al. Beliefs, barriers, social support, and environmental influences related to diabetes risk behaviours among women with a history of gestational diabetes. Health Promot J Austr. 2010;21(2):130-7.

52. Heatley E, Middleton P, Hague W, Crowther C. The DIAMIND study:postpartum SMS reminders to women who have had gestational diabetes mellitus to test for type 2 diabetes: a randomised controlled trial- study protocol. BMC pregnancy and childbirth. 2013;13(92).

53. Clark HD, Graham ID, Karovitch A, Keely EJ. Do postal reminders increase postpartum screening of diabetes mellitus in women with gestational diabetes mellitus? A randomized controlled trial. Am J Obstet Gynecol. 2009;200(6).

54. Carson M, Frank M, Keely E. Postpartum testing rates among women with a history of gestational diabetes- systematic review. Prim Care Diabetes. 2013;7(3):177-86.

55. Creavin S, Creavin A, Mallen C. Do GPs respond to postal questionnaire surveys? A comprehensive review of primary care literature. Fam Pract. 2011;28(4):461-7.

Appendix A. A comparison of current GDM diagnosis, treatment and follow up guidelines

Guideline/ Society (Country)	Australasian Diabetes in Pregnancy Society (ADIPS)(Australia & NZ)(a)	Diabetes Australia and Royal Australian College of General Practitioners (RACGP) (Australia)(b)	Therapeutic Guidelines: Endocrinology (Australia)(c)	American College of Obstetricians and Gynecologists (ACOG)(USA)(d)	American Diabetes Association (ADA)(USA)(e)	National Institute for Health and Clinical Excellence (NICE)(UK)(f)	Canadian Diabetic Association (CDA)(Canada)(g)
Antenatal testing protocol	Universal OGTT, 24-28 weeks; earlier if clinically indicated	Universal screening at 26-28 weeks. Two step approach recommended(GCT then OGTT)	Universal GCT or OGTT at 26 weeks. Early screening if high risk.	–	Universal OGTT at 24-28 weeks in women not previously diagnosed with overt diabetes	At 24-28 weeks if the woman has any risk factors or earlier if GDM in a previous pregnancy	Universal screening 24-28 weeks. Two step approach preferred (GCT then OGTT)
Timing of first postpartum follow up visit	6-12 weeks	6-12 weeks	6-12 weeks	6-12 weeks	6-12 weeks	6 weeks	6 weeks-6 months
Which test(s) for postpartum screening	75g OGTT	75G OGTT	75g OGTT	FPG or 75g OGTT	75g OGTT; not HbA1c	FPG	75g OGTT
Who with?	–	GP	–	–	–	–	–

