

Office of the Chief Coroner  
Province of Ontario

October 2018



# Maternal and Perinatal Death Review Committee

## 2017 Annual Report

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This report was prepared by Dr. Rick Mann,  
Chairperson of the Maternal and Perinatal Death Review Committee,  
and Ms. Kathy Kerr – Executive Lead – Committee Management.

## Message from the Chair



The Maternal and Perinatal Death Review Committee (MPDRC), together with its predecessor, the Obstetrical Care Review Committee, has been providing expert advice to coroner's investigations in Ontario since 1994.

The MPDRC reviews all maternal deaths in Ontario that are reported to the coroner system that occur during pregnancy, during delivery or immediately following delivery up to 42 days post-partum. Deaths after 42 days post-delivery are reviewed if there are concerns that the cause of death is directly related to the pregnancy or a complication of the pregnancy.

The committee also reviews stillbirths and perinatal deaths investigated by the Chief Coroner's Office where issues have been identified by the family, the investigating coroner or the Regional Supervising Coroner.

The MPDRC is comprised of well-respected and experienced experts representing the fields of obstetrics, maternal-fetal medicine, midwifery, perinatal nursing, obstetrical anaesthesiology, pathology, neonatology and family medicine.

Since its inception, the committee has reviewed a total of 403 cases and generated 713 recommendations towards the prevention of stillbirths and deaths involving mothers and neonates. In 2017, 19 cases were reviewed and 22 recommendations were made. The top areas of concern identified in recommendations made in 2017 related to medical management and diagnosis/testing.

As we strive towards reducing similar deaths and improving the quality of care provided to mothers and infants, the identification of these trends will help guide the direction of future recommendations and prompt action by stakeholders within the obstetrical care community.

It is an honour to participate in the work of the MPDRC and I am grateful for the commitment of its members to the people of Ontario. I would like to acknowledge the assistance of Ms. Kathy Kerr, Executive Lead of the MPDRC.

It is my privilege to present to you the 2017 Annual report of the MPDRC.

A handwritten signature in black ink, appearing to read 'Rick Mann', with a stylized flourish at the end.

Rick Mann, MD, CCFP, FCFP  
Chair, Maternal and Perinatal Death Review Committee

## Committee Membership (2017)

**Dr. Sharon Dore**

Society of Obstetricians and Gynaecologists of  
Canada Representative

**Dr. Michael Dunn**

Neonatologist (Level 3)

**Dr. Karen Fleming**

Family Physician (Level 3)

**Dr. Robert Gratton**

Maternal Fetal Medicine

**Dr. Steven Halmo**

Obstetrician (Level 2)

**Ms. Susan Heideman**

Perinatal Nurse

**Dr. Robert Hutchison**

Obstetrician (Level 3)

**Dr. Sandra Katsiris**

Anesthesiologist

**Ms. Kathy Kerr**

Executive Lead

**Ms. Michelle Kryzanauskas**

Midwife (Rural)

**Dr. Dilipkumar Mehta**

Neonatologist (Level 2)

**Ms. Linda Moscovitch**

Midwife (Urban)

**Dr. Toby Rose**

Forensic Pathologist

**Dr. Gillian Yeates**

Obstetrician (Level 1)

**Dr. Rick Mann**

Chairperson

Regional Supervising Coroner

## Executive Summary

- In 1994, the Office of the Chief Coroner established the Obstetrical Care Review Committee. In 2004, the name of the committee was changed to the Maternal and Perinatal Death Review Committee.
- The purpose of the MPDRC is to assist the Office of the Chief Coroner in the investigation, review and development of recommendations directed towards the prevention of future similar deaths relating to all maternal deaths (irrespective of cause) and stillbirths and neonatal deaths where the family, coroner or Regional Supervising Coroner have concerns about the care that the mother or child received.
- Since 2004, the MPDRC has reviewed 403 cases and generated 713 recommendations aimed towards the prevention of future similar deaths.
- On average, 29 cases are reviewed and 51 recommendations are made each year by the MPDRC.
- The top areas of concern identified in recommendations made from 2004-2017 relate to: medical and nursing issues; policy and procedures; communications/documentation; and diagnosis and testing (including electronic fetal monitoring).
- In 2017, 19 cases were reviewed and 22 recommendations were made.
- Of the 19 cases reviewed in 2017, 10 were maternal (seven executive reviews and three full reviews), eight were neonatal and one was stillborn.
- Deaths involving women who are pregnant, but where the pregnancy did not cause or contribute to the death, are noted and undergo an “executive” review. The executive review is conducted by a core team of representatives of the MPDRC and includes an analysis of the circumstances surrounding the maternal death. The results of the review are discussed with the full committee for any additional investigation or comment.<sup>1</sup>

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<sup>1</sup> Commencing in the 2017 Annual Report, executive reviews are included in the statistics for total number of reviews conducted.

