Preconception cardiovascular risk factor management to optimize pregnancy outcomes and overall health

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Women’s Heart Health Symposium

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Conflicts of Interest

- No conflicts of interest to disclose
- Early Career Professorship in Women’s Heart and Brain Health HSFC & McGill University
- Funding from CIHR
Learning objectives

1. Appreciate the burden of cardiovascular risk factors among reproductive-aged women
2. Recognize the impact of uncontrolled cardiovascular disease risk factors on maternal and perinatal morbidity
3. Outline strategies for cardiovascular disease risk factor optimization
Poll the audience

Does your practice include reproductive aged women?
Reproductive milestones as a window into a woman’s health status

- Menstrual irregularities
- Infertility
- Complications during pregnancy/childbirth (e.g., Preeclampsia, GDM)
- Postpartum weight retention, persistent postpartum hypertension, Infertility
Reproductive milestones as a window into a woman’s health status

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Pre-conception
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Pre-conception | Inter-pregnancy interval
Reproductive milestones as a window into a woman’s health status

Menstrual irregularities

Complications during pregnancy/childbirth (eg. Preeclampsia, GDM)

Infertility

Postpartum weight retention, persistent postpartum hypertension,

Pre-conception

Inter-pregnancy interval
Rationale for preconception care in women with chronic disease

• Most *determinants* of pregnancy health are present before pregnancy

• *Severe maternal morbidity* is increasing in Canada

• Prenatal care is often *too late* to have an impact on determinants & outcomes

• *Health optimization* prior to pregnancy improves maternal and fetal outcomes
Cardiovascular risk factors in reproductive aged women

Table 1. Characteristics of Non-Pregnant Women Aged 20–44, NHANES 2011–2016

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Weighted Denominator(^a)</th>
<th>Weighted No.(^b)</th>
<th>(%^2) (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age, y</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20–34</td>
<td>50,018,292</td>
<td>29,695,171</td>
<td>59.4 (56.6–62.1)</td>
</tr>
<tr>
<td>35–39</td>
<td>4,428,498</td>
<td>19.5 (17.9–21.2)</td>
<td></td>
</tr>
<tr>
<td>40–44</td>
<td>10,578,705</td>
<td>21.2 (19.2–23.3)</td>
<td></td>
</tr>
<tr>
<td><strong>Race/ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic white</td>
<td>50,018,292</td>
<td>28,103,804</td>
<td>56.2 (51.2–61.1)</td>
</tr>
<tr>
<td>Non-Hispanic black</td>
<td>4,428,498</td>
<td>13.7 (11.0–17.0)</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>9,867,791</td>
<td>19.7 (16.4–23.6)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>5,188,941</td>
<td>10.4 (9.1–11.9)</td>
<td></td>
</tr>
<tr>
<td><strong>Education level</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;High school diploma</td>
<td>50,018,292</td>
<td>6,266,820</td>
<td>12.5 (10.7–14.6)</td>
</tr>
<tr>
<td>High school diploma</td>
<td>4,428,498</td>
<td>17.0 (15.1–19.1)</td>
<td></td>
</tr>
<tr>
<td>&gt;High school diploma</td>
<td>35,226,226</td>
<td>70.5 (67.0–73.7)</td>
<td></td>
</tr>
<tr>
<td><strong>Body mass index, (\text{kg/m}^2)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal or underweight</td>
<td>49,906,433</td>
<td>18,885,653</td>
<td>38.2 (35.4–41.0)</td>
</tr>
<tr>
<td>Overweight</td>
<td>12,476,053</td>
<td>25.2 (23.4–27.1)</td>
<td></td>
</tr>
<tr>
<td>Obese</td>
<td>18,094,169</td>
<td>36.6 (34.8–38.4)</td>
<td></td>
</tr>
<tr>
<td><strong>Insurance status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publicly insured</td>
<td>49,906,433</td>
<td>9,190,888</td>
<td>18.6 (16.4–20.9)</td>
</tr>
<tr>
<td>Privately insured</td>
<td>29,057,469</td>
<td>58.6 (55.5–61.7)</td>
<td></td>
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<tr>
<td>Uninsured</td>
<td>11,304,289</td>
<td>22.8 (20.6–25.2)</td>
<td></td>
</tr>
<tr>
<td><strong>Hypertension</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has hypertension</td>
<td>47,556,182</td>
<td>4,428,498</td>
<td>9.3 (8.1–10.7)</td>
</tr>
<tr>
<td>Is unaware of hypertension status</td>
<td>4,428,498</td>
<td>750,284</td>
<td>16.9 (13.2–21.5)</td>
</tr>
<tr>
<td>Has uncontrolled hypertension</td>
<td>4,428,498</td>
<td>1,803,248</td>
<td>40.7 (35.0–46.7)</td>
</tr>
<tr>
<td><strong>Diabetes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has diabetes</td>
<td>50,376,524</td>
<td>2,256,582</td>
<td>4.5 (3.4–5.9)</td>
</tr>
<tr>
<td>Has diagnosed diabetes</td>
<td>50,376,524</td>
<td>1,606,530</td>
<td>3.2 (2.3–4.5)</td>
</tr>
<tr>
<td>Has uncontrolled diabetes</td>
<td>1,606,530</td>
<td>827,973</td>
<td>51.5 (37.0–65.8)</td>
</tr>
<tr>
<td>Has undiagnosed diabetes</td>
<td>50,376,524</td>
<td>650,052</td>
<td>1.3 (0.8–2.0)</td>
</tr>
</tbody>
</table>