Frequency of follow up and recommended test	Dependent on future pregnancy plans and perceived risk of type2 diabetes, yearly OGTT if planning pregnancy. 1-2 years FPG (low risk), OGTT/HbA1C (higher risk)	3 yearly; with FPG	If postnatal test normal: annual fasting or random blood glucose or OGTT every 2 years and before subsequent planned pregnancies	3 yearly	Minimum 3 yearly with OGTT. If IFG or IGT, yearly	Yearly,; no blood test specified	At least 3 yearly and before each pregnancy
Other postnatal advice included	No recommendations	Increase physical activity, weight loss/ healthy diet. Refer to dietitian and/or physical activity program. Pre-conception advice. Encourage breastfeeding	Risk counselling for future type2 diabetes. Lifestyle advice: diet/physical activity. Subsequent pregnancy: early screening 12-16 weeks repeated at 26 weeks gestation.	Weight loss and physical activity counselling as needed	Women with a history of GDM found to have pre-diabetes should receive lifestyle interventions or metformin to prevent diabetes.	Lifestyle advice: weight control, diet and exercise. Contraception and pregnancy planning advice	Lifestyle advice to prevent diabetes and cardiovascular disease should begin in pregnancy and continue postpartum. Encourage breastfeeding for at least 3 months postpartum. Provide risk and preconception counselling.
References:	a) Nankervis A, et al. Australian Diabetes in Pregnancy Society (ADIPS) Consensus guidelines for the testing and diagnosis of gestational diabetes mellitus in Australia. 2013, Australian Diabetes in Pregnancy Society. b) Royal Australian College of General Practitioners; Diabetes Australia. Diabetes management in general practice 2014-15. 2011, Sydney: Royal Australian College of General Practitioners. 2014. http://www.racgp.org.au/your-practice/guidelines/diabetes(accessedJun2014) c) Endocrinology Expert Group. Therapeutic guidelines. endocrinology – version 5. The Therapeutic Guidelines Limiteed, 2014 d) ACOG, Postpartum screening for abnormal glucose tolerance in women who had gestational diabetes mellitus. Obstet Gynecol, 2009. **113**(Opinion No 435): p. 1419-21. e) American Diabetes Association, Standards of medical care in diabetes-2013. Diabetes Care, 2013. **36 Suppl 1**: p. S11-66. f) National Institute for Health and Clinical Excellence, Diabetes in pregnancy: management of diabetes and its complications from pre conception to the postnatal period. London: NICE, 2008. www.nice.org.uk/CG063: (accessed Jun 2014) g) Canadian Diabetes Association Clinical Practice Guidelines Expert Committee, Clinical practice guidelines for the prevention and management of diabetes in Canada. Can J Diabetes, 2013. **37** Suppl 1: p. S1-S216.						

Appendix B. Barriers to optimal care

Mother	Health Care Provider	Health System
Inconvenience of OGTT	Lack of health provider knowledge	Fragmentation of health services pre/ post natal care
Lack of awareness: risks, need for testing/lifestyle change	Poor adherence to practice recommendations	Poor communication between health care providers
Maternal characteristics: age, ethnicity, marital status and education	Uncertainty re responsibility for screening	Poor primary care efforts to identify and intervene
Interaction with health care system (mobile population)	Lack of integration of tool into daily work flow	Loss of follow up post delivery
Inconsistent advice from health care providers	Other issues to deal with in consultation-time constraints	Lack of consensus on guidelines

References

Bhake R, Dayan CM. The management of gestational diabetes mellitus after pregnancy. Practical Diabetes International. 2010;27(8):364-7a.

Kapustin J. Postpartum management for gestational diabetes mellitus: Policy and practice implications. J Am Acad Nurse Pract. 2008;20:547-54.

Keely E. Preventing diabetes in women with gestational diabetes: An opportunity not to be missed- how do we improve postpartum screening rates for women with gestational diabetes? Diabetes / Metabolism Research and Reviews. 2012;28(4):312-6.

Kim C. Gestational diabetes: risks, management, and treatment options. International Journal of Women's Health. 2010;2:339-51.

Smirnakis KV, Chasan-Taber L, Wolf M, Markenson G, Ecker JL, Thadhani R. Postpartum diabetes screening in women with a history of gestational diabetes. Obstet Gynecol. 2005;106(6):1297-303.

Sterne V, Logan T, Palmer M. Factors affecting attendance at postpartum diabetes screening in women with gestational diabetes mellitus. Practical Diabetes International. 2011;28(2):64-9.

Tovar A, Chasan-Taber L, Eggleston E, Oken E. Postpartum screening for diabetes among women with a history of gestational diabetes mellitus. Prev Chronic Dis. 2011;8(6):A124.

Appendix C. Invitation and consent form

Be part of a study exploring general practitioners management of women with a history of gestational diabetes in the first 12 months following birth.

Dear Practice Manager,

As you are one of a small group of Mater shared-care aligned general practices identified as caring for a woman with a history of GDM, I would be very grateful for 5- 10 minutes of your busy schedule to assist with our research project.

The study involves an audit of one or two (maximum 4) medical records of women who gave birth in 2011-12 and had a diagnosis of GDM. The audit takes on average 10 minutes to complete by the practice manager or nurse. Names of your patients and their doctor will be provided to you. There is also a one page survey for the treating doctor to complete. This takes no more than 5 minutes of the doctor's time. We are offering a $100 gift voucher to practices who participate in appreciation for their assistance with this research.

