

The Postpartum Maternal Health Clinic Handbook[©]



*A clinician`s guide to clinic development,
patient recruitment, and knowledge translation.*



The MOTHERS Program[™]
Mothers` Health Education, Research and Screening

Promoting mothers' health

Identifying heart disease risk factors

Educating women on the links between pregnancy complications and heart disease



The MOTHERS Program
Queen`s Perinatal Research Unit (QPRU)
Kingston General Hospital
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1.0 Background Information

Heart disease is the number one killer of women in Canada and around the world. For the majority of Canadian women of reproductive age, pregnancy and the postpartum provides a new early window of opportunity for primary disease prevention by identifying risk factors and implementing screening and intervention strategies to improve long-term health.

Pregnancy has been likened to a cardiovascular stress-test and that “failure” (ie. development of certain pregnancy complications) leads to the unmasking of physiologic susceptibility.¹ For example, large database studies have identified that the development of mild preeclampsia (PE) is associated with a small but significant increased risk of future CVD, while the development of severe PE or PE in more than one pregnancy, is associated with a greater risk of premature CVD.^{2,3,4} The underlying cardiovascular and/or vasculoendothelial mechanism(s) linking the adverse pregnancy outcomes to the development of CVD are thought to include hyperlipidemia, endothelial dysfunction and lipid deposition in blood vessel walls.⁵

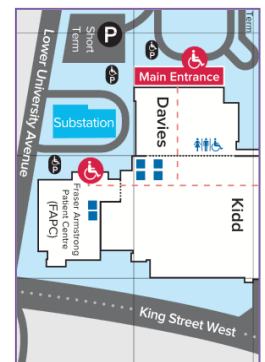
It is rare that a group at high risk for a disease be identified early enough to target follow-up and treatment for primary prevention. The new and unique approach to screening for cardiovascular risk (CVR) factors that is used in the Postpartum Maternal Health Clinic focuses on early identification and primary prevention. This strategy provides physicians with a way to improve cardiovascular disease awareness and prevention, and addresses the need to reduce care inequities for women in general and younger women in particular.

2.0 Introducing a Postpartum Maternal Health Clinic

The following section will outline some of the steps we took in introducing the Maternal Health Clinic at Kingston General Hospital. The main challenges which we have faced were integrating the clinic into standard practice and educating all stakeholders.

2.1 Finding Clinical Space

At Kingston General Hospital we were able to fit our clinic in to an available open clinic time in the obstetrics and gynaecology clinic space in the Fraser Armstrong Patient Centre. As well, the Obstetrical Department saw the value in providing this service to high risk women and has been accepting of this new program. In other centres it may be more difficult to get buy-in from departments and to find clinic space. While there is a great deal of research to support these initiatives it may take some time and some convincing to receive the needed space and support.



¹ Williams D. Pregnancy: a stress test for life. *Curr Opin Obstet Gynecol* 2003; 15:465-471.

² Irgens HU, Reisaeter L, Lie RT. Long term mortality of mothers and fathers after pre-eclampsia: population based cohort study. *BMJ* 2001; 323:1213-1217.

³ Funai EF, Paltiel OB, Malaspina D, Friedlander Y, Deutsch L, Harlap S. Risk factors for pre-eclampsia in nulliparous and parous women: the Jerusalem Perinatal Study. *Paediatr Perinat Epi* 2005; 19:59-68.

⁴ Ray JG, Vermeulen MJ, Schull MJ, Redelmeier DA. Cardiovascular health after maternal placental syndromes (CHAMPS): population-based retrospective cohort study. *Lancet* 2005; 366:1797-1803.

⁵ Staff AN, Dechend R, Pijnenborg R. Learning From the Placenta: Acute Atherosclerosis and Vascular Remodeling in Preeclampsia—Novel Aspects for Atherosclerosis and Future Cardiovascular Health. *Hypertension* 2010; 56:1026-1034.

2.2 Integrating the Referral Process in to Standard Clinical Practice

At Kingston General Hospital we have integrated the referral to the Maternal Health Clinic in to the standard clinical practice. The referral is a part of the postpartum inpatient order that is filled out for all patients who deliver at the hospital (Figure 1).

As well, we have developed a new referral form for the clinic. This form is to be filled out by the Resident or Attending Physician prior to the patient's discharge from the postpartum floor (Figure 2). The top section of the form is sent to our administrative assistant and the bottom portion of the form is given to the patient. At this time we encourage the medical staff to discuss the referral with the patient as we have found that this greatly increases the chances that they will attend the clinic.

L A T E X L I N O L I T E S	
Normal Vaginal Delivery +/- Repair; Post-Partum Order Set	
• Transfer to Kidd 5 or Kidd 10 when expected patient outcomes are met (see page 2)	
Consults:	Reason:
<input type="checkbox"/> Maternal Health Clinic	<input type="checkbox"/> Preeclampsia, eclampsia, Hemolysis, Elevated Liver enzymes and Low Platelets (HELLP) syndrome, gestational hypertension
	<input type="checkbox"/> Gestational Diabetes or gestationally impaired glucose tolerance
	<input type="checkbox"/> Intra-Uterine Growth Restricted (IUGR) baby (less than fifth percentile for gestational age or less than 2500 g at term)
	<input type="checkbox"/> Preterm birth (prior to 37 weeks for any reason)
	<input type="checkbox"/> Placental abruption leading to delivery for either maternal or fetal reasons
<input type="checkbox"/> Social Work	
<input type="checkbox"/> Other: _____	

Figure 1. Postpartum Patient Care Orders - Kingston General Hospital.

Please send to Julia Sloan, Department of Obstetrics & Gynaecology, Victory 4, KGH



Maternal Health Clinic Referral Form

Patient Name: _____

Patient CR Number: _____

Delivery Date: _____

Reason for Referral:

- Preeclampsia, eclampsia or HELLP Syndrome
- Gestational Hypertension
- Gestational Diabetes or Gestational Impaired Glucose Tolerance
- IUGR baby, <5th%ile for gestational age at <37 weeks or <2500g baby at ≥37 weeks
- Idiopathic Preterm birth (< 37 weeks)
- Placental abruption leading to delivery for either maternal or fetal reasons
- Other:

If you have questions or concerns please email or call:
 Jessica Pudwell, jessica.pudwell@queensu.ca, ext. 3937
 Dr. Graeme Smith, info@themothersprogram.ca, ext. 2405

Note: If a patient is missed before discharge they may be referred to the clinic later in the postpartum period.

Bottom Portion - Please give to patient and notify them of their referral to the Maternal Health Clinic

-----Tear Here-----

Congratulations on the birth of your baby!



Becoming a mother is a wonderful and exciting time. It is also a time to take the opportunity to ***“improve your health to benefit the whole family”***.

Based on pregnancy and delivery screening you have been identified as a candidate for follow up in **The Maternal Health Clinic** with Dr Graeme Smith. This clinic held at 6 months after delivery focuses on prevention and lifestyle modification for women who may be at increased risk for heart disease. In 3 months you will receive a package in the mail with the date and time of your clinic appointment.

For more information on the Maternal Health Clinic visit: www.themothersprogram.ca

If you have questions or concerns please email clinic@themothersprogram.ca or call Jessica at (613) 549-6666 Ext 3937.

If you **do not wish to participate** in the Maternal Health Clinic please sign below and leave this sheet at the KIDD5 or KIDD10 desk when you are discharged.

Name

Signature

Date

Figure 2. Maternal Health Clinic Referral Form.

2.3 Educating Medical and Nursing Staff at the Hospital

Educating medical and nursing staff at the hospital has contributed greatly to the success of our program. Our goal was to educate them about how the clinic works, who should be referred, how referrals are placed, and to provide background information about the link between pregnancy complications and cardiovascular disease. In order to reach all staff and to create awareness about the program we have used a number of different approaches including; our website (www.themothersprogram.ca) (Figure 7), emails to all staff in obstetrics and gynaecology, published articles in staff newsletters (Figure 3), memos placed in mail boxes and posted around the department (Figure 4), and have spoken at conferences and clinical rounds. We also rely a great deal on ongoing education through word-of-mouth and staff educators.

The Maternal Health Clinic: Translating Research Results to Clinical Practice

Cardiovascular disease is the number one killer of women in Canada, accounting for almost 35,000 deaths annually. There is a great need to improve cardiovascular awareness and prevention, and reduce care inequities for women. The Maternal Health Clinic aims to address these issues by translating research to clinical practice. The following will outline the goals and research basis of the Maternal Health Clinic.

Pregnancy is a physiologic stress test that identifies some women as being at increased risk for cardiovascular disease (CVD). The development of common complications in pregnancy, namely, pre-eclampsia and gestational hypertension, gestational diabetes or gestational impaired glucose intolerance, placental abruption, preterm delivery and/or fetal growth restriction, have been shown to predict a woman's risk of premature CVD and CVD-related mortality. We have shown that many women who develop pre-eclampsia or gestational diabetes either have sub-clinical cardiovascular risk factors, or are highly prone to their development, which, after time, likely leads to overt CVD. These pregnancy complications share many risk factors in common with CVD: chronic hypertension, dyslipidemia, endothelial dysfunction and lipid deposition within blood vessel walls.

Based on Ontario data (2005-2009), 20.58% of all pregnancies beyond 20 weeks gestation (n=644,412 total) had one or more of the pregnancy complications listed above. However, a survey by our Pre-Eclampsia New Emerging Team (PE-NET) found that obstetrical care providers in Ontario are largely unaware of the associations between these pregnancy and future cardiovascular disease risk.

Pregnancy and the postpartum is one of the few times in a young woman's life when she regularly accesses the health care system. It is also a time when many women are motivated to make healthy changes to their lifestyle. Pregnancy and the postpartum is therefore an excellent opportunity to identify risk factors and implement screening and intervention strategies to improve the long-term health of women.

The goals of the Maternal Health Clinic are; (1) to promote healthy lifestyle choices, (2) to screen for cardiovascular disease risk factors, and (3) to educate both women and care providers on the links between pregnancy complications and cardiovascular disease risk.

The Maternal Health Clinic is available to women who deliver at KGH and experience any of the relevant pregnancy complications. Women are seen at approximately 6 months postpartum in the Fraser Armstrong Patient Centre. At the appointment the women meet with a nurse to complete a survey that relates to personal and family medical history. They also have their weight, height, blood pressure and waist circumference measured. They then meet with Dr. Smith and are given a requisition for blood work and urinalysis. The information collected is used to identify cardiovascular risk factors. This information is summarized and forwarded to the woman's primary care provider for further follow-up and management.

Referral forms for the Maternal Health Clinic are available at the Connell 5 desk. Copies may also be found at the Kidd5 and Kidd10 desks.

Figure 3. Article published in our Obstetrics and Gynaecology Staff Newsletter.

The Maternal Health Clinic Referral Form

A new referral form for the Maternal Health Clinic is now available at the Connell 5 desk. Copies may also be found at the Kidd5 and Kidd10 desks.



This form is to be filled out prior to discharge (ideally at the same time as postpartum orders are written) for women who have experienced any of the below complications during pregnancy;

- Preeclampsia, eclampsia or HELLP Syndrome
- Gestational Hypertension
- Gestational Diabetes or Gestational Impaired Glucose Tolerance
- IUGR baby, <5th%ile for gestational age at <37 weeks or <2500g baby at ≥37 weeks
- Idiopathic Preterm birth (< 37 weeks)
- Placental abruption leading to delivery for either maternal or fetal reasons

Please place the top portion of the referral form in internal mail, it will be sent to Julia Sloan.

Please discuss the referral with your patient and give them the bottom portion of the referral form.

This portion of the form gives them more information about the clinic and the MoHERS Program. It also gives them an opportunity to opt out of participation in the clinic prior to discharge. If they wish to opt out of the program all they need to do is sign the form and leave it with staff at the Kidd 5 or Kidd 10 desks.

Where the forms can be found:

Connell5 - The form can be found at the desk, beside the Unit Clerk, next to the blank billing sheets.

Kidd5 - In the dictation area, in the same location as the smoking cessation folder. The folder is dark blue with a pink 'Maternal Health Clinic Opt-Out Form' label.

Kidd10 - The form can be found in a folder at the desk, to the right of the Unit Clerk's computer. The folder is dark blue with a pink 'Maternal Health Clinic Opt-Out Form' label.

Figure 4. Memo sent to all medical staff in Obstetrics and Gynaecology.

2.4 Educating Patients

Every woman who plans to deliver at Kingston General Hospital is asked to register at 20 weeks gestation. At this time they are given a registration package, in which we have included a general information flyer about the MotHERS Program (Figure 5). This flyer directs women to our website (www.themothersprogram.ca) and serves to familiarize them with the program (Figure 7). We also have a bulletin board and posters throughout the obstetrical clinic and ultrasounds areas (Figure 6). This way the name is not new if they are later invited to the clinic. The bulletin board and the website provide information about the Maternal Health Clinic.

Our website is a trusted source of information, both for women and doctors, about pregnancy, delivery, and the postpartum. All of the information on the website is written and authorized by experienced Obstetricians. Also available on our website are two Apps which we have developed for mothers and their babies. The first is the Baby Movement App, a tracking tool for fetal movement (Figure 8). The second is the Maternelle App, a tool to help mothers track important health indicators such as blood pressure and weight gain or loss. At the same time it also allows moms to record and receive reminders about immunizations (Figure 9).