\(^a\) Values used for denominator in calculating percentages.

\(^b\) Percentages may not sum to 100% because of rounding.

\(^2\) Adjusted prevalence ratios to assess differences by selected characteristics.
Severe Maternal Morbidity in Canada

FIGURE 1: Temporal trends (95% CI) in severe maternal morbidity, Canada (excluding Quebec), 2003/04-2010/11

SMM:
- Sepsis
- PPH/transfusion
- ARDS
- Eclampsia
- Dialysis
- End-organ failure

Source: Canadian Institute for Health Information, Discharge Abstract Database (DAD). Notes: CI - Confidence Interval. The DAD does not include data from Quebec. Manitoba data, which were incomplete for earlier years, were included from 2004/05.
Severe Maternal Morbidity in Canada

Pre-conception determinants of health

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Source: Canadian Institute for Health Information, Discharge Abstract Database (DAD). Notes: CI - Confidence Interval. The DAD does not include data from Quebec. Manitoba data, which were incomplete for earlier years, were included from 2004/05.

Impact of maternal health on fetal development
Impact of maternal health on fetal development

Critical periods of development

1. period of dividing zygote, implantation & bilaminar embryo
2. usually not susceptible to teratogens
3. embryonic period (in weeks)
4. fetal period (in weeks)
5. full term

C.N.S. = central nervous system

- Indicates common site of action of teratogen

Heart
Eyes
Arms
Legs
Teeth
Palate
External genitalia
Ear

Prenatal death
Major morphological abnormalities
Physiological defects & minor morphological abnormalities
Impact of maternal health on fetal development

Mean Entry into Prenatal Care

Critcal Periods of Development

- embryonic period (in weeks)
- fetal period (in weeks)
- full term

1. period of dividing zygote, implantation & bilaminar embryo

2. C.N.S.
   - heart
   - eye
   - arm
   - leg

3. 4. 5. 6. 7. 8. 9.
   - ear
   - palate
   - external genitalia
   - brain

9. 16. 20-36. 38.
   - heart
   - arms
   - eyes
   - legs
   - teeth
   - palate
   - external genitalia
   - ear

- central nervous system
- usually not susceptible to teratogens
- prenatal death
- major morphological abnormalities
- physiological defects & minor morphological abnormalities
# Impact of CVD risk factors in pregnancy

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Maternal outcome</th>
<th>Fetal/neonatal outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>Preeclampsia/eclampsia, Stroke, Heart failure</td>
<td>IUGR, Low birthweight, Preterm birth</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>Preeclampsia/eclampsia, Poor wound healing, Excess gestational weight, C-section</td>
<td>Macrosomia, Shoulder dystocia, Miscarriage/stillbirth, Neonatal hypoglycemia, Congenital anomaly</td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td>Pancreatitis</td>
<td></td>
</tr>
<tr>
<td>Obesity</td>
<td>Preeclampsia/eclampsia, Poor wound healing, Sepsis, Venous thromboembolism, C-section</td>
<td>Miscarriage/stillbirth, Congenital anomaly</td>
</tr>
<tr>
<td>Smoking</td>
<td></td>
<td>IUGR, Preterm birth, Congenital anomalies, SIDS</td>
</tr>
</tbody>
</table>
Preconception assessment can help to identify risk factors for adverse outcomes in pregnancy and opportunities for positive health interventions.