Please find an information sheet and consent form attached. The CRE research officer, Susan Upham will be in contact with you in the next week to further discuss your potential involvement in this project and provide patient and treating doctor names of those eligible to participate. Should you have any questions or concerns about the project, please feel free to contact me on 07 3346 4698.

Sincerely,

Claire Jackson

Claire Jackson
Immediate Past President, RACGP
Director, Centres for Primary Care Reform Research Excellence
Professor in Primary Care Research
email: c.jackson@uq.edu.au ph: 07 3365 5381

I am interested in being involved

Name: _____
Practice: _____
Preferred Day: _____ *Time:* _____
Contact Ph number: _____
email: _____

PARTICIPANT INFORMATION SHEET

Postpartum care of women with prior gestational diabetes in the first 12 months following birth.

Who are we:
The Australian Primary Health Care Research Institute (APHCRI) Centre of Research Excellence (CRE) was established in early 2011 to address primary health care quality, governance, performance and sustainability issues identified within the national health reform agenda. One project within this CRE is investigating GPs knowledge and management of women in the 12 months after a pregnancy with GD, compared with evidence based guidelines.

Significance of project:
Gestational Diabetes Mellitus (GDM) affects 5-8% of Queensland women. GDM is associated with pre-eclampsia, decreased breastfeeding success, as well as progression to overt diabetes in subsequent years. There is currently a gap in GDM research up to 12 months postpartum. Our research will provide new knowledge in this under-researched area.

The project aims:
To determine general practitioners' follow up care of women with prior GDM (up to 12 months postpartum) including current knowledge and use of GDM evidence based guidelines.

Methods:
This evaluation will be done through an audit of GDM patient chart/s and a short GP survey.

What would be involved if I agree to participate in this study?
If you agree to participate in this study you will be asked to complete a short medical chart audit of one or more women presenting with a history of GDM at your practice who gave birth in 2011-12. This can be done by your practice manager or nurse. Patient names will be supplied. This audit seeks information on elements of care provided by the GP. A paper based audit tool will be provided to you by our research team which is simple and easy to complete. To learn more about current practice guidelines and approaches, the treating doctor will be provided with a one page survey to complete.

What are the risks and benefits of being in this study?
There are no risks to staff from undertaking this research. This research aims to add new knowledge to an under-researched area of postpartum care of these women. In appreciation for your time and assistance with this research we will be offering you a **$100 gift voucher.**

Your rights:
Your participation in this study is totally voluntary. You are free to change your mind about being in the study at any time. You do not have to agree to be in this study. You can withdraw from this study at any time, without prejudice and if desired, any identified data collected prior to your withdrawal will be destroyed. This study has been ethically approved by the Mater Health Services Human Research Ethics Committee and participants may **contact the Mater Research Ethics Coordinator** on 3163 1585 should you have any complaints about the conduct of the research, or wish to raise any concerns. Please feel free to contact a member of the team should you wish to discuss this study.

Chief Investigators:
Professor Claire Jackson, Professor of General Practice (UQ) c.jackson@uq.edu.au (07) 3366 55381
Ms Caroline Nicholson, Director / Senior Lecturer, Mater / University of Queensland Centre for Primary Health Care Innovation caroline.nicholson@mater.org.au (07) 3163 1970
Dr Shelley Wilkinson, NHMRC TRIP Fellow and Senior Research Dietitian, Mater Mothers' Hospital and Mater Medical Research Institute shelley.wilkinson@mater.org.au (07) 3163 8585
Associate Investigator: Dr Tina Janamian, Senior Program manager APHCRI Centre of Research Excellence t.janamian1@uq.edu.au (07) 3365 5545
Research Assistant: Susan Upham, APHCRI Centre of Research Excellence s.upham1@uq.edu.au (07) 3346 4835

Thank you for your interest in participating in this study.