All women who deliver at Kingston General Hospital are given a discharge package which contains flyers and information pamphlets from many different programs. In this we now include a MotHERS Program package that includes a letter to the patient (Figure 10), the Postpartum Maternal Health Record (Figure 11), and a letter to their family doctor (Figure 13). The letter to the patient promotes the MotHERS Program website, briefly explains the Postpartum Maternal Health Record, and notifies them that if they are eligible they will be invited to the Maternal Health Clinic. The Postpartum Maternal Health Record is a tool that we have developed to help promote monitoring of Maternal Health during the postpartum period. It is designed to accompany the infant's immunization record and to be filled out along with the family doctor during infant check-ups. The letter to the family doctor introduces them to the Postpartum Maternal Health Record and describes how it is intended to be utilized. The letter also includes information about the Maternal Health Clinic.

Finally, we ask the Obstetrical Residents and/or Attending Staff to discuss the Maternal Health Clinic with their patients if they intend to place a referral. The previously described referral form (Figure 2) is designed to initiate this discussion as patients should receive the bottom portion of this form from the medical staff prior to discharge from the hospital.

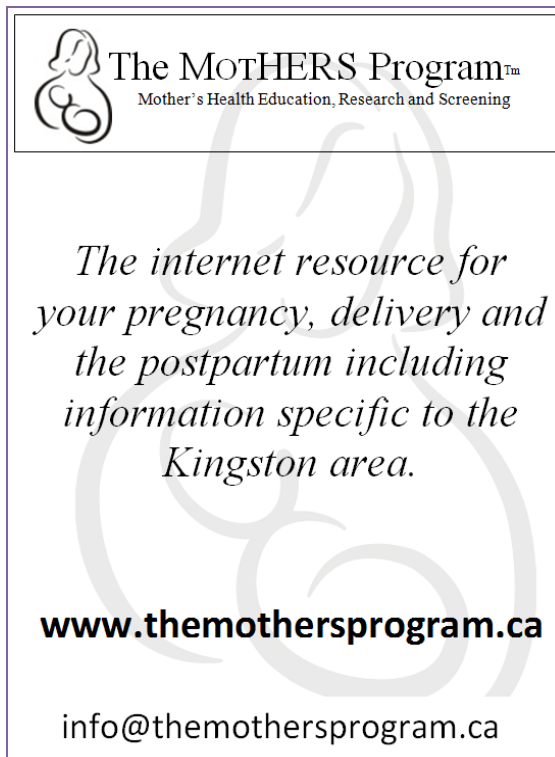


Figure 5. Half-page flyer included in the registration package at Kingston General Hospital.

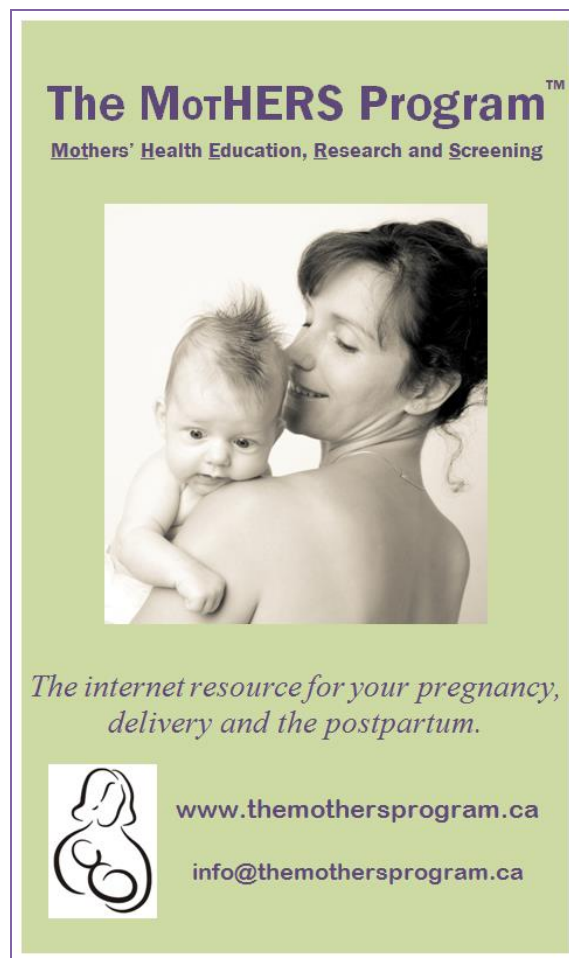


Figure 6. Poster found in the obstetric clinic area and ultrasound unit at Kingston General Hospital.

Free pregnancy update emails
• Sign up now!

Wondered if your baby moved today?
Download our new Baby Movement app that will help you keep track of your baby's daily movements.

Available on the App Store
Get it at BlackBerry App World

FAQ / About / Contact / Search: Go

The MoTHERS Program™

Mothers' Health Education, Research and Screening

Home | Before Pregnancy | During Pregnancy | After Delivery | News & Events | Resources & Information | Apps

About Us

- Before Pregnancy
- During Pregnancy
- After Delivery



THE MOTHERS PROGRAM

Improving mothers' health benefits the whole family

The MoTHERS Program is dedicated to improving mother's health through education, research and screening. Learn more...

My Account

Join now to receive our free pregnancy update emails, participate in our forum, and comment on articles and stories.

[Register Now](#)

Already registered?

[Sign in](#)

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During Pregnancy
Sex



The Latest News

General / February 19, 2013

More evidence supports taking folic acid supplements before conception

Folic acid supplements taken four to eight weeks before pregnancy appear to lower the risk of autism, according to a new study published in the Journal of the American Medical Association.

Postpartum Health Record Survey

We would like to receive your feedback to help us improve the Postpartum Health Record and provide better resources to new moms in our community!

[Learn more](#)

Resources for your Region

For Your Region

In this section you will find a list of useful resources for different regions throughout Ontario.

Before Pregnancy

- Eating Right & Exercising
- Folic Acid
- Genetics
- Infectious Disease Risk
- Infertility
- Medical Complications
- Priming for Pregnancy

During Pregnancy

- Confirming Pregnancy
- Dating your Pregnancy
- Managing your Care
- Prenatal Tests
- What's Safe, What's Not?
- Nutrition in Pregnancy
- Nausea & Vomiting
- Aches & Pains
- Fetal Movements

After Delivery

- Bleeding
- Breast & Bottle Feeding
- Car Seats
- Circumcision
- Contraception
- Developmental Milestones
- Exercise
- Infant Care
- Infant Feeding - Up to one year
- Neonatal Intensive Care Unit (NICU)
- Postpartum Depression
- Postpartum Health

Resources & Information

- For Your Region
- BORN
- Calendar & Assessment Tools
- Forum
- Medical Labs in Your Area
- Postpartum Health Record



- Central Eastern Ontario
- Eastern Ontario
- North Western Ontario
- Western Ontario
- Central Western Ontario
- North Eastern Ontario
- Toronto

Figure 7. The MoTHERS Program website (www.themothersprogram.ca).

Choose between the 2 hour or 12 hour counting method!

The app can run in the background while you do other things!

Get it at BlackBerry App World

Available on the App Store

Time Remaining: 02:00:00, Movements: 6

2 Hours evening

12 Hours daytime

Time Remaining: 12:00:00, Movements: 10

12 hours daytime

E-mail your baby's movement history to your health care team!

Set reminders to do your daily counts!

Warning: Counting and keeping track of your baby's movements has been shown to decrease the chance of stillbirth but it is not a guarantee. If you ever have concerns or questions about your baby, contact your health care provider or birthing unit immediately. For more information on baby movement counting, go to The Mothers Program website www.themothersprogram.ca

Figure 8. The Baby Movement App.

Keep track of the entire family in one convenient location!

Get it at BlackBerry App World

Available on the App Store

Receive immunization due date reminders!

Mom's can track their blood pressure and weight changes!

Easily access immunization information at any time!

Health Track

Kids: Steven, Laura, Mom: Bridget

Bridget: 5.0 LBS to goal

Pre-pregnancy weight: 125.0 LBS, Weight at delivery: 130.0 LBS, Goal weight: 125.0 LBS

Blood Pressure: 120/80, March 15, 2012

Weight, Activity Level, Breast Feeding

Steven: 00 01 months weeks

Diphtheria, Tetanus, Pertussis, Polio, Pneumo Coniugate

March 15, 2012, Due: May 07, 2012

Figure 9. The Maternelle App.



The MoHERS Program™
Mother's Health Education, Research and Screening

Congratulations on the birth of your baby!

Becoming a mother is a wonderful and exciting time. It is also a time to take the opportunity to *“improve your health to benefit the whole family”*.

The MoHERS Program website, www.themothersprogram.ca, is an interactive, internet resource for your pregnancy, delivery and the postpartum including information specific to the Kingston area.

Enclosed is a **“MOTHERS Post Partum Health Record”**. Your baby's check-ups and immunizations are a great time to fill out this record with your care provider! Keep this form with your baby's immunization record for an easy reminder.

As well, based on pregnancy and delivery screening, you may be identified as a candidate for follow up in **The Maternal Health Clinic** with Dr Graeme Smith. This clinic focuses on prevention and lifestyle modification for women who may be at increased risk for cardiovascular disease.

If you are interested in more information about the program speak to your care provider.

www.themothersprogram.ca

info@themothersprogram.ca

Figure 10. Letter to new moms found in The MoHERS Program discharge package.


Pregnancy-Related Cardiovascular Risk Indicators	
Preeclampsia	<input type="checkbox"/>
Gestational Hypertension	<input type="checkbox"/>
Gestational Diabetes	<input type="checkbox"/>
Gestational Impaired Glucose Tolerance	<input type="checkbox"/>
Placental Abruption	<input type="checkbox"/>
Excessive Weight Gain in Pregnancy	<input type="checkbox"/>
Preterm Birth	<input type="checkbox"/>
Intrauterine Growth Restriction	<input type="checkbox"/>

If you are unsure whether you experienced any of the above complications during this or a previous pregnancy ask your family physician, midwife or obstetrician at your next follow up appointment.

For assistance filling out any section of the health record and/or for definitions of terms used in the health record please visit:
www.themothersprogram.ca

Personal and Family History	
With which ethnicity do you identify?	
<input type="checkbox"/> Caucasian	
<input type="checkbox"/> African	
<input type="checkbox"/> Asian	
<input type="checkbox"/> Southeast Asian	
<input type="checkbox"/> Metis/First Nations/Inuit	
<input type="checkbox"/> Other _____	
Are you a smoker?	Yes / No
Personal history of heart attack or stroke?	Yes / No
Personal history of high blood pressure?	Yes / No
Personal history of diabetes?	Yes / No
Family history of preeclampsia (toxemia) or high blood pressure in pregnancy?	Yes / No
Family history of high blood pressure?	Yes / No
Family history of heart attack or stroke?	Yes / No
Family history of diabetes?	Yes / No

MOTHERS Post Partum Health Record®



Name _____

Mother's Date of Birth _____
YYYY / MM / DD

Mother's Ontario Health Card Number _____

Date of Delivery _____
YYYY / MM / DD

Your baby's check-ups and immunizations are a great time to fill out this record with your care provider! Keep this form with your baby's immunization record for an easy reminder.

Recommended Health Check-Up Schedule														
Time Since Delivery	Date of Completion (yyyy-mm-dd)	Weight ^a (lbs or kg)	Waist Circumference (cm)	Body Mass Index ^b (kg/m ²)	Blood Pressure (mmHg)	Activity Level (sedentary/mild/moderate/strenuous)	Breast-feeding (Yes/No)	2 Hour 75g OGTT ^c (mmol/L)	HDL ^d (mmol/L)	LDL ^d (mmol/L)	Cholesterol ^d (mmol/L)	Triglycerides ^d (mmol/L)	Glucose ^d (mmol/L)	High Sensitivity CRP (mg/L)
6 Weeks														
2 Months														
4 Months														
6 Months								Fasting ____ 1 Hour ____ 2 Hour ____						
12 Months														

Pre-pregnancy Weight ^a	lbs or kg	Current Medications		
Weight at Delivery ^a	lbs or kg	6 Weeks	6 Months	12 Months
Goal Weight for 6 Months Post Partum ^a	lbs or kg			
Height ^a	inches or cm			

a - Please circle the units used
 b - BMI = Weight in kg / (Height in metres)²
 c - Recommended for women who developed gestational diabetes during their pregnancy
 d - Blood work should be completed after a minimum of a 12 hour fast

Figure 11. The Postpartum Maternal Health Record found in the MoThERS Program discharge package.

2.5 Educating Family Doctors

Prior to launching the Maternal Health Clinic a letter was sent to all family physicians in Kingston and the surrounding area (Figure 12). This letter was designed to introduce the family doctors to the clinic, to identify who is eligible to attend, to welcome them to send referrals, and to notify them to expect follow up letters for women who attend. We also presented at a few on-going education events for family physicians in Kingston.

We try to conduct on-going education of family doctors through a few approaches. The first is through a letter to family physicians that is included in the MoTHERS Program discharge package (Figure 13). This letter talks both about the Postpartum Maternal Health Record (Figure 11) and the Maternal Health Clinic. Women are asked to give this letter to their family physician at the time of their next appointment. The second is through the patient appointment notification letters, which will be described in further detail in section 3.03.



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Kingston, Ontario, K7L 2V7
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info@themothersprogram.ca
f The MoTHERS Program
t Mothers_program

Pregnancy is a physiologic stress test that identifies some women as being at increased risk for cardiovascular disease. As part of a program to improve Maternal Health through education, research and screening, we are starting a clinic that will take place 6 months postpartum in order to screen for cardiovascular risk factors. All results and recommendations will be forwarded to the woman's primary care provider for further follow up and management.