But how do we manage these risk factors in anticipation of pregnancy?
Clinical scenario

• 39 F GoPo, trying to conceive – considering IVF
• PMH: chronic hypertension, diabetes mellitus type 2
• Non-smoker, sedentary lifestyle
• Meds: metformin 1 g BID, enalapril 5 mg DIE,
• BMI 36 kg/m², BP 140/95, acanthosis, large abdominal circumference
• Urinalysis 0.5 g/g proteinuria
• Normal GFR, fasting glucose 7.7, A1c = 8.2 %, TG = 3.0, non-HDL = 3.5 mmol/L
Poll the audience

In addition to counselling this patient on the risks in pregnancy, starting folic acid, and ensuring a recent eye exam, you advise to:

1. Stop all medications and start insulin (NPH + Hum R sliding scale)
2. Continue metformin, stop enalapril, start ASA right away
3. Start liraglutide and refer to a bariatric surgeon
4. Delay pregnancy until better control of diabetes, ensure adequate contraception, refer to nutritionist, recommend ASA 81-162 mg as of 11 weeks + adequate calcium intake, recommend cessation of enalapril at positive pregnancy test
5. You are not sure → refer to obstetric medicine
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Risk of Fetal Anomaly Relative to Periconceptional A1C

Preconception Checklist for Women with Pre-existing Diabetes

- Use reliable birth control until adequate glycemic control
- Attain a preconception A1C of ≤7.0% (≤ 6.5% if safe)
- May remain on metformin + glyburide until pregnancy, otherwise switch to insulin
- Assess for and manage any diabetes complications
- Folic Acid 1 mg/d: 3 months pre-conception to 12 weeks post-conception
- Discontinue potential embryopathic meds:
  - **ACE inhibitors / ARB** (prior to or upon detection of pregnancy in those with significant proteinuria)
- **Statin** therapy
Metformin in women with type 2 diabetes in pregnancy (MiTy): a multicentre, international, randomised, placebo-controlled trial

Denice S Feig, Lois E Donovan, Bernard Zinman, J Johanna Sanchez, Elizabeth Asztalos, Edmond A Ryan, I George Fantus, Eileen Hutton, Anthony B Armson, Lorraine L Lipscombe, David Simmons, Jon F R Barrett, Paul J Karanicolas, Siobhan Tobin, H David McIntyre, Simon Yu Tian, George Tomlinson, Kellie E Murphy, on behalf of the MiTy Collaborative Group*

Multi-centre placebo controlled RCT 500 women w DM2
Metformin + insulin vs. insulin alone
No difference in composite neonatal primary outcome (i.e. safe)

Interpretation We found several maternal glycaemic and neonatal adiposity benefits in the metformin group. Along with reduced maternal weight gain, insulin dosage, and rate of caesarean sections, and improved glycaemic control, the lower adiposity and infant size measurements resulted in fewer large infants but a higher proportion of small-for-gestational-age infants. Understanding the implications of these effects on infants will be important to properly advise patients who are contemplating the use of metformin during pregnancy.

Lancet Endocrinol, 2020
BP trajectory in pregnancy

SYSTOLIC BP THROUGHOUT GESTATION

Magriples Am J Perinatology 2013
Management of hypertension

Severe Hypertension in Pregnancy
- Obstetrical emergency
- Initiate pharmacotherapy*

BP ≥140/90 mm Hg
- Yes
  - BP ≥160/110 mm Hg?
    - Yes
      - Increase antihypertensive dose or Start 2nd antihypertensive drug
    - No
      - Non-severe Hypertension in Pregnancy
        1) Start single antihypertensive drug therapy**
           (target DBP of 85 mm Hg)
        2) Maternal, placental, and fetal assessments
        3) Regular reassessments of BP
  - No
    - Normal Blood Pressure
      Reassess at next visit

Non-severe Hypertension in Pregnancy
1) Start single antihypertensive drug therapy**
   (target DBP of 85 mm Hg)
2) Maternal, placental, and fetal assessments
3) Regular reassessments of BP

BP ≥160/110 mm Hg?
- Yes
  - DBP of ≥85 mm Hg?
    - Yes
      - Continue maternal, placental, and fetal assessments
    - No
      - DBP of <85 mm Hg
        - Yes
          - Continue maternal, placental, and fetal assessments
        - No
          - Reassess at next visit

Normal Blood Pressure
Reassess at next visit

* See Magee et al.