CONSENT FORM

Your Consent

You are invited to take part in this research project.

The Participant Information Sheet contains detailed information about the research project for you to read before you decide whether or not to take part t.

If you agree to take part in it, your practice manager or nurse and the treating doctor will be asked to sign this Consent Form and return it to a researcher from the University of Queensland, Discipline of General Practice. By signing the Consent Form, you indicate that you understand the information and that you give your consent to participate in the research project. You may also agree to participate by emailing your agreement from your personal computer address.

You will be given a copy of the Participant Information Sheet and Consent Form to keep as a record.

I _____ (print name), understand that by signing this form I agree to take part in the 'General practitioners status quo on postnatal care of women with prior GDM (extended to 12 months postpartum) including current knowledge and use of GDM evidence-based best practice guidelines" study and I have:

- **Read and understood the information given to me;**
- **Had any questions or queries answered to my satisfaction;**
- **Been informed of the possible risks of my involvement;**
- **Understood that the project is for the purpose of research;**
- **Been informed that the confidentiality of the information will be maintained and safeguarded;**
- **Been assured that I am free to withdraw at any time without comment or penalty; and**
- **Agreed to participate in the project**
- **Requested to receive a copy of the project report Yes/No in electronic/ paper format and have provided the following address to send the report to:**

_____

_____

Participant Signature **Date**

Thank you for participating in this study.

Appendix D. GP Survey

Postpartum care of women with prior gestational diabetes

1. What guidelines or approach informs your care for postpartum women with prior gestational diabetes (GDM) and on a scale of 1-5, how useful are these guidelines/approach (tick one box for each guideline)?

Guidelines or approaches used	**How useful were these guidelines/approaches**				
	1 **Not familiar**	2 (Not useful)	3	4	5 (Very useful)
Diabetes Management in General Practice: Guidelines for Type 2 diabetes 2012/13 (Diabetes Australia)	☐	☐	☐	☐	☐
Therapeutic Guidelines Endocrinology v4 2009	☐	☐	☐	☐	☐
Australian Diabetes in Pregnancy (ADIPS) Consensus Guidelines for testing and diagnosis of GDM in Australian, Feb 2013	☐	☐	☐	☐	☐
Australian Diabetes in Pregnancy (ADIPS) Gestational Diabetes mellitus – management guidelines published MJA 1998. Updated and endorsed by RANZCOG in 2003	☐	☐	☐	☐	☐
Hospital discharge summary	☐	☐	☐	☐	☐
Mater Mothers Hospital GP Maternity Shared Care Guideline Aug 2012	☐	☐	☐	☐	☐
Other (Please specify)	☐	☐	☐	☐	☐

2. How many weeks post-partum do you recommend women with prior GDM be tested for diabetes?_____
3. Which diabetes test do you usually order?_____
4. Do you have a reminder system to monitor postpartum women with prior GDM? □ No □ Yes

   (a) If yes, please briefly explain your (or your practice's) reminder system:

   _____
   _____

   (b) If yes, do you think the reminder system works well? □ No □ Yes

   (b) Please briefly explain how it works well or doesn't work well:

Appendix E. Chart Audit

THE UNIVERSITY OF QUEENSLAND

Postpartum Data Collection Instructions:

1. Review the medical record for all visits from: _____ to:_____
2. Record information for all headings for every visit
3. Ring Susan Upham on 3346 4835 if you have any questions (Mon- Wed 9- 4pm, Thurs 9- 12:30)

#Type of medical record:

ID:	Diabetes Test Eg. OGTT, HbA1c, Fasting Plasma Glucose (FPG). If no test ordered record N/A in *date ordered column				BMI recorded		Weight recorded		Blood Pressure recorded		Mental health **EDS		Breastfeeding status recorded		Birth Control discussed		Diet/Exercise discussed		Other relevant referral	Other –please specify
Date of visit	Name of Test	*Date ordered	Date done	Result 1.Normal 2.Abnormal 3.No result	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Eg. dietitian, exercise program/physiologist, endocrinologist, GPMP, EPC, diabetes educator	Eg. Pregnancy, Diabetes diagnosis

IDENTIFICATION CODE:

Appendix F. Postpartum Care in General Practice Survey

POSTPARTUM CARE IN GENERAL PRACTICE - What happens and can it be improved?

