

PREGNANCY and WOMENS CARDIOVASCULAR HEALTH



14th Annual Collingwood, Ontario, February 10 -12, 2017



"That's the last time I go grocery shopping when I get a craving."

Karen Fleming MD MSc CCFP FCFP



PREGNANCY AND CARDIOVASCULAR DISEASE

Learning Objectives

- Discuss cardiovascular disease (CVD) in women
- Identify pregnancy complications with increased risk CVD risks
- Review barriers faced by physicians and women in implementing risk reduction
- Discuss strategies to implement screening and risk factor reduction in practice settings for at risk women



WOMEN AND HEART DISEASE HEALTH GAPS

#1 KILLER OF WOMEN WORLDWIDE

- Affects women of all ages
- 1 in 3 women will die of heart disease or stroke
- Risk factors develop as early as age 20
- Women are more likely to die 1 year after heart attack than men
- Heart attacks go unrecognized in women 54% time
- Women are less likely to undergo evaluation of cardiac symptoms
- Women have lower rates of diagnostic testing, medications and cardiac rehabilitation
- Reducing risk factors before first heart event could postpone
 or prevent 33% deaths



LIFETIME CVD RISK AT AGE OF 50



D. Lloyd-Jones, Circulation. 2006;113:791-798.

AHA HEART AND STROKE PREVENTION GUIDELINES FOR WOMEN

- 2011 Update of the American Heart Association Evidence Based Guidelines for the Prevention of Cardiovascular Disease in Women
- Pregnancy complications added 2011
- 2013 Update of AHA Stroke Prevention Guidelines in Women
- Pregnancy complications included



2011 AHA PREGNANCY RISK FACTORS

- Pre-eclampsia
- Gestational Hypertension
- Gestational Diabetes/ Impaired GT
- Placental abruption
- Idiopathic preterm delivery
- IUGR (intrauterine growth restriction)
- Excessive weight gain/weight retention



ONTARIO MIDWIFERY HYPERTENSIVE DISORDER GUIDELINES 2012

- Women who have had HDP should be advised that they may be at increased risk of developing hypertension or cardiovascular disease later in life. (III-B)
- Midwives should discuss the positive benefits of a heart healthy diet and lifestyle with women who have had HDP, and how these factors may mitigate development of hypertension-related disease in later life. (IB)
- Upon discharge from midwifery care, ensure information about a client's HDP is communicated to the primary care provider/family physician who will be providing ongoing care to the client, if applicable. (IIIB)



SOGC CLINICAL PRACTICE GUIDELINE (MAY 2014)

Recommendations: Beyond 6 weeks

- Severe early screen for underlying disease (11-2B)
- Discuss pregnancy interval implications (11-2B)
- Healthy BMI promotion (1-A) HDP but normotensive CVR assessment (11-2B)
- All HDP pursue healthy diet/lifestyle (1-B)



2016 CANADIAN GUIDELINES

Society Guidelines

2016 Canadian Cardiovascular Society Guidelines for the Management of Dyslipidemia for the Prevention of Cardiovascular Disease in the Adult

Primary Panel: Todd J. Anderson MD,^{a,*} Jean Grégoire, MD,^{b,*} Glen J. Pearson, PharmD,^{c,*}
Arden R. Barry, PharmD,^d Patrick Couture, MD,^e Martin Dawes, MD,^f Gordon A. Francis, MD,^g
Jacques Genest, Jr, MD,^h Steven Grover, MD,ⁱ Milan Gupta, MD,^{j,k} Robert A. Hegele, MD,¹
David C. Lau, MD, PhD,^m Lawrence A. Leiter, MD,^k Eva Lonn, MD,ⁿ G.B. John Mancini, MD,^f
Ruth McPherson, MD, PhD,^o Daniel Ngui, MD,^f Paul Poirier, MD, PhD,^p
John L. Sievenpiper, MD, PhD,^k James A. Stone, MD, PhD,^a George Thanassoulis, MD,^h and
Richard Ward, MD,^q

Table 1. Summary of 2016 guidelines changes and highlights

Lipid screening for men and women 40 years of age and older Inclusion of screening for women with a history of hypertensive diseases of pregnancy

2012-2014 ONTARIO BORN DATA

- Better Outcomes Registry & Network
- 286,497 births
- 20.1% had pregnancy complications
- 18% obese, 24% OW, 53% normal weight

ONE OR MORE PREGNANCY RELATED CV RISK FACTORS



PREECLAMPSIA LITERATURE

Cardiovascular disease risk in women with pre-eclampsia: systematic review and meta-analysis