Please refer any patient to Dr. Graeme Smith (KGH x2405) who has one or more of the following novel pregnancy-related cardiovascular risk indicators:

- Preeclampsia, eclampsia, HELLP syndrome, gestational hypertension
- Gestational diabetes of gestational impaired glucose tolerance
- IUGR baby (<5thtile for gestational age or <2500g in a term baby)
- Idiopathic preterm delivery (<37 weeks)
- Placental abruption leading to delivery for either maternal or fetal reasons

Based on Ontario data (2005-2009), 20.58% of all pregnancies beyond 20 weeks gestation (n=644,412 total) had one or more of these novel pregnancy-related cardiovascular risk indicators. According to the American College of Cardiology's 2011 update for the *Evidence-Based Guidelines for the Prevention of CVD in Women*, complications in pregnancy should be included in the assessment of a woman's risk.

Please contact me if you have any questions.

Sincerely,

Graeme N. Smith, MD PhD FRCSC
Professor, Obstetrics & Gynecology

Figure 12. Maternal Health Clinic introduction letter for family doctors in the Kingston area.

*****Please give this letter to your care provider*****

The MOTHERS Program is new to the Kingston area! Many care providers may not yet know about the program and the resources it offers. Please bring this letter and your copy of the Post Partum Health Record to your next appointment with your care provider.



Introduction to the Post Partum Health Record[®]

The MOTHERS Program is dedicated to improving mother's health through education, research and screening. The post partum health record was developed by The MOTHERS Program as a tool to help you and your patients monitor their health for 1 year post partum. It is designed to initiate discussions regarding weight loss, exercise, healthy lifestyle and breastfeeding.

MOTHERS
Post Partum Health Record[®]

The MOTHERS PROGRAM
Mother's Health Education, Research and Screening

Name _____

Mother's Date of Birth _____

____ / ____ / ____

Mother's Ontario Health Card Number _____

Date of Delivery _____

____ / ____ / ____

A focus within The MOTHERS program is cardiovascular disease risk identification and prevention. The recommended measurements, blood tests and history collected in the post partum health record are designed to identify risk factors for cardiovascular disease. As well, it highlights pregnancy complications that your patients may have experienced that may indicate an increased risk of developing cardiovascular disease. Our hope is that by highlighting risk factors patients will be motivated to make healthy life choices and reduce their risk of cardiovascular disease.

The post partum health record will be provided to every woman who delivers at Kingston General Hospital or at home with the assistance of a Midwife from the Community Midwives of Kingston. You may contact us if you would like a supply sent to your office. Patients may also print copies from our website.

The measurements and blood tests included in the post partum health record are our recommendations for follow up in the first year post partum. We have tried to emphasize with patients that you as their care provider may choose to change the follow up based on what you feel is appropriate as indicated by their medical history.

In addition, as part of a The MOTHERS Program we are starting a clinic that will take place 6 months postpartum in order to screen for cardiovascular risk factors. All results and recommendations will be forwarded to the woman's primary care provider for further follow up and management.

Any patient who has had one or more of the following novel pregnancy-related cardiovascular risk indicators is eligible to attend this clinic:

- Preeclampsia, eclampsia, HELLP syndrome, gestational hypertension
- Gestational diabetes or gestational impaired glucose tolerance
- IUGR baby (<5th tile for gestational age or <2500g in a term baby)
- Idiopathic preterm birth
- Placental abruption leading to delivery for either maternal or fetal reasons

Based on Ontario data (2005-2009), 20.58% of all pregnancies beyond 20 weeks gestation (n=644,412 total) had one or more of these novel pregnancy-related cardiovascular risk indicators. According to the American College of Cardiology's 2011 update for the *Evidence-Based Guidelines for the Prevention of CVD in Women*, complications in pregnancy should be included in the assessment of a woman's risk.

If you have questions or comments regarding the post partum health record please feel free to contact us at info@themothersprogram.ca.

Additional information regarding The MOTHERS Program and the Post Partum Health Record can be found at www.themothersprogram.ca.

Figure 13. Letter to postpartum care providers included in the MoThERS Program discharge package.

3.0 Day to Day Management of the Postpartum Maternal Health Clinic

The following section will provide information on the day-to-day management of the clinic. The documents used and the protocol followed will be outlined. Details of the clinic at Kingston General Hospital will be provided along with ways in which the Postpartum Maternal Health Clinic framework may be adapted to fit your clinical practice and patient population.

3.01 Who Should be Seen in the Clinic

In our clinic at Kingston General Hospital we see patients who have experienced one or more of the following complications in their most recent pregnancy;

- preeclampsia,
- gestational hypertension,
- gestational diabetes,
- impaired glucose tolerance,
- clinically significant abruption,
- idiopathic preterm delivery,
- intrauterine growth restriction,
- or a term baby weighing less than 2500 grams.

Other criteria that may be considered, which we do not currently use, include;

- excess weight gain during pregnancy,
- pre-pregnancy obesity,
- smoking,
- chronic hypertension,
- type I or II diabetes,
- family history of cardiovascular disease,
- and patient history of major cardiac or pulmonary event.

The criteria that you select for your clinic should reflect your patient population and the specific goals of your clinic. Be sure to consider the prevalence of each complication at your centre; based on resources and clinic space it may be unrealistic to include all of the above criteria.

As well, certain groups may already be well cared for in terms of cardiovascular risk screening. It is likely best to focus your clinic on groups that do not have an established care program. In our case we found that individuals with only chronic hypertension and/or type I or II diabetes were already receiving well-rounded care through their family doctors and/or specialists. We also do not see women whose only risk is that they are smokers; these women already receive counselling and information about smoking cessation from their primary health care providers and from the hospital. However, these individuals will be referred to the clinic if they develop one of the above listed pregnancy complications in order to educate both the patient and family doctor about the increased risks associated with the pregnancy complication.

Finally, you should consider the level of interest in the clinic that is likely to be expressed from each group. At our centre we initially began recruiting individuals who gained excess weight during their last pregnancy (based

on the Health Canada's Guidelines). Excess weight gain during pregnancy is an important risk factor for both obesity and the development of cardiovascular disease. However, we found that a large percentage of this group was not interested in participating and have since removed the criteria from our list.

3.02 Patient Referrals and Screening

At Kingston General Hospital patients are referred to the Maternal Health Clinic through use of our referral form (Figure 2). This form is to be filled out by a Resident or Attending staff member prior to the patients discharge from hospital. The top portion of the form is sent through internal mail to our administrative assistant. The bottom portion of the form is given to the patient prior to discharge. At this time we also encourage the Resident or Attending Staff to discuss the referral with the patient as this greatly improves attendance. Patients are given the option to opt out of the program prior to discharge by signing the bottom of the form and returning it to the patient care desk.

We have found that utilizing only a referral form based strategy would result in a number of eligible patients being missed. Therefore, every three months we receive a list of patients from our hospital's BORN Ontario representative who meet the criteria for referral to clinic (approved by our local Research Ethics Board). Of these patients, any who were missed in the paper referral system are added to our list of potential clinic patients.

The charts of all potential clinic patients are reviewed to ensure that they meet the inclusion/exclusion criteria. A patient may be excluded for any number of reasons that are deemed relevant by the clinic staff. The following is a list of some of the reasons why we have excluded patients from the clinic recruitment process in the past;

- living outside of LHIN 10,
- not having an OHIP or DND number,
- having ongoing psychological or social issues,
- if their baby has ongoing health issues or has passed away during the neonatal period,
- if they do not speak English,

Exclusions are made on a case-by-case basis and at the discretion of clinic staff. All efforts are made to include any woman who meets the referral criteria.

After this final screening process a monthly clinic recruitment list is generated.

The referral and screening process which you utilize for your clinic will depend on the resources available. We have found that utilizing only a referral based strategy would result in a number of eligible patients being missed and have therefore included a review through BORN Ontario.

3.03 Patient Recruitment

A monthly patient recruitment list is generated through the referral and screening process. Patients are assigned an appointment date and time that is approximately 6 months postpartum. An appointment package is mailed to each patient and a letter is sent to their family doctor.

The patient's appointment package consists of a letter, a personal and family history form, an information pamphlet, and a blood work requisition. The requisition is for fasting blood work (glucose, lipid profile, high sensitivity CRP, and creatinine) and a urinalysis (microalbumin creatinine ratio), which may be completed at any local lab at their convenience. If the patient had gestational diabetes or impaired glucose tolerance they will also be asked to complete a 2 hour oral glucose tolerance test. The letter in the appointment package provides some background information the Maternal Health Clinic (Figure 14). This includes brief descriptions about heart disease, pregnancy complications, the MoHERS Program, and what will be done at the Maternal Health Clinic. The letter notifies them of their appointment date and time, identifies their reason for referral, and provides instructions for completing the blood work. The purpose of the personal and family history form is to have patients review their family history of heart disease prior to their appointment (Figure 15). The information pamphlet provides information on the MoHERS Program, information on heart disease and its relationship with pregnancy complications, and further information on what to do before and after their clinic visit (Figure 16).

The family doctor letters are sent out at the same time as the patient appointment packages (Figure 17). The family doctor letter provides background information on the Maternal Health Clinic and the relationship between pregnancy complications and heart disease. The letter notifies the doctor of their patient's upcoming appointment and identifies their reason for referral. The letter also advises them to expect a follow up letter from the appointment.

The appointment packages and family doctor letters are mailed approximately 2-3 months prior to the appointment dates. One month after the packages are mailed follow up calls are placed to the patients. The purpose of these calls is to ensure that the packages were successfully delivered, to answer questions regarding the clinic, to confirm their clinic appointment date and time, and to remind them to complete the blood work as soon as possible. On the Monday prior to the Thursday appointments reminder calls are placed to each of the patients.

26 January 2017



The MoHERS Program
Mother's Health Education, Research and Screening

Hello

Pregnancy is a physiologic stress test that identifies some women as being at increased risk for heart disease. The development of many common complications in pregnancy has been shown to predict a woman's risk of premature heart disease.

Heart Disease is the number one killer of women in Canada, accounting for almost 35,000 deaths annually.

During your last pregnancy you developed complications that have been associated with an increased risk of developing heart disease in some women. You have therefore been referred to the Maternal Health Clinic. You have an appointment scheduled for **10:50 am on 09 February 2017** at Kingston General Hospital, Armstrong Building, Level 5.

Early diagnosis and treatment of risk factors can prevent up to 80% of heart disease.

The Maternal Health Clinic primarily focuses on prevention and lifestyle modification for woman who may be at increased risk for developing heart disease. At your appointment you will meet with the nurse to check weight, height, blood pressure, waist circumference and complete missing information on health forms. You will then meet with Dr. Smith to discuss pertinent information regarding your health. All information collected will be forwarded to your family doctor / health care provider.

There is a potential link between YOUR pregnancy complications and heart disease risk.

Please find enclosed an information sheet that we ask you to complete and bring with you to your scheduled appointment.

The Maternal Health Clinic is dedicated to improving mother's health through education, research and screening. It is based on a similar program in Kingston, Ontario (The Mothers Program), and their website is a great source of information: www.themothersprogram.ca.

If you are not interested in attending this clinic or need to reschedule, please contact the Maternal Health Clinic at (613) 549-6666, ext 2740.

Sincerely,

Reason for Referral:	
X	Preeclampsia, eclampsia, HELLP syndrome, gestational hypertension
	Gestational diabetes
	IUGR baby or term baby < 2500g
	Idiopathic preterm birth (prior to 37 weeks)
	Placental abruption
	Other

Figure 14. General patient letter from the appointment package.

Personal and Family History Form

Please bring this completed form to your clinic visit.
When applicable please provide details such as the person's age at diagnosis and their relationship to you.



1. Family history of high blood pressure in pregnancy? Yes / No
Please consider all female relatives on your mother's side of the family.

2. Family history of preeclampsia (toxemia) in pregnancy? Yes / No
Please consider all female relatives on your mother's side of the family.

3. Family history of high blood pressure? Yes / No

4. Family history of heart attack or stroke? Yes / No

5. Family history of diabetes? Yes / No

6. Personal history of heart attack or stroke? Yes / No

7. Personal history of high blood pressure? Yes / No

8. Personal history of diabetes? Yes / No

9. With which ethnicity do you identify?
 - Caucasian
 - African
 - Asian
 - Southeast Asian
 - Metis, First Nations or Inuit
 - Other _____

10. What was your pre-pregnancy weight?

11. What medications are you currently taking?

Figure 15. Personal and family history form from the appointment package.

Postpartum Maternal Health Clinic

Promoting mothers' health

Identifying heart disease risk factors

Educating women on the links between pregnancy complications and heart disease



The MoTHERS Program™

Mothers' Health Education, Research and Screening

Before Your Clinic Visit

Blood Work and Urine Analysis

The nurse will provide you with a requisition. It may be completed at any local lab. For a list of labs in Kingston and the surrounding area please visit the resources section of our website.

Please be sure to fast for a minimum of 12 hours prior to having the blood work done. Also, be sure to provide the urine sample when you are not menstruating.

A reminder to have blood work and urine analysis completed will be sent out approximately 6 weeks following your clinic visit. Please let the nurse know whether you would prefer a phone call, email or text message reminder.

After your clinic visit

You will be sent a brief summary of your clinic results once your blood work and urine analysis results are received by our office. In order to see the detailed results you will need to follow up with your family doctor.

This follow up may be included as a part of your next yearly check-up or an additional appointment may be scheduled. If you do not have a family doctor please notify the nurse as different plans for follow up may be arranged.

Follow Up with your Family Doctor

Your doctor will not call you for follow up. You need to call to make an appointment.

The detailed results of your clinic visit will be sent to your family doctor once your blood work and urine analysis results have been received by our office.