Thank you for completing this questionnaire about how mothers and babies are cared for in your general practice within the FIRST 8 WEEKS POSTPARTUM. The information obtained will help us develop an understanding about how mothers and babies in the postpartum period are managed in general practice. We plan to develop guidelines and investigate ways of improving maternal and infant care.

The questionnaire will take approximately 10-15 minutes to complete. Complete it by marking the appropriate box or complete the question in the space provided. Unless otherwise indicated please give only one response for each question.

Please return the questionnaire to in the reply paid envelope, by fax (07 3346 5178), scan and email to n.gaudens@uq.edu.au or post to Dr Wendy Brodribb, Discipline of General Practice, Level 8 Health Sciences Building, RBWH, Herston 4029.

Alternatively, you may complete the questionnaire online at https://www.surveymonkey.com/s/QY6RB8Q using the identification code above, in the space provided.

The first three questions are about the location of your practice

1. What is the postcode of your practice? _____

2. What suburb, city or town do you practice in? _____

3. How many kilometres is your practice situated from the nearest birthing facility?

☐ 0-20 ☐ 21 – 50 ☐ 51 – 100 ☐ >100

The following questions relate to postpartum and neonatal care in your general practice and contact with other care providers.

4. When do you encourage/recommend women who birth in a PUBLIC facility (including those who share antenatal care) to return for a routine postpartum/neonatal review with you? (mark as many as you like)

- ☐ Within 2 weeks postpartum
- ☐ Around 4 weeks postpartum
- ☐ Around 6 weeks postpartum
- ☐ Whatever the hospital says
- ☐ I don't make a recommendation
- ☐ Other _____

5. When do you encourage/recommend women who birth in a PRIVATE facility under the care of an obstetrician to return for a routine postpartum/neonatal review with you? (mark as many as you like)

- ☐ Within 2 weeks postpartum
- ☐ At 4 weeks postpartum
- ☐ At 6 weeks postpartum
- ☐ Following her appointment with the obstetrician

☐ I don't make a recommendation

☐ Other _____

For what length of time is a mother/baby usually booked for a routine postpartum/neonatal visit in your practice and how long do you usually spend with them?

	6. Time booked in minutes	7. Time taken in minutes
Mother		
Infant		

How many women and/or infants have you seen for a 'routine' postpartum/neonatal review in the last month?

8. Within the first 2 weeks of birth			9. 3-8 weeks after birth		
	Mothers	Infants		Mothers	Infants
None	☐	☐	None	☐	☐
1-2	☐	☐	1-2	☐	☐
3-5	☐	☐	3-5	☐	☐
6-10	☐	☐	5-10	☐	☐
11-20	☐	☐	11-20	☐	☐
>20	☐	☐	>20	☐	☐

How many women and/or infants have you seen for a non-routine visit (i.e. they came with a problem or concern) within the first 8 weeks postpartum in the last month?

10. Within the first 2 weeks of birth			11. 3-8 weeks after birth		
	Mothers	Infants		Mothers	Infants
None	☐	☐	None	☐	☐
1-2	☐	☐	1-2	☐	☐
3-5	☐	☐	3-5	☐	☐
6-10	☐	☐	5-10	☐	☐
11-20	☐	☐	11-20	☐	☐
>20	☐	☐	>20	☐	☐

12. What proportion of your patients who have either public, shared or private antenatal care do you see in the first 8 weeks postpartum?

	Public care	Shared care	Private care
None	☐	☐	☐
Less than half	☐	☐	☐
About half	☐	☐	☐

More than half	☐	☐	☐
All	☐	☐	☐
Not applicable	☐	☐	☐

13. Do you usually receive a hospital discharge summary about the birth and postpartum course before you see the mother and/or infant for the first time?