Morven Caroline Brown · Kate Elizabeth Best · Mark Stephen Pearce · Jason Waugh · Stephen Courtenay Robson · Ruth Bell

CHAMPS Ray et al Lancet 2005

Yinon et al Circulation 2010

+ many epidemiological studies from around the world

Review

Preeclampsia: No longer solely a pregnancy disease

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PREGNANCY LOSS AND CARDIOVASCULAR DISEASE

<u>Risk of Cardiovascular Disease Among</u> <u>Postmenopausal Women with Prior Pregnancy Loss:</u> <u>The Women's Health Initiative</u>

- Stillbirth/recurrent miscarriage
- Increased risk heart disease
- No increased risk stroke

WHI did not collect pregnancy history



HYPERTENSIVE DISORDERS OF PREGNANCY : RISKS

- 1. Coronary artery disease
- 2. Stroke
- 3. Peripheral vascular disease
- 4. Hypertension
- 5. Diabetes
- 6. Renal disease
- 7. Increased total mortality



PREECLAMPSIA AND FUTURE RISK OF DIABETES (FEIG 2013)



IMPACT ON REVASCULARIZATION

Original Research

ajog.org

OBSTETRICS

Prognosis after maternal placental events and revascularization: PAMPER study

Joel G. Ray, MD, MSc; Gillian L. Booth, MD, MSc; David A. Alter, MD, PhD; Marian J. Vermeulen, BScN, MHSc

Published January 2016

Retrospective cohort study using linked databases (ICES)



PHYSICIAN AWARENESS 2007

- Hypertensive Disorders of Pregnancy and Long-Term Risk of Hypertension:
- What Do Ontario Prenatal Care Providers Know and What Do They Communicate?
- 2/3 aware increased risk hypertension
- 83% discuss with patients
- 83% notify primary care provider
- 58% primary care providers report being notified birth
- 12% primary care notified of increased CV risk

MacDonald et al, J Obstet Gynaecol Can 2007; 29(9): 705-710



PHYSICIANS' KNOWLEDGE OF FUTURE VASCULAR DISEASE IN WOMEN WITH PREECLAMPSIA

YOUNG, HACKER, AND RANA (HYPERTENSION IN PREGNANCY, 31:50–58, 2012)





PHYSICIAN AWARENESS

Preeclampsia and long-term risk of cardiovascular disease: what do obstetrician-gynecologists know? <u>Heidrich et al. BMC Pregnancy and Childbirth 2013, 13:61</u>

- Most aware of risks
- Less than half are aware of guidelines for PP follow up
- Challenges in counseling and follow up women
- Need for knowledge translation
- (German study)



PHYSICIAN AWARENESS 2015

Obstet Gynecol. 2015 Jun;125(6):1287-92. doi: 10.1097/AOG.00000000000856.

Recognition by Women's Health Care Providers of Long-Term Cardiovascular Disease Risk After Preeclampsia.

Wilkins-Haug L¹, <u>Celi A</u>, <u>Thomas A</u>, <u>Frolkis J</u>, <u>Seely EW</u>.

Author information

CONCLUSION: When assessing cardiovascular risk, internists were less likely than gynecologists to include a pregnancy history. However, once identified as at risk for cardiovascular disease, gynecologists were less likely than internists to obtain appropriate testing. Education concerning the link between certain pregnancy complications and future cardiovascular disease is needed. Areas of opportunity for education in both medical specialties are identified.



PATIENT AND PHYSICIAN AWARENESS

Gestational hypertension: a neglected cardiovascular disease risk marker Am J Obstet Gynecol, Robbins CL, Dietz PM, Bombard J, et al. 2011; 204:336.e1-9.

Women with gestational-HTN were no more likely than non-HTN women to have had screening tests within the recommended interval or be aware signs MI

(Primary care study USA)



WOMEN'S PERCEPTION

Women's Perception of Future Risk Following Pregnancies Complicated by Preeclampsia Hypertension in Pregnancy, 2013; 32(1): 60–73

- Risk perception increased by + FH CVD
- Women appreciate information
- 6 months good time
- UK focus group-midwifery care



A MISSED PRIMARY CARE OPPORTUNITY TO IMPROVE WOMEN'S HEALTH? 2017

Patient-recall survey was administered to 2102 patients of the Sunnybrook Academic Family Health Team. With 204 responses, **25% of the women** experienced a pregnancy complication associated with increased CVD risk.