These results will provide a detailed summary of your risk factors for heart disease. They may also include specific recommendations regarding your physical examination and blood test results. Finally, they may also include general recommendations regarding your overall health and lifestyle.

The MoTHERS Program

The MoTHERS Program is dedicated to improving mother's health through education, research and screening.

Our goals in the Postpartum Maternal Health Clinic are

- (1) To promote healthy lifestyle choices.
- (2) To identify women's risk factors for heart disease.
- (3) To educate women on the links between pregnancy complications and heart disease risk.



What is Heart Disease?

Cardiovascular disease, or Heart Disease, is any condition that affects the structure or function of the heart and blood vessels. It can lead to heart attacks and stroke.

Early diagnosis and treatment of risk factors can prevent up to 80% of heart disease.

Risk Factors for Heart Disease

Understanding the risks is the first step in decreasing your chances of developing Heart Disease.

You cannot change some Heart Disease risk factors like age and sex, but you can reduce others through lifestyle changes. Diet and exercise can help with weight loss and improve cholesterol and blood pressure levels.

Risk Factors for Heart Disease That You Can Change Include:

- High Cholesterol
- High Blood Pressure
- Diabetes
- Being Overweight
- Physical Inactivity
- Smoking
- Alcohol Consumption
- Stress



The Postpartum as a Time for Change

The first year after delivery is a great opportunity for moms to adopt a healthier lifestyle. Making healthy food choices and developing an exercise routine can greatly benefit your overall health and help fight against disease and illness. Remember, your health also affects the well being of your family!

Pregnancy Complications and Heart Disease Risk

Pregnancy can often reveal early risk signs for disease and illness. Some conditions experienced during pregnancy reveal very early signs of risks for future health issues like heart disease. These conditions include;

- Preeclampsia
- Gestational Hypertension
- Gestational Diabetes
- Gestational Impaired Glucose Tolerance
- Placental Abruption
- Excessive Weight Gain in Pregnancy
- Preterm Birth
- Intrauterine Growth Restriction

New moms who have experienced any of the above conditions are urged to take this opportunity to be proactive and develop a healthy lifestyle in order to minimize their risk of heart disease later in life.

Moms who are considering another pregnancy are encouraged to consider preconception counseling and close monitoring of future pregnancies as their risk for developing a complication may be increased.



**For more information please visit:
www.themothersprogram.ca**

Figure 16. Adjusting to Motherhood pamphlet from the appointment package.



26 January 2017

Dear Dr

Re: Upcoming Appointment at the Maternal Health Clinic for

OHIP:

Pregnancy is a physiologic stress test that identifies some women as being at increased risk for cardiovascular disease. As part of a program to improve Maternal Health through education, research and screening, we have started a clinic that will take place 6 months postpartum in order to screen for cardiovascular risk factors.

Any woman who has one or more of the following novel pregnancy-related cardiovascular risk indicators is eligible to attend this clinic:

X	Preeclampsia, eclampsia, HELLP syndrome, gestational hypertension
	Gestational diabetes
	IUGR baby or term baby < 2500g
	Idiopathic preterm birth (prior to 37 weeks)
	Placental abruption leading to delivery for either maternal or fetal reasons
	Other

During _____'s last pregnancy, she developed the above marked complication(s). She has been referred to the Maternal Health Clinic and has an appointment scheduled for 10:50 am on 09 February 2017 at Kingston General Hospital, Armstrong Building, Level 5.

At her appointment she will meet with a nurse to check weight, height, blood pressure, waist circumference and complete missing information on health forms. She will then meet with me to discuss information regarding the pregnancy-related cardiovascular indicator she experienced and her health. She will also be given a requisition to complete fasting blood work and urine analysis at her convenience. From this various risk calculations will be made.

All results and recommendations from this appointment will be forwarded to you, her primary care provider, for further follow up and management.

Thank you for your anticipated support of this new program. Please feel free to contact me if you have any questions or comments.

Figure 17. Family doctor appointment notification letter.

3.04 Clinic Location

At Kingston General Hospital the Postpartum Maternal Health Clinic is held in the same clinic space as all of our obstetrical and gynaecological clinics, in the Fraser Armstrong Patient Centre. We find that two or three exam rooms is sufficient space to maintain an efficient flow to the clinic. Any similar clinical, research, or community space would be appropriate as long as the location is easily accessible to patients and confidentiality may be maintained during appointments.

3.05 Clinic Scheduling

In our clinic we see patients for one visit at 6 months postpartum based on our own published research^{6,7,8}. We have found that this is a good point in the postpartum period for women to adopt lifestyle changes and to address issues with postpartum weight loss. Delaying screening by year(s) postpartum could potentially result in the risk factors becoming well-established and less likely to be reversible. Furthermore, long term follow up, both clinically and in research studies, can be difficult and result in poor follow up rates. Six months postpartum is an appropriate point in time to assess biochemical markers as all values should no longer be affected by changes experienced in pregnancy and it is within the timeframe recommended for the follow up glucose tolerance test for women who developed gestational diabetes. Finally, screening and intervention prior to a subsequent pregnancy has not only the potential to improve long term CVD risk but also may improve future pregnancy outcomes through improvement in CVR factors. We would suggest a similar time frame for other clinics, however a different timeframe may be more appropriate based on your individual patient population, resources, and scope of clinic practice.

At Kingston General Hospital the Postpartum Maternal Health Clinic is held during the Thursday morning clinic time slot, with appointments scheduled every 20 minutes, from 8:30am to 10:50am. We typically schedule 2 clinics per month, depending on the case load for the given month. The frequency and timing of your clinic will depend on your case load and available clinic space.

⁶ Smith GN, Pudwell J, Walker M, Wen SW, for the Pre-Eclampsia New Emerging Team (PE-NET). Risk estimation of metabolic syndrome at one and three years following a pregnancy complicated by pre-eclampsia. *J Obstet Gynaecol Can* 2012; 34:836-841.

⁷ Smith GN, Pudwell J, Walker M, Wen SW, for the Pre-Eclampsia New Emerging Team (PE-NET). Ten year, thirty year and life-time risk estimates of cardiovascular disease following a pregnancy complicated by pre-eclampsia. *J Obstet Gynaecol Can* 2012; 34:830-835.

⁸ Smith GN. The development of pre-eclampsia provides a window of opportunity for early cardiovascular risk screening and intervention. *Expert Rev Obstet Gynecol* 2009; 4:355-357.

3.06 Clinic Appointment Details

At the clinic appointment patients first meet with the nurse who describes the purpose of the clinic and our desire to be able to use the information collected in future research projects. If the patient agrees and signs the consent form then the information collected in the clinic may be used, if they decline their results will be excluded from research projects. There is also an option for patients to agree to future contact regarding further research studies (Figure 18).

Following the consent process the nurse then completes an interview which consists of demographic information, personal health history, and family health history, and a physical examination consisting of height, weight, waist circumference and blood pressure. The blood pressure is measured using a BPtru machine, with 6 measurements over a 10 minute period. All of this information is recorded in the case report form (Figure 19).

The information in the case report form and the results of their blood work are entered in to the clinic database. The database generates the patient's risk profile, including lifetime risk of heart disease, 30 year risk of heart disease and presence of metabolic syndrome. The database also generates estimates of how their risk level may change if modifiable risk factors are optimized.

The physician then meets with each patient to discuss the pregnancy complication experienced how it may relate to future risk for heart disease. The information collected at the visit, the patient's risk profile, and potential lifestyle modification strategies are discussed. Each appointment at the Postpartum Maternal Health Clinic takes approximately 30-40 minutes to complete.



“Pregnancy and Heart Disease”

As a participant in the Postpartum Maternal Health Clinic you are being approached about a research programme directed by Dr. Graeme Smith from Queen’s University/Kingston General Hospital. The following information describes the programme, which will be discussed with you. Feel free to ask any questions you may have.

PURPOSE

If you have been invited to be a part of the Postpartum Maternal Health Clinic it is because you have developed one or more of the following pregnancy complications; preeclampsia, gestational hypertension, gestational diabetes, gestational impaired glucose tolerance, placental abruption, excessive weight gain in pregnancy, preterm birth and intrauterine growth restriction. One or more of these conditions affects approximately 20% of all pregnancies in Ontario.

We know that mothers who have developed one or more of the above complications have a higher risk of developing heart disease compared to mothers who had no complications.

As part of the Postpartum Maternal Health Clinic, information collected will be used to determine your risk factors for heart disease and provide appropriate counselling.

With your consent, the research programme will further use this information and results to help better explain the relationship between pregnancy and heart disease risk factors.

DETAILS

Information collected during the clinic includes demographics, height, weight, waist circumference, medical history, pregnancy history and family history of heart disease. You will also be asked to complete fasting blood work and a urine analysis at your convenience. The blood work includes a lipid profile, glucose and C-reactive protein measure. If you had gestational diabetes or impaired glucose tolerance you will be asked to complete a 2 hour 75 gram oral glucose tolerance test. The urine analysis is for a microalbumin creatinine ratio.

BENEFITS

You may not benefit directly however your participation may contribute to medical knowledge.

RISKS

In obtaining your blood work you may develop a small bruise at the site of the blood test, which should disappear after a few days.

CONFIDENTIALITY

We respect your confidentiality. All records will be kept locked with restricted access in the office of the Principal Investigator. All records of the results will be shared by Dr. G. Smith and his research staff and trainees at Queen's University. Results from future studies may be presented at scientific meetings or published in the medical literature. Qualified representatives of the Queen's University Health Sciences and Affiliated Teaching Hospitals Research Ethics Board have the right to examine

all records. If information leaves the hospital, it will be coded and you will not be identified by name.

VOLUNTARY PARTICIPATION

You are being invited to participate in the research programme, but you are under no obligation to do so. You may choose not to participate without any reason. You may withdraw from the programme at any time without explaining your decision. Your decision to not participate, or to withdraw, will not affect the care you receive at KGH now or in the future. Should you decide to withdraw from the research programme any data generated from your records will be destroyed.

LIABILITY STATEMENT

In the event that you are injured as a result of the procedures, medical care will be provided to you until resolution of the medical problem. By signing this consent form, you do not waive your legal rights nor release the investigator(s) and sponsors from their legal and professional responsibilities.

QUESTIONS

It is important to us to answer any concerns you may have. If at any time you have further questions you can contact:

Dr. Graeme Smith, Dept of Obstetrics and Gynecology at ☎ (613) 548-2405 ✉ gns@queensu.ca

or

Michelle Roddy, Research Nurse at ☎ (613) 549-6666 Ext. 2740 ✉ roddym@kgh.kari.net

or

Jessica Pudwell, Clinic Coordinator at ☎ (613) 549-6666 Ext. 3937 ✉ jessica.pudwell@queensu.ca

or

Dr. Shawna Johnston, Program Medical Director, Dept. of Obstetrics and Gynecology at ☎ (613) 613-548-6115 ✉ slj3@queensu.ca

If you have any questions about your rights as a research participant please contact Dr. Albert Clark, Chair of Queen's University Health Sciences and Affiliated Teaching Hospitals Research Ethics Board at 1-844-535-2988.

Participant Statement

I have read the consent form. I have been given sufficient time to consider the above information and to seek advice if I chose to do so. I have had the opportunity to ask questions regarding the future studies and understand the potential risks and benefits. I am voluntarily signing this form. I will receive a copy of this consent form for my information.

Re-contact

To learn more about pregnancy and heart disease we would like to be able contact you at a later time to provide you with information regarding further research options.

- Yes, I may be approached for future research options to be made available to me and I understand that I will be under no obligation to participate.
- No, I would not like to be approached for future research options at the end of this project.

By signing this consent form, I am indicating that I agree to participate in this programme.

Participant Name

Name of Investigator or Delegate

Participant Signature

Signature of Investigator or Delegate

Date

Date

Participant's Email Address: _____

Participant's Cell Number: _____

Figure 18. Consent form for use of information in research and future contact.