☐ Nearly always
☐ Sometimes
☐ Rarely
☐ Never (Go to Question 15)

14. Overall, how useful do you find the discharge summaries?

☐ Very useful
☐ Some what useful
☐ Not useful

15. How many times have you had contact with any local community postpartum service providers (Child and Family Health nurses, pharmacy nurses, private midwives, lactation consultants), not located in your practice, about a patient?

☐ Never – I don't ever get any contact with these people (Go to Question 20)

In the past month:

☐ None (go to Question 20)
☐ 1
☐ 2-3
☐ 4-5
☐ 6 or more

16. Was this contact:

☐ In person
☐ By phone
☐ By letter or email

17. Who usually initiates that contact?

☐ Myself
☐ The community postpartum service provider
☐ Either
☐ Other (please explain) _____

18. What is the reason for your most recent contact with the community postpartum service provider?

_____

_____

19. Overall, how would you describe the contact between yourself and the community postpartum service provider?

☐Very helpful ☐Helpful ☐No opinion ☐Unhelpful ☐Very unhelpful

20. Are you aware of a home visiting midwifery service in your area that provides care to postpartum mothers after leaving hospital?

☐ No (go to Question 24)

☐ Yes - and have had contact (go to Questions 21,22 & 24)

☐ Yes – but have not had contact (go to Question 23)

21. Was this contact

☐ In person

☐ By phone

☐ By letter or email

22. How would you describe your contact with the home visiting midwifery service?

☐Very helpful ☐Helpful ☐No opinion ☐Unhelpful ☐ Very unhelpful

23. Would you have liked contact with the home visiting midwifery service?

☐ No ☐ Yes

24. What after-hours service arrangements do you provide for recent mothers and their babies? (mark as many as applicable)

☐ On call myself

☐ Practice roster on call

☐ Advised to call or go to the local hospital

☐ After-hours service (deputising service)

☐ My home/mobile phone number

☐ Advice to contact free 13 HEALTH number

☐ No routine arrangement

IDENTIFICATION CODE:

The following items relate to discussion about an examination of the neonate and mother.

25. When I see an infant WITHIN the first 8 weeks postpartum, I talk about, check and/or discuss:
(please tick the box that most closely matches how often you discuss that issue)

	Nearly always	Sometimes	Rarely	Never
Heel prick test	☐	☐	☐	☐
Hearing test	☐	☐	☐	☐
Vitamin K administration	☐	☐	☐	☐
Infant feeding	☐	☐	☐	☐
Infant sleeping	☐	☐	☐	☐
Infant behaviour	☐	☐	☐	☐
Infant crying	☐	☐	☐	☐
Immunisation	☐	☐	☐	☐
SIDS prevention	☐	☐	☐	☐

26. When I see an infant for the FIRST TIME within the first 8 weeks postpartum, I observe and/or perform:
(please tick the box that most closely matches how often you perform that activity)

	Nearly always	Sometimes	Rarely	Never
Weigh baby	☐	☐	☐	☐
Measure length	☐	☐	☐	☐
Measure head circumference	☐	☐	☐	☐
Examine heart and pulses	☐	☐	☐	☐
Examine eyes	☐	☐	☐	☐
Examine hips	☐	☐	☐	☐
Examine umbilicus	☐	☐	☐	☐
Examine genitalia	☐	☐	☐	☐
Examine reflexes	☐	☐	☐	☐
Examine fontanelles	☐	☐	☐	☐
Examine spine	☐	☐	☐	☐
Examine appearance	☐	☐	☐	☐
Assess development	☐	☐	☐	☐
Other (please list)				

27. When I see a woman WITHIN the first 8 weeks postpartum, I talk about, check and/or discuss: (please tick the box that most closely matches how often you discuss that issue)