GDM	15	29
GDM and HDP	4	27
GDM and Preterm Birth	2	13
GDM, HDP and Preterm Birth	2	13
HDP	17	33
HDP and GDM	4	24
HDP and Preterm	6	35
IUGR	7	13
IUGR and Preterm	1	14
Idiopathic Preterm Birth	9	17
Stillbirth	1	2



Percentage of patients (n=52) who indicated obstetrical care provider and/or family doctor discussed future health concerns during post-delivery visit



FUTURE STEPS

- **25%** recalled no discussion of future health concerns by their obstetrical care provider and family doctor during post-delivery visit
- Data from patient electronic medical records will be extracted to determine whether pregnancy related CVD markers have been captured
- Develop a "prompt" function in patient EMRs at Sunnybrook to prompt the family doctor to enquire about their patient's pregnancy history
- A **postcard** with information identifying relevant pregnancy complications will be distributed to discharged patients with an electronic link to the CRIB website for further patient education material



NEXT GENERATION IMPACT....



So I blame you for everything - whose fault is that?



BARRIERS TO PREVENTION FOR WOMEN

- Lack of time
- Lack of support
- Fatigue
- Child care
- Return to work
- Low self efficacy
- Transition between care providers



MOTIVATING FACTORS

- 1. Complicated pregnancy frightening
- 2. Healthy lifestyle reduces likelihood CVD
- 3. <u>Benefits to next pregnancy</u>
- 4. <u>Benefits to next generation (kids)</u>
- 5. Pregnancy seen as time to make changes



INTERVENTION STUDIES NEEDED POST PARTUM WOMEN

ADAPT M

- women with previous GDM
- Home based diet and exercise program
- Ongoing (PI Lorraine Lipscombe)
- ACCELERATION (PI Paul Oh)



1ST IDEA: AT-RISK

Apply proven strategies used in tertiary prevention to change behaviour ...to primary and secondary





<u>AC</u>tivity, smoking <u>C</u>essation, healthy <u>E</u>ating and aLcohol int<u>ER</u>vention & motiv<u>ATION</u> Program

i.e. apply proven strategies in cardiac rehabilitation to



Program activities will impact multiple points on the prevention continuum

Primary prevention

Secondary prevention

Tertiary prevention

CARDIOVASCULAR RISK MANAGEMENT MODEL

- 1. 6 week <u>OB</u> visit : education/ invitation
- 2. 3-6 months : <u>Multidisciplinary team</u>
 - Identify/treat comorbidities
 - Healthy lifestyle planning
 - Pre-pregnancy planning
- 3. Yearly weight, BP, bloodwork at <u>GP</u>

Cardiovascular Risk Management After a Hypertensive Disorder of Pregnancy

2012;60:1368-1373; Hypertension.



MATERNAL HEALTH CLINIC NETWORK

	Maternal Health Clinic (MHC)	Maternal Cardiovascular Health Clinic (MatCH)	Northside, Maternal Heart Health Center	Brigham and Women's Hospital Maternal Cardiometabolic Clinic	4P Maternal Health Clinic	Postpartum Preeclampsia Clinic	
Clinic Details							
Location	Kingston, ON, Canada	Montreal, QC, Canada	Atlanta, GA, USA	Boston, MA, USA	Toronto, ON, Canada	Edmonton, AB, Canada	
Primary Physician(s)	Graeme Smith	Natalie Dayan & Leora Birnbaum	Lee Padove	Louise Wilkins- Haug, Ann Celi & Ellen W. Seely	Karen Fleming	Winnie Sia	
Research Coordinator	Graeme Smith			Ellen W. Seelx			
Start Date	November 2011	October 2013	November 2014	November 2011	February 2014	September 2010	
Clinic Frequency	2 half day per month	2 half day per month	4 half day per month	4 half day per month	1 half day per month	2 half day per month	
Patients per Clinic	8	3	4	6	4	6	
Timing of 1st Appointment	6 months postpartum	3 months postpartum	3 months postpartum	From delivery to 3 months postpartum	3-6 months postpartum	3 months postpartum	
Timing of Follow-Up	Not Applicable	As needed, case- by-case	Not Applicable	As needed, case- by-case	Not Applicable	Every 3-6 months for 1	



FUTURE OPPORTUNITIES

- 1. Knowledge translation: physician;woman
- Advocate for data linkages between primary care, specialty care and pregnancy care (BORN) (ICES)
- 3. Evaluate lifestyle interventions for at risk women to better inform future guidelines





QUESTIONS?

The doctor of the future will give no medicine but will interest his patients in the care of the human frame, in diet, and in the cause and prevention of disease"

- Thomas Edison