Clinical Health Questionnaire and CRF

□□□□□□

DEMOGRAPHIC DATA

1. DOB □□□□/□□□□/□□ y y y y m m m m d d Present Age □□ yrs		2. Postal Code □□□ □□□										
4. Background (capture only one) <table border="0"> <tr> <td><input type="radio"/> Aboriginal</td> <td><input type="radio"/> East African</td> </tr> <tr> <td><input type="radio"/> African Canadian</td> <td><input type="radio"/> French Canadian</td> </tr> <tr> <td><input type="radio"/> Arabic</td> <td><input type="radio"/> Jewish</td> </tr> <tr> <td><input type="radio"/> Asian</td> <td><input type="radio"/> Other Caucasian</td> </tr> <tr> <td><input type="radio"/> British Island/UK</td> <td><input type="radio"/> Other: _____</td> </tr> </table>		<input type="radio"/> Aboriginal	<input type="radio"/> East African	<input type="radio"/> African Canadian	<input type="radio"/> French Canadian	<input type="radio"/> Arabic	<input type="radio"/> Jewish	<input type="radio"/> Asian	<input type="radio"/> Other Caucasian	<input type="radio"/> British Island/UK	<input type="radio"/> Other: _____	3. Occupation _____
<input type="radio"/> Aboriginal	<input type="radio"/> East African											
<input type="radio"/> African Canadian	<input type="radio"/> French Canadian											
<input type="radio"/> Arabic	<input type="radio"/> Jewish											
<input type="radio"/> Asian	<input type="radio"/> Other Caucasian											
<input type="radio"/> British Island/UK	<input type="radio"/> Other: _____											
6. Household Income (capture only one) <ul style="list-style-type: none"> <input type="radio"/> Less than \$29,999 <input type="radio"/> \$30,000 - \$59,999 <input type="radio"/> \$60,000 - \$89,999 <input type="radio"/> \$90,000 and over <input type="radio"/> declined 		5. Education Level (capture only one) <ul style="list-style-type: none"> <input type="radio"/> Grade School <input type="radio"/> High School <input type="radio"/> College/University (not complete) <input type="radio"/> College/University (completed) 										
7. Marital Status (capture only one) <ul style="list-style-type: none"> <input type="radio"/> Married <input type="radio"/> Living Common-Law <input type="radio"/> Widowed <input type="radio"/> Separated <input type="radio"/> Divorced <input type="radio"/> Single, never married 												

GENERAL HEALTH DATA

8. Height □□□ cm <small>for conversion: 1 foot = 30.48 cm 1 inch = 2.540 cm</small>	Weight □□□ kg Pre pregnant Wt □□□ kg Delivery Wt □□□ kg Wt retention □□□ kg
9. Waist Circumference □□□.□ cm	
10. Do you smoke? <input type="radio"/> Yes <input type="radio"/> No If Yes... Avg number cigarettes per day □□ Have you been exposed to second-hand smoke? <input type="radio"/> Yes <input type="radio"/> No If Yes... Explain _____	11. Have you ever smoked? <input type="radio"/> Yes <input type="radio"/> No If Yes... For how many years? □□ Avg number cigarettes per day □□
12. Do you consume alcohol? <input type="radio"/> Yes <input type="radio"/> No If Yes... Avg number drinks per week □□	13. Are you physically active? <input type="radio"/> Yes <input type="radio"/> No If Yes... Avg number of times physically active per week □□ (30-60 mins moderate activity-CFG)

GENERAL HEALTH DATA

14. Are you taking any medications/supplements? Yes No

Medication	Dosage	Frequency
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

PREGNANCY-RELATED CONDITIONS KNOWLEDGE/HISTORY DATA

15. Pregnancy – GTPAL

G T P A L

G – GRAVIDA - how many pregnancies (including miscarriages, abortions)
T – TERM - how many term deliveries ≥ 37 wks.
P – PRETERM - how many viable preterm deliveries < 37 wks.
A – ABORTIONS - how many abortions, spontaneous or induced.
L – LIVING - how many children currently living.

16. Do you have a history of:

- Gestational Diabetes
- Gestational Hypertension
- Mild Preeclampsia (PET)
- Severe PET
- Eclampsia
- HELLP
- IUGR (U/S confirmed-< 5%tile, term < 2500g)
- PPROM
- Multiple Gestation Pregnancy
- Excess Wt gain
- Abruption
- Spontaneous or Therapeutic Abortion (<20 wks)
- Stillbirth

Comments:

17. Did you breastfeed? Yes No
If yes, are you still breastfeeding? Yes No Plan to how long? _____

CARDIOVASCULAR/CHRONIC DISEASE KNOWLEDGE/HISTORY DATA

18. Do you have a history of:

- Hypertension: Gestational ____ Chronic ____
- Hyperthyroidism
- Hypothyroidism
- Type 1 Diabetes
- Type 2 Diabetes
- Gestational Diabetes
- Endocrine problems
- Pneumonia
- Asthma
- Major Cardiac event (MI, DVT, PE)
- Other Cardiac or Pulmonary problems

19. Do you have a Maternal family history of:

- Chronic Hypertension
- Cardiovascular/Pulmonary event
- Diabetes
- Preeclampsia/HELLP
- Gestational HTN
- Other

Comments:

20. Do you have a Paternal family history of:

- HTN
- Cardiac/Pulmonary event
- Diabetes
- Other

Comments:

21. Date of Visit: / /
y y y y m m m d d Blood Requisition given: Y / N

22. BpTRU measurements: Time hr min

2nd BP: / mm Hg 5th BP: / mm Hg
3rd BP / mm Hg 6th BP / mm Hg
4th BP: / mm Hg

Average: / mm Hg

23. Serum Results

Triglyceride: <input type="text"/> . <input type="text"/> <input type="text"/> mmol/L	Glucose: <input type="text"/> <input type="text"/> . <input type="text"/> mmol/L
Cholesterol: <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> mmol/L	CRP: <input type="text"/> <input type="text"/> mg/L
HDL: <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> mmol/L	2 Hour 75g OGGT: <input type="text"/> <input type="text"/> . <input type="text"/> mmol/L
LDL: <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> mmol/L	

Source Notes

Email: _____
Phone/cell: _____

Research Nurse/Assistant signature: _____

Signature: _____ Date (dd mmm yyyy):

Figure 19. Case report form used in the Maternal Health Clinic.

After Your Clinic Visit

Step 1: Blood Work and Urine Analysis

The nurse will provide you with a requisition. It may be completed at any local lab. For a list of labs in Kingston and the surrounding area please visit the resources section of our website.

Please be sure to fast for a minimum of 12 hours prior to having the blood work done. Also, be sure to provide the urine sample when you are not menstruating.

A reminder to have blood work and urine analysis completed will be sent out approximately 6 weeks following your clinic visit. Please let the nurse know whether you would prefer a phone call, email or text message reminder.

Step 2: Summary of Results and Reminder for Follow Up

You will be sent a brief summary of your clinic results once your blood work and urine analysis results are received by our office. In order to see the detailed results you will need to follow up with your family doctor.

This follow up may be included as a part of your next yearly check-up or an additional appointment may be scheduled. If you do not have a family doctor please notify the nurse as different plans for follow up may be arranged.

Step 3: Follow Up with your Family Doctor

Your doctor will not call you for follow up. You need to call to make an appointment.

The detailed results of your clinic visit will be sent to your family doctor once your blood work and urine analysis results have been received by our office.

These results will provide a detailed summary of your risk factors for heart disease. They may also include specific recommendations regarding your physical examination and blood test results. Finally, they may also include general recommendations regarding your overall health and lifestyle.

Postpartum Maternal Health Clinic

Promoting mothers' health

Identifying heart disease risk factors

Educating women on the links between pregnancy complications and heart disease



The MoTHERS Program™

Mothers' Health Education, Research and Screening

The MoTHERS Program

The MoTHERS Program is dedicated to improving mother's health through education, research and screening.

Our goals in the Postpartum Maternal Health Clinic are

- (1) To promote healthy lifestyle choices.
- (2) To identify women's risk factors for heart disease.
- (3) To educate women on the links between pregnancy complications and heart disease risk.



What is Heart Disease?

Cardiovascular disease, or Heart Disease, is any condition that affects the structure or function of the heart and blood vessels. It can lead to heart attacks and stroke.

Early diagnosis and treatment of risk factors can prevent up to 80% of heart disease.

Risk Factors for Heart Disease

Understanding the risks is the first step in decreasing your chances of developing Heart Disease.

You cannot change some Heart Disease risk factors like age and sex, but you can reduce others through lifestyle changes. Diet and exercise can help with weight loss and improve cholesterol and blood pressure levels.

Risk Factors for Heart Disease That You Can Change Include:

- High Cholesterol
- High Blood Pressure
- Diabetes
- Being Overweight
- Physical Inactivity
- Smoking
- Alcohol Consumption
- Stress



The Postpartum as a Time for Change

The first year after delivery is a great opportunity for moms to adopt a healthier lifestyle. Making healthy food choices and developing an exercise routine can greatly benefit your overall health and help fight against disease and illness. Remember, your health also affects the well being of your family!

Pregnancy Complications and Heart Disease Risk

Pregnancy can often reveal early risk signs for disease and illness. Some conditions experienced during pregnancy reveal very early signs of risks for future health issues like heart disease. These conditions include;

- Preeclampsia
- Gestational Hypertension
- Gestational Diabetes
- Gestational Impaired Glucose Tolerance
- Placental Abruption
- Excessive Weight Gain in Pregnancy
- Preterm Birth
- Intrauterine Growth Restriction

New moms who have experienced any of the above conditions are urged to take this opportunity to be proactive and develop a healthy lifestyle in order to minimize their risk of heart disease later in life.

Moms who are considering another pregnancy are encouraged to consider preconception counseling and close monitoring of future pregnancies as their risk for developing a complication may be increased.



For more information please visit:

www.themothersprogram.ca

Figure 20. Pamphlet given to women at their Maternal Health Clinic visit.

3.07 Clinic Follow Up Summary

The overall follow up process is described in the flow chart below (Figure 21).

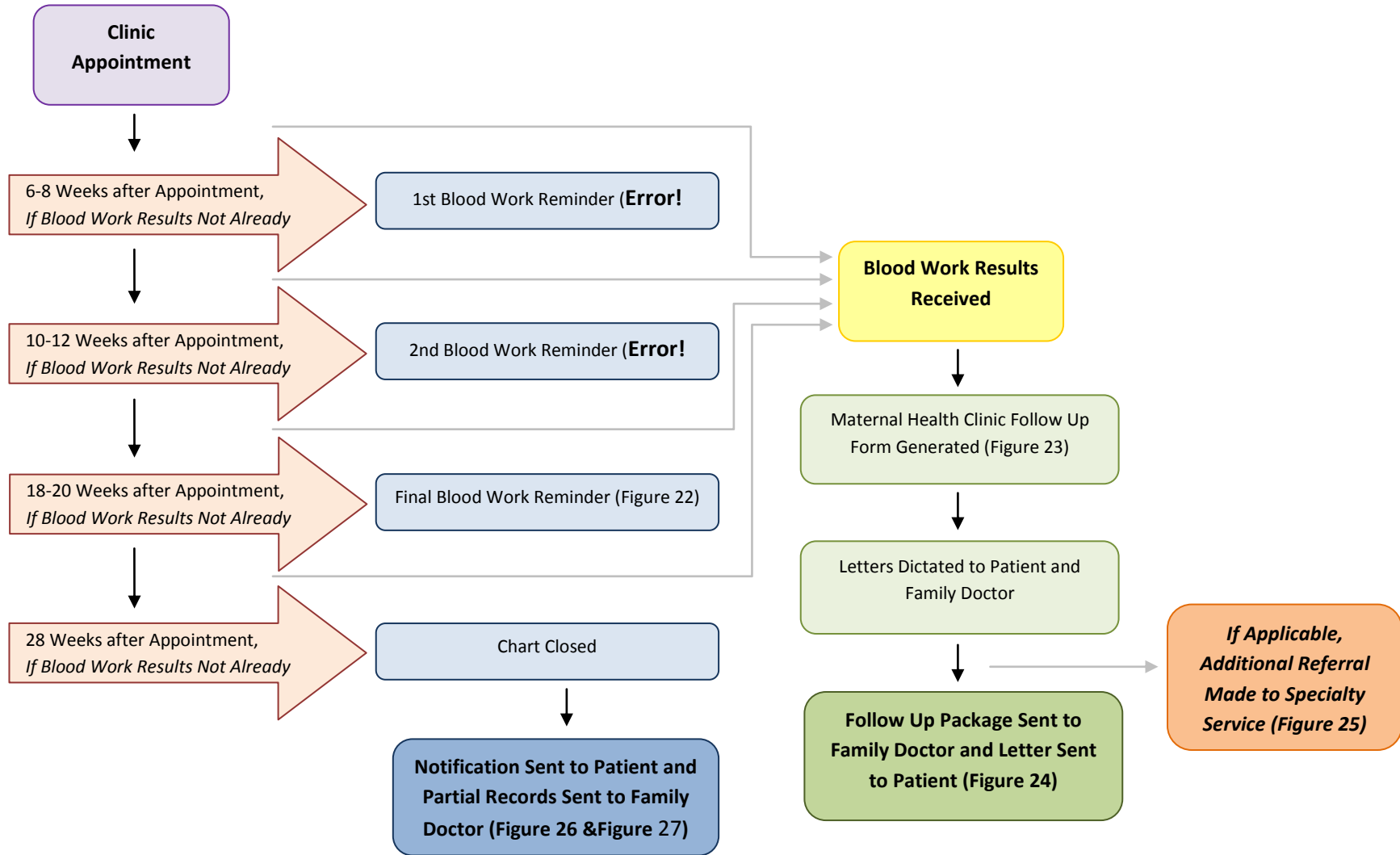


Figure 21. Flow chart of the follow up process after the clinic appointment.

3.08 Blood Work Reminders

If a patient does not complete the blood work prior to their appointment they are given a new requisition and asked to complete it as soon as possible following the appointment. Following their clinic appointment the patient charts are filed until the blood work and urinalysis results are received. Reminders to complete the blood work are done at 6-8 weeks, 10-12 weeks, and 18-20 weeks after their appointment. The first two reminders are done over the phone or by email. By completing these reminders we are also able to ensure that we have received all of the appropriate results from the community labs.

A final blood work reminder is mailed to the patients if the complete blood work and urinalysis results have not been received 18-20 weeks after their clinic appointment (Figure 22). In this letter we include a new blood requisition and notify them that if results are not received that their chart will be closed.

Hello <name>,
This is your **final reminder to complete the blood work** from your visit with Dr. Smith at the Maternal Health Clinic on <date of visit>.

If we do not receive the results of these tests your chart will be closed and the partially complete records will be forwarded to your family doctor.

Important: If you have completed the blood work, we have not received a copy of the results. Please contact our office. We need to know which lab completed the tests in order to obtain a copy of the results.

Please contact our office if you have in questions.

Sincerely,
The MoHERS Program team
613-549-6666, ext 3937
www.themothersprogram.ca
clinic@themothersprogram.ca

Figure 22. Final blood work reminder letter.