	Nearly always	Sometimes	Rarely	Never
Labour and birth	☐	☐	☐	☐
Care in hospital	☐	☐	☐	☐
PV bleeding/discharge	☐	☐	☐	☐
Urine problems	☐	☐	☐	☐
Bowel problems	☐	☐	☐	☐
Back problems	☐	☐	☐	☐
Mothers feelings/ emotional wellbeing	☐	☐	☐	☐
Screening for postpartum depression	☐	☐	☐	☐
Tiredness/fatigue	☐	☐	☐	☐
Mother's sleep	☐	☐	☐	☐
Mother's diet	☐	☐	☐	☐
Contraception	☐	☐	☐	☐
Sexual issues	☐	☐	☐	☐
Next pregnancy	☐	☐	☐	☐
Pelvic floor exercises	☐	☐	☐	☐
Immunisation	☐	☐	☐	☐
Coping with other children	☐	☐	☐	☐
Relationship with partner	☐	☐	☐	☐
Time out from the baby	☐	☐	☐	☐
Household work	☐	☐	☐	☐
Parenting	☐	☐	☐	☐
Return to work	☐	☐	☐	☐
Financial concerns	☐	☐	☐	☐
Mother's exercise	☐	☐	☐	☐
Childcare	☐	☐	☐	☐
Other (please list)				

28. When I see a woman within the first 8 weeks postpartum for a routine checkup, I observe and/or perform (please tick the box that most closely matches how often you perform that activity):

	Nearly always	Sometimes	Rarely	Never
Examination				
BP check	☐	☐	☐	☐
Weight check	☐	☐	☐	☐
Urine check	☐	☐	☐	☐
Vaginal examination	☐	☐	☐	☐
Pelvic floor tone assessment	☐	☐	☐	☐
Abdominal examination	☐	☐	☐	☐
Examination of perineum	☐	☐	☐	☐
Examination of LSCS wound	☐	☐	☐	☐
Pap smear (if due)	☐	☐	☐	☐
Breast examination	☐	☐	☐	☐
Mother breastfeeding	☐	☐	☐	☐
Maternal affect	☐	☐	☐	☐
Maternal –infant interaction	☐	☐	☐	☐
Other (please list)				

29. What week postpartum would you recommend that women who had gestational diabetes have an oral glucose tolerance test (OGTT)?____wks

What guidelines or approaches inform your care for postpartum women and infants, and on a scale of 1-5, how useful do you find these guidelines/approaches? (tick one)

30. Guidelines or approaches used	31. How useful were these guidelines/approaches				
	1 (Not useful)	2	3	4	5 (Very useful)
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

What guidelines or approaches inform your care for postpartum women with gestational diabetes, and on a scale of 1-5, how useful do you find these guidelines/approach? (tick one)

32. Guidelines or approaches used	33. How useful were these guidelines/approaches				
	1 (Not useful)	2	3	4	5 (Very useful)
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

34. The following statements and questions relate to your **OPINION** about the role of the GP and other health professionals in the provision of postpartum care. Please mark one box for each statement to show how strongly you agree or disagree.

	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
Women do not need to see a GP following childbirth unless they have specific problems	☐	☐	☐	☐	☐
Most women are happy with the way that GPs provide postpartum care	☐	☐	☐	☐	☐
If postpartum depression occurs, a visit to a GP is unlikely to make a great deal of difference	☐	☐	☐	☐	☐
GPs should be able to deal with common breastfeeding problems	☐	☐	☐	☐	☐
Newborn babies should be routinely seen by a paediatrician following hospital discharge	☐	☐	☐	☐	☐
Postpartum depression should routinely be managed by a psychiatrist expert in the area	☐	☐	☐	☐	☐
Breastfeeding problems should routinely be managed by a lactation consultant	☐	☐	☐	☐	☐
The child's Personal Health Record book (red book) is useful for the GP when providing postpartum care	☐	☐	☐	☐	☐
Community support groups such as the Australian Breastfeeding	☐	☐	☐	☐	☐

Association have little to offer postpartum women					

35. The following are statements related to your knowledge and attitudes about postpartum care. Please tick one box for each statement to show how strongly you agree or disagree.