** See Table 2.
Do ACE inhibitors cause embryopathy?

ACE vs healthy

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Treatment</th>
<th>Control</th>
<th>Risk Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Events</td>
<td>Total</td>
<td>Events</td>
</tr>
<tr>
<td>Cooper</td>
<td>18</td>
<td>209</td>
<td>834</td>
</tr>
<tr>
<td>Cournot</td>
<td>4</td>
<td>129</td>
<td>3</td>
</tr>
<tr>
<td>Moretti</td>
<td>2</td>
<td>108</td>
<td>2</td>
</tr>
<tr>
<td>Lennestal</td>
<td>7</td>
<td>150</td>
<td>33686</td>
</tr>
</tbody>
</table>

Maybe confounding by indication

Likely safe to continue until positive preg test IF there is a compelling indication (i.e. nephropathy)

ACE inhibitors DO cause a fetopathy (renal failure) in the SECOND trimester

Figure 3. Forest plot of ACE inhibitors/angiotensin receptor blockers exposed group vs ‘other’ antihypertensive exposed control.
Guidelines

1. Antihypertensive therapy is recommended for average SBP measurements of \( \geq 140 \text{ mm Hg} \) or DBP measurements of \( \geq 90 \text{ mm Hg} \) in pregnant women with chronic hypertension, gestational hypertension, or preeclampsia (Grade C).

2. A. Initial antihypertensive therapy should be monotherapy from the following first-line drugs: oral labetalol, oral methyldopa, long-acting oral nifedipine, or other oral \( \beta \)-blockers (acebutolol, metoprolol, pindolol, and propranolol) (Grade C).

   B. Other antihypertensive drugs can be considered as second-line drugs including: clonidine, hydralazine, and thiazide diuretics (Grade D).

   C. ACE inhibitors (Grade C) and angiotensin receptor blockers (Grade D) should not be used in pregnant women.

3. A. A DBP of 85 mm Hg should be targeted for pregnant women receiving antihypertensive therapy with chronic hypertension or gestational hypertension (Grade B). A similar target could be considered for pregnant women with preeclampsia (Grade D).

   B. Additional antihypertensive drugs should be used if target BP levels are not achieved with standard-dose monotherapy (Grade C). Add-on drugs should be from a different drug class chosen from first-line or second-line options (Grade D).

II. Management of severe hypertension (BP \( \geq 160/110 \text{ mm Hg} \)) in pregnancy

Background.

In a secondary analysis of the CHIPS trial, BP \( \geq 160/110 \text{ mm Hg} \) was associated with significantly worse maternal and perinatal outcomes, independent of the development of preeclampsia. These included: increased maternal hospital length of stay > 10 days, pregnancy loss or need for high-level neonatal care > 48 hours, increased risk of preterm birth at < 34 and < 37 weeks gestation, low birth weight (ie, weight less than the 10th percentile), maternal platelets < 100,000/L, and elevated maternal liver enzymes.

The CHIPS trial did not find a significant difference in the rate of stroke between study arms because of a low event rate (n = 1; 0.2% in the tight arm vs n = 0 in the less tight arm), because stroke in pregnancy and the immediate postpartum period is a relatively uncommon adverse outcome (30 per 100,000 pregnancies).

Importantly, BP \( \geq 160/110 \text{ mm Hg} \) and the presence of HDP are both considered risk factors for ischemic and hemorrhage stroke in pregnancy.

Specifically, a large US population-based study reported that women with HDP were 5.2 times more likely to be hospitalized for stroke compared with pregnant women with normal BP. In a case series of 28 women with HDP with stroke in pregnancy or early postpartum, immediately before the stroke, SBP was recorded as \( \geq 160 \text{ mm Hg} \) in 95.8% (23 of 24) and DBP \( \geq 110 \text{ mm Hg} \) in 12.5% of women (3 of 24).