3.09 Clinic Results

After the clinic visit, and once the blood work and urinalysis results are received, a Maternal Health Clinic Follow Up Form is generated (Figure 23). This document summarizes their pregnancy-related and traditional cardiovascular risk indicators, their blood work and urinalysis results, and their cardiovascular disease risk estimates; including their lifetime CVR score⁹, 30 year CVR score¹⁰, and whether they meet the criteria for metabolic syndrome¹¹.

Once this document is generated a follow up letter is dictated outlining all of the findings and the issues discussed at the appointment (Figure 24). The family doctor is mailed the follow up letter, a copy of the Maternal Health Clinic Follow Up Form, and a copy of the blood work and urinalysis results. The patient is mailed the follow up letter and asked to contact their family doctor for further follow up.

If appropriate, a referral may be placed with a specialty service such as endocrinology, nephrology, cardiology, or cardiac rehab (Figure 25). If a referral is placed both the family doctor and the patient will be notified in their follow up letter. A patient will be referred to endocrinology if their glucose screen is positive. A patient will be referred to nephrology if they have elevated urine albumin:creatinine. A patient will be referred to cardiology if they have a high 30-year (>10% risk) or Lifetime Risk (>39%) score or if they meet the criteria for the metabolic syndrome. Patient referral to cardiac rehab is at the discretion of the cardiologist and is not made until after their follow up assessment in the cardiology clinic.

⁹ Lloyd-Jones D, Leip EP, Larson MG, D'Agostino RB, Beiser AS, Wilson PW, et al. Prediction of lifetime risk for cardiovascular disease by risk factor burden at 50 years of age. *Circulation* 2006;113:791–8.

¹⁰ Pencina MJ, D'Agostino RB, Larson MG, Massaro JM, Vasan RS. Predicting the 30-year risk of cardiovascular disease: the Framingham Heart Study. *Circulation* 2009;119:3078–84.

¹¹ Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults. Executive summary of the third report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). *JAMA* 2001;285:2486–97.

Maternal Health Clinic Follow Up Form



LAST NAME	FIRST NAME	OHIP NUMBER	VERSION CODE	MOTHERS PROGRAM ID
DATE OF BIRTH (DD/MM/YYYY)	HOME TELEPHONE NUMBER	FAMILY PHYSICIAN	CR NUMBER	
ADDRESS	UNIT NUMBER	CITY	PROVINCE	POSTAL CODE

Pregnancy-Related Cardiovascular Risk Indicators

Risk Indicator	Notes	A Previous Pregnancy	Index Pregnancy
Preeclampsia	Preeclampsia, eclampsia or HELLP syndrome.		
Gestational Hypertension	Hypertension in pregnancy without proteinuria.		
Gestational Diabetes or Gestational Impaired Glucose Tolerance	Diagnosis of gestational diabetes is based on 2 or more abnormal values on a 75g Oral Glucose Tolerance Test. Gestational Impaired Glucose Tolerance is based on a single abnormal value on a 75g OGTT.		
Abruption	The occurrence of a clinically significant abruption leading to delivery or adverse maternal/fetal outcome.		
Excessive Weight Gain	Excessive weight gain during pregnancy indicates increased risk. It is determined based on the patient's pre-pregnancy (pp) BMI. The criteria are as follows; ppBMI <18.5 and >18.0 kg gained, ppBMI 18.5 - 24.9 and >16.0 kg gained, ppBMI 25.0 - 29.9 and >11.5 kg gained, ppBMI >29.9 and >9.0 kg gained.		
Preterm Birth	<37 weeks (for any reason)		
IUGR	Any birth <5 th %tile for gestational age or term baby <2500g		
Total Number of Pregnancy Related Cardiovascular Risk Indicators			

History and Examination

Risk Indicator	Notes	Risk Factor
1 Age (Years)	Current age. Risk increases with age.	
2 Height (cm)	Weight measured pre-pregnancy or during early pregnancy. BMI = (Weight/ (Height*Height))*10,000. Underweight BMI <18.5, Ideal BMI 18.5-24.9, Overweight BMI 25.0-29.9, Obese BMI >29.9.	
Pre-pregnancy Weight (kg)		
Pre-pregnancy BMI (kg/m ²)		
3 Current Weight (kg)	Weight at 6 months postpartum. BMI = (Weight/ (Height*Height))*10,000. Underweight BMI <18.5, Ideal BMI 18.5-24.9, Overweight BMI 25.0-29.9, Obese BMI >29.9.	
Current BMI (kg/m ²)		
4 Weight at Delivery (kg)	Excessive weight gain during pregnancy indicates increased risk. It is determined based on the patient's pre-pregnancy (pp) BMI. The criteria are as follows; ppBMI <18.5 and >18.0 kg gained, ppBMI 18.5 - 24.9 and >16.0 kg gained, ppBMI 25.0 - 29.9 and >11.5 kg gained, ppBMI >29.9 and >9.0 kg gained.	
Weight Gained in Pregnancy (kg)		
5 Pregnancy Weight Retention (kg)	At 6 months postpartum. Pregnancy Weight Retention = Current Weight – Pre-pregnancy Weight. It is recommended that women attempt to return to their pre-pregnancy weight by 6 months postpartum.	
6 Current Waist Circumference (cm)	At 6 months postpartum. Measure just above the uppermost lateral border of the right iliac crest. The plane of the tape should be parallel to the floor. The tape should be snug, but not compress the skin. Take measurement at the end of normal expiration.	
7 Pre-pregnancy Blood Pressure (mmHg)	Blood pressure taken pre-pregnancy or during early pregnancy. Systolic blood pressure greater than 130 mmHg or diastolic blood pressure greater than 85 mmHg indicates increased risk.	
Pre-pregnancy Antihypertensive Medication Usage (Yes/No)		
8 Current Blood Pressure (mmHg)	Blood pressure taken at 6 months postpartum. Systolic blood pressure greater than 130 mmHg or diastolic blood pressure greater than 85 mmHg indicates increased risk.	
Current Antihypertensive Medication Usage (Yes/No)		

History and Examination Continued

Risk Indicator		Notes	Risk Factor
9	Smoking (Yes/No)	Smoking indicates increased risk.	
	<i>If yes, number of cigarettes per day</i>		
10	Ever Smoked (Yes/No)	A history of smoking indicates increased risk.	
	<i>If yes, number of years smoked</i>		
11	Alcohol Consumption (Yes/No)	Alcohol consumption may increase your risk.	
	<i>If yes, number of drinks per week</i>		
12	Breastfeeding (Yes/No)	Breastfeeding may affect a woman's ability to return to her pre-pregnancy weight.	
	<i>If yes, duration in months</i>		
13	Physically Active (Yes/No)	The federal guidelines of 30-60 minutes of moderate activity.	
	<i>If active, number of times per week</i>		
14	Ethnicity	Southeast Asian, African and Metis/First Nations/Inuit are at increased risk.	
15	Patient History of Major Cardiac Event (Yes/No)	Patient history of MI or stroke indicates increased risk.	
16	Patient History of Diabetes (Yes/No)	Patient history of diabetes predating pregnancy indicates increased risk.	
17	Patient History of Chronic Hypertension (Yes/No)	Patient history of chronic hypertension indicates increased risk.	
18	Family History of Hypertension/Preeclampsia in pregnancy (Yes/No)	Any female family member on the maternal side with a self-reported history may indicate increased risk.	
19	Family History of Hypertension (Yes/No)	Family history of hypertension may indicate increased risk.	
20	Family History of Major Cardiac Event (Yes/No)	Family history of MI or stroke (<55 years of age in male relative and <65 years in a female relative may indicate increased risk).	
21	Family History of Diabetes (Yes/No)	Family history of diabetes (type 1, type 2 or gestational) may indicate increased risk.	
22	Medications	Some medications may affect a woman's risk of heart disease and/or may need to be taken into consideration when interpreting her biochemical test results. List current medications below.	
Total Number of Other Risk Factors			

Biochemical Testing

Biochemical Test	Result	Biochemical Test	Result
2 Hour 75g OGTT (Fasting) <i>Indicated only for women with a history of gestational diabetes.</i>		Total Cholesterol (Fasting)	
		HDL (Fasting)	
		LDL (Fasting)	
Glucose (Fasting)		Triglycerides (Fasting)	
Urine Microalbumin: Creatinine		High Sensitivity CRP	

Lifetime CVD estimate

Risk Factor	Stratification (Risk Level)	Patient's Risk Level (Please Circle)		
Total Cholesterol (mmol/L)	<4.65 (optimal)	Optimal / Not Optimal / Elevated / Major		
	4.65-5.15 (not optimal)			
	5.16-6.19 (elevated)			
	>6.20 (major)			
Systolic Blood Pressure (mmHg) OR Currently Taking an Antihypertensive Medication	<120 (optimal)	Optimal / Not Optimal / Elevated / Major		
	120-139 (not optimal)			
	140-159 (elevated)			
	≥160 or Taking an Antihypertensive Medication (major)			
Diastolic Blood Pressure (mmHg) OR Currently Taking an Antihypertensive Medication	<80 (optimal)	Optimal / Not Optimal / Elevated / Major		
	80-89 (not optimal)			
	90-99 (elevated)			
	≥100 or Taking an Antihypertensive Medication (major)			
Elevated Fasting Glucose (mmol/L) OR Previous Diagnosis of Type 1 or 2 Diabetes	≤6.88 (optimal)	Optimal / Major		
	>6.88 or Diabetic (major)			
Smoking	No (optimal)	Optimal / Major		
	Yes (major)			
Women's Lifetime CVD estimate (Lloyd-Jones et al., Circ 2006;113:791-798)				
• All Optimal (8%)	• ≥1 Not Optimal (27%)	• ≥1 Elevated (39%)	• 1 Major (39%)	• ≥2 Major (50%)
Lifetime CVD Risk Estimate:				
_____ %				

Other Risk Calculations

(1) 30 Year CVD Risk Estimate

Your risk of developing cardiovascular disease at some point in the next 30 years is ___ to ___%.

(2) Metabolic Syndrome Calculation

Risk Factor	Scoring Cut Offs	Yes/No
Elevated Blood Pressure	≥ 130/85 mmHg	
Abdominal Obesity	> 88 cm waist circumference	
Elevated Triglycerides	> 1.7 mmol/L	
Decreased HDL	< 1.3 mmol/L	
Elevated Fasting Glucose	> 5.6 mmol/L	
The metabolic syndrome criteria is met if 3 or more of the above risk factors are present.		

Figure 23. Maternal Health Clinic follow up form.



The MoTHERS Program™

Mother's Health Education, Research and Screening

cc: [Insert Family Doctor]

Patient Name: _____

OHIP Number: _____

DOB: _____

Dear [Insert Name]:

It was a pleasure to meet with you at the Maternal Health Clinic. This letter is in follow-up to your recent visit following a pregnancy complicated by preeclampsia and excessive weight gain. As we discussed, this clinic is designed to see women approximately six months after delivery who have had certain pregnancy complications. We know that the development of what we call pregnancy-related cardiovascular risk indicators helps to identify women who are at future risk of developing cardiovascular disease such as heart attack or stroke.

At the time you were seen, it was identified that your pre-pregnancy BMI, which is based on your height and weight, was 32.4 (18.5-24.9 is considered ideal). Your current BMI was 31.1. You gained approximately 31 kg of weight during your pregnancy but you have done very well and lost it all; most women who are going to get back to their pre-pregnancy weight do so between 6 to 12 months after delivery. Your waist circumference was measured at 94.8 cm where 88 cm is considered the upper end of health normal. Your blood pressure was normal at 114/72 mmHg. Cardiovascular risk factors that we identified included that you are physically active approximately 7 times per week but you do have a family history of high blood pressure, as well as a family history of diabetes. Your blood work and urine test have come back essentially normal except that you have an elevated total cholesterol level. When we put all this information into a risk equation we find that you have a high lifetime risk of having a major cardiovascular event during your life. This translates into approximately a 39 percent chance during your lifetime, which is essentially about a 10 percent chance in the next 30 years.

We talked about making lifestyle modifications, specifically by increasing your baseline activity level by using a pedometer. Most people find that a pedometer, which measures your daily step counts, can be both motivating and also eye opening. The recommendation is that you take over 10,000 steps a day where the average sedentary person is only taking about half that number. I would suggest that you purchase a cheap pedometer at any sporting goods store and record your daily step counts to get an idea of your overall physical activity level.

I would encourage you to go to The MoTHERS Program website (www.themothersprogram.ca) for more information related to pregnancy, the postpartum and future health. I hope that this clinic visit has been helpful to you to identify areas that you might want to work on in order to preserve your health and prevent future disease.

A copy of the Maternal Health Clinic Follow-up Form and your laboratory results have been sent to your family doctor. Presenting a risk estimate to someone has not been shown to significantly decrease the chance of future cardiovascular disease without further follow up. Based on your findings, I am also making a referral for you to be seen by Dr. Raveen Pal in Cardiology; based on her assessment, she may consider referring you on to the Cardiac Rehab Program at the Hotel Dieu Hospital for further risk reduction.

Yours sincerely,

Graeme N. Smith, MD, PhD, FRCSC
Professor, Division of Maternal Fetal Medicine
Department of Obstetrics and Gynecology
Phone: 613-548-2405/Fax: 613-548-1330
Email: gns@queensu.ca

Figure 24. Sample follow up letter.

Specialty Service	Referral Criteria
Endocrinology	Positive Glucose Screen
Nephrology	Elevated Urine Albumin:Creatinine
Cardiology	30 Year Risk Score >10% OR Lifetime Risk Score >39% OR Metabolic Syndrome Criteria Met
Cardiac Rehab	Referral is at the discretion of the Cardiologist
Dietitian	Referral is at the discretion of the Cardiologist, Cardiac Rehab Specialist or Family Doctor
Exercise Therapist	Referral is at the discretion of the Cardiologist, Cardiac Rehab Specialist or Family Doctor

Figure 25. Criteria for referral to specialty services.