	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
I am clear about when women and/or infants should return for their routine postpartum/neonatal check/s.	☐	☐	☐	☐	☐
I am clear about what should take place at a routine postpartum/neonatal review.	☐	☐	☐	☐	☐
A vaginal examination at a postpartum review will often reveal a problem that needs to be addressed.	☐	☐	☐	☐	☐
Most women should be advised to refrain from intercourse until after the postpartum review	☐	☐	☐	☐	☐
A great deal of my knowledge about how to deal with breastfeeding problems comes from my personal experience of being a parent.	☐	☐	☐	☐	☐
Most women should be advised to refrain from all but gentle exercise in the 3 months following childbirth.	☐	☐	☐	☐	☐
Most women should be encouraged to take iron supplements in the 3 months following childbirth.	☐	☐	☐	☐	☐
Most women do not need to take iodine supplements postpartum.	☐	☐	☐	☐	☐
The opportunity for discussion and a thorough physical examination are of equal importance at the postpartum review.	☐	☐	☐	☐	☐
More postpartum problems could be prevented if GPs saw women within two weeks of leaving hospital.	☐	☐	☐	☐	☐

36. Listed below are problems that may be of concern in the postpartum period. Please tick one box for each statement to show how confident you feel about dealing with the problem.

	Very confident	Fairly confident	Not confident
Perineal pain	☐	☐	☐
Urinary incontinence	☐	☐	☐
Caesarean wound pain	☐	☐	☐
Constipation/haemorrhoids	☐	☐	☐
Faecal incontinence	☐	☐	☐
Vaginal discharge	☐	☐	☐
Prolonged vaginal bleeding	☐	☐	☐
Tiredness and exhaustion	☐	☐	☐
Back pain	☐	☐	☐
Mastitis	☐	☐	☐
Nipple problems	☐	☐	☐
Low milk supply	☐	☐	☐
Postpartum depression	☐	☐	☐
Contraception	☐	☐	☐
Issues relating to sex	☐	☐	☐
Relationship problems	☐	☐	☐
Neonatal jaundice	☐	☐	☐
Infant vomiting	☐	☐	☐
Parenting problems	☐	☐	☐
Immunisation concerns	☐	☐	☐
Infant crying	☐	☐	☐
Infant sleep problems	☐	☐	☐
Others (please list)			

About yourself

All information provided will remain confidential.

37. How many patients do you see in general practice in an average week?

☐ 0-25
☐25-50
☐ 51-100
☐ 101-180
☐ >180

38. How many hours do you work in general practice in an average week?

☐<10 ☐11-25 ☐26-50 ☐>50

39. Are you involved in providing shared antenatal care?

☐ Yes ☐ No (go to Question 41)

40. Approximately, how many women did you provide shared care for in the past year?

☐ 0 ☐<5 ☐ 5-10 ☐ 11-20 ☐ >20

41. Are a GP obstetrician?

☐ Yes ☐ No (go to question 43)

42. How women did you provide intra-partum care for in the last 12 months? _____

43. What is your year of birth? _____

44. In what year did you complete your medical training? _____

45. Are you a:

☐ GP registrar
☐ FRACGP
☐ FACRRM
☐ Other (please list): _____

46. Do you have any of the following qualifications? (please tick)

☐ Certificate of Women's Health
☐ DRANCOG (or equivalent)
☐ DRANZCOG advanced (or equivalent)
☐ Diploma in Child Health
☐ IBCLC
☐ Certificate of Sexual and Reproductive Health
☐ MPH
☐ others related to women and child health (please list) _____

47. In what year did you complete, or plan to complete, your GP training? _____

48. What is your country of birth? ☐ Australia or Other: _____

In what country did you undertake your

49. Medical training: ☐ Australia or Other_____

50. GP training: ☐ Australia or Other_____

51. What is your gender?

☐ Male ☐ Female

52. Do you have children?

☐ Yes ☐ No

THANK YOU VERY MUCH FOR YOUR ASSISTANCE WITH THIS RESEARCH PROJECT