Table 2. Antihypertensive medications commonly used in pregnancy

<table>
<thead>
<tr>
<th>First-line oral drugs (Grade C)</th>
<th>Second-line oral drugs (Grade D)</th>
<th>Medications to avoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labetalol</td>
<td>Clonidine</td>
<td>ACEi* (Grade C)</td>
</tr>
<tr>
<td>Methyldopa</td>
<td>Hydralazine</td>
<td>ARBs* (Grade D)</td>
</tr>
<tr>
<td>Long-acting oral nifedipine</td>
<td>Thiazide diuretics</td>
<td></td>
</tr>
<tr>
<td>Other ( \beta )-blockers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(acebutolol, metoprolol,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pindolol, and propranolol)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ACEi, angiotensin-converting enzyme inhibitors; ARBs, angiotensin receptor blockers.

* Fetotoxicity of renal system.

Hypertension Canada 2018
5 A’s in obesity management

5 Steps in the Patient Journey

Ask, Assess, Advise, Agree, Assist

1. Recognition of obesity as a chronic disease by healthcare providers, who should ask the patient permission to offer advice and help treat this disease in an unbiased manner.

2. Assessment of an individual living with obesity, using appropriate measurements, and identifying the root causes, complications and barriers to obesity treatment.

3. Discussion of the core treatment options (medical nutrition therapy and physical activity) and adjunctive therapies that may be required, including psychological and behavioural, pharmacologic and surgical interventions.

4. Agreement with the person living with obesity regarding goals of therapy, focusing mainly on the value that the person derives from health-based interventions.

5. Engagement by healthcare providers with the person with obesity in continued follow-up and reassessments, and encouragement of advocacy to improve care for this chronic disease.
# Weight gain recommendations

<table>
<thead>
<tr>
<th>If before pregnancy, you were...</th>
<th>You should gain...</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Underweight</strong></td>
<td></td>
</tr>
<tr>
<td>BMI less than 18.5</td>
<td>28-40 pounds</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Normal Weight</strong></td>
<td></td>
</tr>
<tr>
<td>BMI 18.5-24.9</td>
<td>25-35 pounds</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Overweight</strong></td>
<td></td>
</tr>
<tr>
<td>BMI 25.0-29.9</td>
<td>15-25 pounds</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Obese</strong></td>
<td></td>
</tr>
<tr>
<td>BMI greater than or equal to 30.0</td>
<td>11-20 pounds</td>
</tr>
</tbody>
</table>

[https://www.cdc.gov/reproductivehealth/maternalinfanthealth/pregnancy-weightgain.htm#recommendations](https://www.cdc.gov/reproductivehealth/maternalinfanthealth/pregnancy-weightgain.htm#recommendations)
Preeclampsia prevention

• ASA 75 – 150 mg daily given HS, starting at 11 weeks gestation (ideally before 16 weeks) has been shown to lower the risk of preeclampsia in high-risk women (ISSHP\(^1\), Hypertension Canada, ACOG, JOGC)
  – ASA 150 lowers risk of preterm preeclampsia by 60\(^2\)
  – High-risk women: ideally using combination of clinical factors, uterine artery doppler, T1 PAPP-A and PlGF \(^3\)
  – Hypertension, prior preeclampsia, obesity, IVF, advanced maternal age, renal disease, lupus, APLAS, diabetes

• If inadequate dietary calcium intake (<600 mg per d), calcium supplementation (1.2-2.5 daily) can modestly lower risk of preeclampsia

1. Brown et al., Preg Hypertension 2018;
2. Rolnick et al., NEJM 2017;
3. Akolekar, Fetal Diagn Therap 2013
Physical activity

• Pregnant women should exercise at least 3 days per week for an average 50 min using a combination of aerobic exercise, strength and flexibility training; this has been associated with less weight gain and reduced incidence of hypertensive disorders in pregnancy; there are no significant adverse effects of exercise in pregnancy.

Brown et al., Preg Hypertension 2018
## Preconception Health Care Tool

Preconception Health Care involves identifying potential physical, genetic, psychosocial, environmental, and behavioral risk factors for adverse pregnancy outcomes, and reducing those risks prior to conception through counseling, education, and intervention. Preconception Health Care focuses on health promotion and illness prevention for everyone of reproductive age. It is important to improve maternal and infant outcomes, as the critical period for fetal development often occurs before prenatal care begins. Each of the preconception topics below should be addressed with every individual of reproductive age on an ongoing basis.

### Prevent & Promote

#### Reproductive Life Plan: Ask all individuals of reproductive age, "Would you like to have a child in the next year?" Encourage all individuals to make a Reproductive Life Plan.