3.10 Closing Incomplete Charts

If the blood work results are not received within 28 weeks of the appointment then the patient's chart is closed. The Maternal Health Clinic Follow Up form is completed based on the available information from the Case Report Form. The Family Doctor is mailed a copy of the partially complete form and a letter that informs them of the incomplete follow up and advises them to complete the risk assessment at a later date (Figure 26). The patient is mailed a letter notifying them that their chart has been closed and directing them to complete follow up with their Family Doctor (Figure 27).



The Mothers Program™

Mother's Health Education, Research and Screening

Patient Name: _____

OHIP Number: _____

DOB: _____

Dear Dr. [Insert Doctor Name]:

[Insert Patient Name] was seen in consultation in the Maternal Health Clinic because she had excessive weight gain for her BMI in her last pregnancy. We know that certain complications in pregnancy identify women at being at increased risk of future cardiovascular disease and as such, at the time of delivery if a woman is identified as having one or more of these pregnancy-related cardiovascular risk indicators, they are automatically referred on for follow up 6 months after delivery.

[Insert Patient Name] never completed the requested blood work from her visit on December 14th, 2011. As such, we have not been able to complete a full cardiovascular risk factor assessment. I have included her partial records from the visit back in December. I would recommend that the blood work and cardiovascular risk assessment be completed at some point in the future, however I leave this in your capable hands.

If you have any concerns or questions, please contact me directly.

Yours sincerely,

Graeme N. Smith, MD, PhD, FRCSC
Professor, Division of Maternal Fetal Medicine
Department of Obstetrics and Gynaecology
Phone: 613-548-2405/Fax: 613-548-1330
Email: gns@queensu.ca

Figure 26. Sample closure notification letter for family doctor.



The Mothers Program™

Mother's Health Education, Research and Screening

Hello [Insert Name],

We have not received your blood work from your visit with Dr. Smith at the Maternal Health Clinic on [Insert Date]. Your chart has been closed and the partially complete records have been forwarded to your family doctor. Please contact your family doctor to complete the follow up.

Please contact our office if you have in questions.

Sincerely,

The Mothers Program Team

613-549-6666, ext 3937

www.themothersprogram.ca

clinic@themothersprogram.ca

Important: If you have completed the blood work, we have not received a copy of the results. Please contact our office. We need to know which lab completed the tests in order to obtain a copy of the results.

Figure 27. Sample chart closure notification letter for patient.

3.11 Special Case: Patients who Live Greater than 1 hour from the Hospital

At Kingston General Hospital we see obstetric patients from a very large geographical area, for many of these patients it is not feasible to return to the hospital for a clinic visit at 6 months postpartum. If a patient lives outside of LHIN 10 they are excluded from the program. If a patient lives greater than 1 hour from the hospital, but still within LHIN 10, they are sent a letter inviting them to participate in the program and giving them two options for how they may participate (Figure 28). The first option allows them to book an appointment and attend the clinic at the hospital. The second option allows them to complete the risk assessment through their family doctor.

If a patient indicates that they wish to complete the risk assessment with their family doctor they are sent a letter with instructions for follow up (Figure 29) and a requisition for blood work and urinalysis. Their family doctor is sent a letter that outlines the background and purpose of the clinic, identifies why the patient was referred, and notifies them that the patient wishes to complete the assessment through their office (Figure 30). The family doctor is also sent a blank copy of the Maternal Health Clinic Follow Up Form for use in the assessment.



The MoHERS Program™

Mother's Health Education, Research and Screening

Hello [Insert Name],

Pregnancy is a physiologic stress test that identifies some women as being at increased risk for heart disease. The development of many common complications in pregnancy has been shown to predict a woman's risk of premature heart disease.

During your last pregnancy you developed [Insert Complication]. This complication has been associated with an increased risk of developing heart disease. You have therefore been referred to Dr. Graeme Smith's Maternal Health Clinic. The Maternal Health Clinic primarily focuses on prevention and lifestyle modification for woman who may be at increased risk for developing heart disease.

As you live more than an hour from Kingston General Hospital we would like to offer you two different options for participating in this program.

1) You may choose to attend the clinic at Kingston General Hospital. At this appointment you would meet with the nurse to check weight, height, blood pressure, waist circumference and complete missing information on health forms. You would then meet with Dr. Smith to discuss pertinent information regarding your health. All information collected would be forwarded to your family doctor for follow up.

2) You may choose not to attend the clinic at Kingston General Hospital and do all of your follow up through your family doctor. If you choose this option all necessary forms and information will be sent to you and your family doctor.

The Maternal Health Clinic is a part of The MoHERS Program. The MoHERS Program is dedicated to improving mother's health through education, research and screening. For more information on the Maternal Health Clinic and The MoHERS Program please visit our website at www.themothersprogram.ca.

Please contact Jessica at 613-549-6666 ext. 3937 to indicate whether you are interested in participating in this program and choose your follow up option.

Sincerely,

**Dr. Graeme Smith and
The MoHERS Program Team**
www.themothersprogram.ca
info@themothersprogram.ca

**Heart Disease is the number one
killer of women in Canada,
accounting for almost 35,000
deaths annually.**

**Early diagnosis and treatment
of risk factors can prevent up
to 80% of heart disease.**

The Goals of the Maternal Health Clinic

- (1) To promote mothers' health.
- (2) To identify women's risk factors for heart disease.
- (3) To educate women on the links between pregnancy complications and heart disease risk.

Figure 28. Sample letter of invitation for women who live greater than 1 hour from the hospital.



The MoHERS Program™

Mother's Health Education, Research and Screening

Hello [Insert Name],

Thank you for your interest in The MoHERS Program. Enclosed is the pamphlet which is given to women in the Maternal Health Clinic. Your follow up will be slightly different than what is outlined on the back of the pamphlet.

Please take the enclosed requisition to your local lab to have the blood work and urine analysis completed. Please fast for a minimum of 12 hours prior to the blood work. Also, be sure to provide the urine sample when you are not menstruating.

Once you have completed the blood work and urine analysis **please contact [Insert Family Doctor Name] office to schedule a follow up appointment.**

Your doctor has been sent a form which outlines the pregnancy related cardiovascular risk indicators that you have experienced and will be used to summarize cardiovascular disease risk factors and calculate risk estimates. Our hope is that you and your doctor use your follow up appointment to discuss healthy lifestyle choices and cardiovascular disease prevention.

Please feel free to contact me if you have any questions or comments.

Sincerely,

Graeme N. Smith, MD PhD FRCSC
Professor, Obstetrics & Gynecology
Ph: 613-549-6666 ext.2405
www.themothersprogram.ca
info@themothersprogram.ca

Figure 29. Sample letter for patients completing all follow up with their family doctor.



The MoHERS Program™

Mother's Health Education, Research and Screening

Re: Follow up for **[Insert Patient Name]** (OHIP# - [Insert OHIP #])

Hello [Insert Doctor Name],

Pregnancy is a physiologic stress test that identifies some women as being at increased risk for cardiovascular disease. According to the American College of Cardiology's 2011 update for the Evidence-Based Guidelines for the Prevention of CVD in Women, complications in pregnancy should be included in the assessment of a woman's risk for cardiovascular disease.

As part of a program to improve Maternal Health through education, research and screening, we have started a clinic that will take place 6 months postpartum in order to screen for cardiovascular risk factors. Any woman who has one or more of the following pregnancy related cardiovascular risk indicators is eligible for follow up in the clinic:

- Preeclampsia, eclampsia, HELLP syndrome, gestational hypertension
- Gestational diabetes or gestational impaired glucose tolerance
- IUGR baby (<5th percentile for gestational age or <2500g in a term baby)
- Preterm birth (prior to 37 weeks for any reason)
- Placental abruption leading to delivery for either maternal or fetal reasons

During her last pregnancy [Insert Patient Name] developed [Insert Complication]. She was referred to Dr. Graeme Smith's Maternal Health Clinic, but has indicated that she is unable to attend the clinic. **She wishes to follow up with you regarding cardiovascular risk factor screening.**

Enclosed in this package is the Maternal Health Clinic Follow Up Form which we have developed to summarize risk factors and calculate risk estimates. Our hope is that this form is used as a tool to initiate discussions regarding weight loss, exercise, healthy lifestyle choices and cardiovascular disease prevention.

Your patient has been sent a requisition for all biochemical tests needed to complete the follow up form. Once completing the blood work and urine analysis **she will be in contact with your office to schedule an appointment** for discussion and follow up.

Thank you for your anticipated support of this new program. Please feel free to contact me if you have any questions or comments.

Sincerely,

Graeme N. Smith, MD PhD FRCSC
Professor, Obstetrics & Gynecology
(Ph) 613-549-6666 ext.2405
(Fax) 613-548-1330
www.themothersprogram.ca
info@themothersprogram.ca

Figure 30. Sample letter for family doctors for patients completing all follow up with their family doctor.

3.12 Databases Used for Tracking Patients

The referrals received are tracked in our referrals database (Figure 31). As well, all potentially eligible patients who are identified from the BORN Ontario database are included in this database. In this database we track all of the referrals which we receive including the patient's date of delivery, the referring doctor, how we received the referral, whether they were booked in to the clinic, and whether they opted out of the program.

Month of Referral	LastName	FirstName	Date of Birth	Hospital ID	Date of Delivery	Referring Doctor	Type of Referral	Patient Booked	Patient Opted Out
Month	MacDonald	Mary	DD/MM/YYYY	#####	DD/MM/YYYY	Dr. Smith	(1) Program Referral Form (2) Hospital Form (3) Fax From Doctor (4) Email From Doctor (5) Referral from Program Staff	Yes/No If No, Reason for Exclusion	Yes/No

Figure 31. Patient referral database.

Once patients are booked in to the clinic they are tracked in our pending appointments database (Figure 32). In this database we track the date and time of upcoming appointments, when the appointment letters were sent, and whether the patient has confirmed the appointment.

MOTHERS ID	LastName	FirstName	Hospital ID	Date of Birth	Date of Delivery	Date of Appointment	Time of Appointment	Family Doctor	Date Appt Package Sent	Confirmed	Patient Rescheduled	Message Left
#####	MacDonald	Mary	#####	DD/MM/YYYY	DD/MM/YYYY	DD/MM/YYYY	##:##	Dr. Roberts	DD/MM/YYYY	Yes/No	Yes/No	Yes/No

Figure 32. Pending appointments database.

Once a patient has attended the clinic they are tracked in our attendee database (Figure 33). In this database we track when they attended the clinic, whether blood work has been received, when reminder calls have been made, whether the follow up letter dictation has been completed, and when results have been sent to patients and family doctors.

MOTHERS ID	LastName	FirstName	Date of Birth	Hospital ID	Date of Delivery	Date of Appointment	Time of Appointment	Family Doctor	Blood Results Pending
#####	MacDonald	Mary	Date	#####	Date	Date	##:##	Dr. Roberts	Yes/No

1st Reminder	2nd Reminder	Final Reminder	Blood Results Received	Chart To Sent for Dictation	Dictation Completed	Results Sent to Patient&Doctor	Chart Closed
Date	Date	Date	Date	Date	Date	Date	Date

Figure 33. Patient attendee database.

If a patient chooses to complete the assessment with their family doctor then they are tracked in a family doctor follow up database (Figure 34). In this database we track who has been sent an invitation for follow up and what responses we have received.

MOTHERS ID	Last Name	First Name	Hospital ID	Date of Birth	Date of Delivery	Family Physician	Invite Letter Sent	Status
#####	MacDonald	Mary	#####	Date	Date	Dr. Roberts	Date	(1) Invitation Letter Sent (2) Booked In To Clinic (3) Attended Clinic (4) Follow Up Information Sent to Patient&Doctor

Figure 34. Patient follow up with family doctor database.

3.13 Databases Used to Store Patient Information

For all patients that are booked in to the clinic or sent an out-of-town invite (patients who live greater than 1 hour from the hospital) information from their medical chart is entered in to our Access database in 5 different tables; (1) identifying information, (2) main, (3) medications, (4) obstetrical history, (5) delivery outcomes. The identifying information table captures the patient's name, address and family doctor (

Figure 35). This table is important for patient follow up as it contains the necessary contact information. The main (Figure 36), medications (

Figure 37), and obstetrical information (Figure 38) tables contain relevant information that is pulled from both the antenatal and delivery records. The delivery outcomes table contains information about the most recent delivery and identifies the reason for referral to the clinic (Figure 39). Permission to maintain these ongoing databases was obtained from the appropriate Research and Ethics Board at Queen's University. All information is kept safe and confidential. No personally identifying information is ever released or published.

ID:

Last Name (Preferred or Current):

AKA Last Name (Official or Former Last Name):

First Name (Preferred or Current):

First Name (Former or Official):

Date of Birth (DD/MM/YYYY):

Address:

Unit Number:

City:

Province:

Postal Code:

Home Telephone:

OHIP Number:

Version Code:

CR Number:

Family Physician:

Location of Patient's Residence:

If in the extended catchment area, is patient seeing an obstetrician at KGH regularly:

Email Contact:

Cell Phone Number:

DND Number:

Figure 35. Identifying information table.

DEMOGRAPHICS

ID:

Age:

Language:

Other Language Type:

Occupation:

Highest Level of Education Achieved:

Marital Status:

Other Marital Status Type:

Race:

If Asian, from what decent:

If Other Race, specify:

CURRENT PREGNANCY

Gravida:

Term:

Premature:

Abortuses:

Living:

Final Estimated Date of Birth (DD/MM/YYYY):

Dating Method:

BLOOD PRESSURE

Baseline Systolic Blood Pressure (mmHg):

Baseline Diastolic Blood Pressure (mmHg):

Gestational Age at Baseline Blood Pressure (weeks):

Final Systolic Blood Pressure (mmHg):

Final Diastolic Blood Pressure (mmHg):

Gestational Age at Final Blood Pressure (weeks):

HEIGHT AND WEIGHT MEASURES

Height (cm):

First Available Weight (kg):

Gestational Age at First Available Weight (weeks):

Final Available Weight (kg):

Gestational Age at Final Available Weight (weeks):

Body Mass Index at Baseline Weight (kg/m²):

Weight Gain From Baseline to Final Weight (kg):

Excessive Weight Gain:

MEDICAL HISTORY

Smoker:

If Smoker, how many cigarettes per day:

History of Hypertension:

History of Gestational Hypertension

History of Chronic Hypertension

Other History of Hypertension

Relevant Comments Regarding Hypertension History:

History of Endocrine Problems:

History of Thyroid Problems

History of Type 1 Diabetes

History of Type 2 Diabetes

History of Gestational Diabetes

Other History of Endocrine Problems

Relevant Comments Regarding Endocrine History:

History of Cardiac or Pulmonary Problems:

History of Pneumonia

History of Asthma

History of Major Cardiac or Pulmonary Event (MI, DVT, PE, etc.)

Other History of Cardiac or Pulmonary Problems

Relevant Comments Regarding Cardiac or Pulmonary History:

FAMILY MEDICAL HISTORY		
Self: Family History of At Risk Population: <input type="text"/> <ul style="list-style-type: none"> <input type="checkbox"/> Hypertension <input type="checkbox"/> Cardiovascular or Pulmonary Event <input type="checkbox"/> Diabetes <input type="checkbox"/> Other Relevant Comments Regarding Self History: <input type="text"/>	Maternal: Family History of At Risk Population: <input type="text"/> <ul style="list-style-type: none"> <input type="checkbox"/> Chronic Hypertension <input type="checkbox"/> Cardiac or Pulmonary Event <input type="checkbox"/> Diabetes <input type="checkbox"/> Preeclampsia or HELLP <input type="checkbox"/> Gestational Hypertension <input type="checkbox"/> Other Relevant Comments Regarding Maternal History: <input type="text"/>	Paternal: Family History of At Risk Population: <input type="text"/> <ul style="list-style-type: none"> <input type="checkbox"/> Hypertension <input type="checkbox"/> Cardiac or Pulmonary Event <input type="checkbox"/> Diabetes <input type="checkbox"/> Other Relevant Comments Regarding Paternal History: <input type="text"/>

CLINICAL TEST RESULTS	ABSTRACTION DETAILS
Hemoglobin (g/L): <input type="text"/> Mean Cell Volume (fL/cell): <input type="text"/> Glucose Challenge Test Results: <input type="text"/>	Antenatal Record 1 Completed By: <input type="checkbox"/> Family Doctor <input type="checkbox"/> Midwife <input type="checkbox"/> Obstetrician <input type="checkbox"/> Other
If Indicated, Oral Glucose Tolerance Test Completed: <input type="text"/> Oral Glucose Tolerance Test Results: <input type="text"/>	Antenatal Record 2 Completed By: <input type="checkbox"/> Family Doctor <input type="checkbox"/> Midwife <input type="checkbox"/> Obstetrician <input type="checkbox"/> Other
Results at Fasting for the Oral Glucose Tolerance Test (mmol/L): <input type="text"/> Results at 1 Hour for the Oral Glucose Tolerance Test (mmol/L): <input type="text"/> Results at 2 Hours for the Oral Glucose Tolerance Test (mmol/L): <input type="text"/>	Date of Abstraction (DD/MM/YYYY): <input type="text"/> Notes Regarding the Abstraction: <input type="text"/>

Figure 36. Main table.

ID	<input type="text"/>
ID Entry Number	<input type="text"/>
Med	<input type="text"/>
Relevant Comments Regarding Medications	<input type="text"/>
Indic	<input type="text"/>
Other Indication	<input type="text"/>
<u>Information Sources:</u>	<input type="checkbox"/> Antenatal Record 1 <input type="checkbox"/> Delivery Review <input type="checkbox"/> Antenatal Record 2 <input type="checkbox"/> 6 Month Clinic Visit

Figure 37. Medications table.

ID	<input type="text"/>	Details Regarding the Relevant Comments:
ID-Number	<input type="text"/>	Gestational Diabetes <input type="checkbox"/>
Year (YYYY)	<input type="text"/>	Gestational Hypertension <input type="checkbox"/>
Sex	<input type="text"/>	Mild Preeclampsia <input type="checkbox"/>
Gestational Age (weeks)	<input type="text"/>	Severe Preeclampsia <input type="checkbox"/>
Birth Weight (grams)	<input type="text"/>	Eclampsia <input type="checkbox"/>
Type of Delivery	<input type="text"/>	HELLP Syndrome <input type="checkbox"/>
Relevant Comments	<input type="text"/>	U/S Confirmed Intrauterine Growth Restriction <input type="checkbox"/>
		Preterm Premature Rupture of Membranes <input type="checkbox"/>
		Multiple Gestation Pregnancy <input type="checkbox"/>
		Excess Weight Gain <input type="checkbox"/>
		Abruption <input type="checkbox"/>
		Spontaneous or Therapeutic Abortion (<20 Weeks) <input type="checkbox"/>
		Preterm Delivery (>20 Weeks and <37 Weeks Gestation) <input type="checkbox"/>
		Stillbirth <input type="checkbox"/>
		Additional Relevant Comments Not Captured Above:
		<input type="text"/>

Figure 38. Obstetrical history table.

ID:	<input type="text"/>	Lowest Hemoglobin After Admission (g/L):	<input type="text"/>
ID_Baby:	<input type="text"/>	Mean Cell Volume From the Same CBC as the Lowest Hemoglobin:	<input type="text"/>
Delivery at KGH:	<input type="text"/>	Systolic Blood Pressure Measured on Admission to Labor and Delivery:	<input type="text"/>
Date of Delivery (DD/MM/YYYY):	<input type="text"/>	Diastolic Blood Pressure Measured on Admission to Labor and Delivery:	<input type="text"/>
Gestational Age at Delivery (weeks):	<input type="text"/>	Patient Deemed Appropriate for Follow-Up:	Yes <input type="text"/>
Sex:	<input type="text"/>	Patient Eligible for Follow Up:	<input type="checkbox"/>
Birth Weight (grams):	<input type="text"/>		
Percentile of Birth Weight:	<input type="text"/>		
Delivery Method:	<input type="text"/>		

Pregnancy and Delivery Complications:

- No Relevant Complications
- Gestational Diabetes
- Gestational Hypertension
- Mild Preeclampsia
- Severe Preeclampsia
- Eclampsia
- HELLP Syndrome
- Idiopathic Preterm Delivery
- Preterm Premature Rupture of Membranes
- Clinically Significant Abruption Requiring Transfusion
- Clinically Significant Abruption Not Requiring Transfusion
- Stillbirth
- Confirmed Intrauterine Growth Restriction
- Multiple Gestation Pregnancy
- Other Relevant Complications

If Severe Preeclampsia, symptoms experienced:

- Elevated Serum Creatinine
- Elevated Systolic or Diastolic Blood Pressure
- Increase in AST or ALT
- Intrauterine Growth Restriction
- Oliguria
- Proteinuria
- Pulmonary Edema or Cyanosis
- Thrombocytopenia

If Applicable, Other Pregnancy or Delivery Complications:

Figure 39. Delivery outcomes table.

We also maintain an address database for family physicians in the Kingston area in order to facilitate mailing lists and patient follow up (Figure 40).

Physician Name:	<input type="text"/>	
Registration Number:	<input type="text"/>	
Location:	<input type="text"/>	
Address:	<input type="text"/>	
City:	<input type="text"/>	
Province:	<input type="text"/>	
Postal Code:	<input type="text"/>	
Phone Number:	<input type="text"/>	
Extension:	<input type="text"/>	
Fax Number:	<input type="text"/>	
AKA Name:	<input type="text"/>	
Other Practices:	<input type="checkbox"/>	
Other Location 1:	<input type="text"/>	Other Location 4: <input type="text"/>
Other Location 2:	<input type="text"/>	Other Location 5: <input type="text"/>
Other Location 3:	<input type="text"/>	Other Location 6: <input type="text"/>

Figure 40. Physician mailing address database.

The final database that we maintain contains information collected during the patient's Maternal Health Clinic visit (Figure 41). In this table we store all of the information collected on the Case Report Form and the results of the cardiovascular risk assessment.

Demographics	
ID:	<input type="text"/>
Date of Birth (DD/MM/YYYY):	<input type="text"/>
Date of Visit (DD/MM/YYYY):	<input type="text"/>
Age (Years):	<input type="text"/>
Occupation:	<input type="text"/>
Postal Code:	<input type="text"/>
Background:	<input type="text"/>
Education Level:	<input type="text"/>
Household Income:	<input type="text"/>
Marital Status:	<input type="text"/>

General Health Data	
Height (cm):	<input type="text"/>
Current Weight (kg):	<input type="text"/>
Pre-Pregnancy Weight (kg):	<input type="text"/>
Delivery Weight (kg):	<input type="text"/>
Weight Retention (kg):	<input type="text"/>
Waist Circumference (cm):	<input type="text"/>
Smoker:	<input type="text"/>
Average Number of Cigarettes Per Day:	<input type="text"/>
Ever Exposed to Second Hand Smoke:	<input type="text"/>
Type of Second Hand Smoke:	<input type="text"/>
Have You Ever Smoked:	<input type="text"/>
Number of Years Smoked:	<input type="text"/>
Average Number of Cigarettes Per Day:	<input type="text"/>
Alcohol Consumption:	<input type="text"/>
Average Number of Drinks Per Week:	<input type="text"/>
Physical Activity:	<input type="text"/>
Average Number of Times Physically Active Per Week:	<input type="text"/>

Pregnancy History

Gravida:

Term:

Preterm:

Abortions:

Living:

Breastfed Baby:

Still Breastfeeding Baby:

If No, Number of Months Baby Breastfed:

If Yes, Number of Months Planning to Breastfeed:

Breastfed Less Than 6 Months:

History of Gestational Diabetes

History of Gestational Hypertension

History of Mild PET

History of Severe PET

History of Eclampsia

History of HELLP

History of IUGR

History of PPROM

History of Multiple Birth

History of Excess Weight Gain in Pregnancy

History of Abruptio

History of Preterm Birth

History of Spontaneous or Therapeutic Abort

History of Stillbirth

History of Other Relevant Complication:

Medical History

History of Chronic Hypertension

History of Hypothyroidism

History of Hyperthyroidism

History of Type One Diabetes

History of Type Two Diabetes

History of Other Endocrine Problems

History of Pneumonia

History of Asthma

History of a Major Cardiac Event

History of Other Cardiac or Pulmonary Problems

Maternal Family History of Chronic Hypertension

Maternal Family History of Cardiac or Pulmonary Event

Maternal Family History of Diabetes

Maternal Family History of Preeclampsia or HELLP

Maternal Family History of Gestational Hypertension

Other Relevant Maternal Family History:

Paternal Family History of Chronic Hypertension

Paternal Family History of Cardiac or Pulmonary Event

Paternal Family History of Diabetes

Other Relevant Paternal Family History:

Blood Pressure Measures and Meds

Time of Blood Pressure Measure:

Second Blood Pressure Measure (mmHg):

Third Blood Pressure Measure (mmHg):

Fourth Blood Pressure Measure (mmHg):

Fifth Blood Pressure Measure (mmHg):

Sixth Blood Pressure Measure (mmHg):

Average Blood Pressure (mmHg):

2nd Missing

3rd Missing

4th Missing

5th Missing

6th Missing

List of Medications:

Taking Antihypertensives:

Lab Results

Blood Requisition Given:

Date of Blood Work:

Blood Work Not Done:

Triglyceride (mmol/L):

Cholesterol (mmol/L):

High Density Lipoprotein (mmol/L):

Low Density Lipoprotein (mmol/L):

Fasting Glucose (mmol/L):

C-Reactive Protein (mg/L):

Urine Albumin:Creatinine Ratio (mg/mmol):

OGTT Ordered:

Fasting Glucose (mmol/L):

1 Hour Glucose (mmol/L):

2 Hour Glucose (mmol/L):

CRP Below Analytical Range

ACr Below Analytical Range

Fasting Missing

1 Hour Missing

2 Hour Missing

CVD Estimates

Lifetime CVD Estimate for Total Cholesterol:

Lifetime CVD Estimate for Systolic Blood Pressure:

Lifetime CVD Estimate for Diastolic Blood Pressure:

Lifetime CVD Risk Estimate for Fasting Glucose:

Lifetime CVD Risk Estimate for Smoking:

Lifetime CVD Risk Estimate:

Comments:

Metabolic Syndrome Elevated Blood Pressure:

Metabolic Syndrome Abdominal Obesity:

Metabolic Syndrome Calculation Elevated Triglycerides:

Metabolic Syndrome Calculation Decreased HDL:

Metabolic Syndrome Calculation Elevated Fasting Glucose:

Metabolic Syndrome Criteria Met:

30 Year CVD Risk Estimate Higher Value:

30 Year CVD Risk Estimate Midpoint Value:

30 Year CVD Risk Estimate Lower Value:

Figure 41. Maternal Health Clinic visit database.

4.0 Contact Information

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