- **No**: Discuss contraception options.
- **Not sure**: Choosing Likely Tool.
- **Inform women of reproductive age that natural fertility and assisted reproductive technology success is significantly lower for women in their late 30s-40s.

#### Reproductive History: A detailed reproductive history should be obtained for all individuals.

<table>
<thead>
<tr>
<th>Gravida (G)</th>
<th>Abortions (A)</th>
<th>Full-term (F)</th>
<th>Miscarriage (M)</th>
<th>Preterm (P)</th>
<th>Premature Delivery (Pd)</th>
<th>Birth Weight (BW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Number)</td>
<td>(Number)</td>
<td>(Number)</td>
<td>(Number)</td>
<td>(Number)</td>
<td>(Number)</td>
<td>(Weight)</td>
</tr>
<tr>
<td>(Number)</td>
<td>(Number)</td>
<td>(Number)</td>
<td>(Number)</td>
<td>(Number)</td>
<td>(Number)</td>
<td>(Weight)</td>
</tr>
</tbody>
</table>

- **Details:**

### Screen

#### Inquire about previous pregnancies:

- Premature Birth
- Stillbirth
- Gestational Diabetes
- Cesarean Birth
- Assisted Reproductive Technologies
- Uterine Anomalies
- High/Low Birth Weight

#### Provide appropriate referrals.

- Advise women with prior caesarean delivery to wait at least 18 months prior to conception.
- Recommend folate acid 5mg daily prior to conception and for 12 weeks after conception if positive history of neural tube defect.
- Recommend <18 and >59 month interpregnancy interval (IP).

### Manage

#### Provide treatment according to Canadian Guidelines on Sexually Transmitted Infections.

- Inform women with genital herpes of risk of vertical transmission.

### Sexual Health:

All individuals should be counselled about safer sexual practice.

#### Screen if High Risk:

- Chlamydia
- Syphilis
- Trichomoniasis
- Gonorrhea
- Genital Herpes (if lesions)

### Chronic Medical Conditions:

Optimize management for the following diseases, as suboptimal control or treatments can increase risk for adverse maternal and/or infant outcomes.

- **Mothrls** should be consulted for the safety of any medications taken by patients with chronic conditions.
- Mothrls hotline: 1-877-439-2744
- **Asthma**: Delay conception until good control is achieved.
- **Cancer**: All individuals with cancer should be counselled regarding the potential effects of treatment on fertility and informed of options to preserve fertility, if desired, and referred appropriately.
- **Diabetes**: Increased risk of birth defects can be mitigated with good preconception glycaemic control. Encourage contraception for those without good control. Folic acid 5mg daily prior to conception and for 12 weeks after conception. ACE inhibitors are contraindicated. Estradiol-containing contraception options should be avoided for those with DM-20 years or target organ damage. Meclofenamic acid 400mg daily may be safer. Refer to specialist.
- **HIV**: Transmission risk to fetus is ~2% with antiretroviral therapy. Efavirenz is contraindicated. Antiretroviral drugs may interfere with hormonal contraceptive methods. Refer to specialist.
- **Hypertension**: Increased risk for adverse fetal and maternal outcomes. Assess for target-end organ damage in those with long-standing hypertension. Alternatives to ACE are recommended.

For more information regarding preconception chronic disease management, visit the Before, Between, & Beyond Pregnancy Preconception Care Clinical Toolkit.

### Medications:

- Human teratogenicity risk is unknown for the majority of medications. Use caution when prescribing for women of reproductive age. Consult Mothrls.

- **Screen for teratogenic medication use:**
  - Prescribed Medications
  - Over-the-Counter Medications
  - Complementary and Alternative Therapy (herbal, natural, weight loss, athletic products or supplements, etc.)

- Potentially teratogenic medications should be changed to safer options. Women should be counseled not to stop prescribed medications without consulting with their provider.

- Recommend folic acid 5mg daily prior to conception and for 12 weeks after conception for women taking folate antagonists (e.g., methotrexate, sulindac, and antiepileptics).
Figure. Pregnancy-related complications and cardiovascular disease (CVD) events: the association between prepregnancy risk factors and postpregnancy outcomes.
Summary

- Preconception care occurs at many time points in a woman’s reproductive lifespan
- The burden of CVD risk factors in reproductive aged women is substantial
- Adequate control of pre-pregnancy CVD risk factors can improve pregnancy outcomes
- The peripartum period is an opportunity for prevention and health optimization
Thank you

• Questions?