# Introduction

## Purpose

In 1994, the Office of the Chief Coroner established the Obstetrical Care Review Committee. In 2004, the name of the committee was changed to the Maternal and Perinatal Death Review Committee.

The purpose of the MPDRC is to assist the Office of the Chief Coroner in the investigation, review and development of recommendations directed towards the prevention of future similar deaths relating to all maternal deaths regardless of cause. This includes all deaths during pregnancy and the post-natal period (which is considered to be up to 42 days after delivery). Any deaths after 42 days and up to 365 days post-delivery are reviewed if the cause of death is directly related to the pregnancy or a complication of the pregnancy.

The committee reviews stillbirths and neonatal deaths where the family, coroner or Regional Supervising Coroner have concerns about the care that the mother or child received.

Findings of legal responsibility or conclusions of law are not permitted under the Coroners Act.

## Definition of Maternal Deaths, Stillbirths, Perinatal and Neonatal Deaths

The MPDRC reviews the deaths of all women who died “during pregnancy and following pregnancy in circumstances that could reasonably be attributed to pregnancy.” Deaths involving women who are pregnant, but where the death was not attributed to pregnancy are noted for statistical purposes and a condensed, executive review is conducted.

**Maternal deaths** are classified by the following criteria:

- Antepartum – during pregnancy
- Intrapartum - during delivery or immediately following delivery
- Postpartum - < 42 days after delivery

This committee does *not* review late maternal deaths occurring >42 days unless the cause of death is directly related to the pregnancy or a complication of the pregnancy.

**Stillbirth** is defined as the complete expulsion or extraction from the mother of a product of conception either after the 20<sup>th</sup> week of pregnancy or after the product of conception has attained the weight of 500 grams or more, and where after such expulsion or extraction there is no breathing, beating of the heart, pulsation of the umbilical cord or movement of voluntary muscle. (source: *Vital Statistics Act of Ontario*)

**Perinatal** deaths are defined as deaths during, at the time of, or shortly after birth, including home births.

**Neonatal** deaths are defined as deaths within the first seven days after birth.

## Aims and Objectives

1. To assist coroners in the Province of Ontario to investigate maternal and perinatal deaths and to make recommendations that may prevent similar deaths.
2. To provide expert review of the care provided to women during pregnancy, labour and delivery, and the care provided to women and newborns in the immediate postpartum period.
3. To provide expert review of the circumstances surrounding all maternal deaths in Ontario, in compliance with the recommendations of the Special Report on Maternal Mortality and Severe Morbidity in Canada.<sup>2</sup>
4. To inform doctors, midwives, nurses, institutions providing care to pregnant and postpartum women and newborns, and relevant agencies and ministries of government about hazardous practices and products identified during case reviews.
5. To produce an annual report that can be made available to doctors, nurses and midwives providing care to mothers and infants, and hospital departments of obstetrics, midwifery, radiology/ultrasound, anaesthesia and emergency for the purpose of preventing future deaths.
6. To help identify the presence or absence of systemic issues, problems, gaps, or shortcomings of each case to facilitate appropriate recommendations for prevention.
7. To help identify trends, risk factors, and patterns from the cases reviewed to make recommendations for effective intervention and prevention strategies.
8. To conduct and promote research where appropriate.
9. To stimulate educational activities through the recognition of systemic issues or problems and/or referral to appropriate agencies for action.
10. Where appropriate, to assist in the development of protocols with a view to prevention.
11. Where appropriate, to disseminate educational information.

Note: All of the above described objectives and attendant committee activities are subject to the limitations imposed by the Coroners Act of Ontario and the Freedom of Information and Protection of Privacy Act.

## Structure and Size

The committee membership consists of respected practitioners in the fields of specialty including: obstetrics, family practice, specialty neonatology, community pediatrics, pediatric and maternal pathology, anesthesiology, midwifery and obstetrical nursing. The membership is balanced to reflect wide and practicable geographical representation as well as representation from all levels of institutions providing obstetrical care including teaching centers to the extent possible. The chairperson will be a Deputy Chief Coroner or Regional Supervising Coroner or other person designated by the Chief Coroner.

Other individuals are invited to the committee meetings as necessary on a case by case basis (e.g. investigating coroner, Regional Supervising Coroner, other specialty practitioner relevant to the facts of the case, etc.).

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<sup>2</sup> Special Report on Maternal Mortality and Severe Morbidity in Canada, Health Canada, 2004.

## Methodology

Investigating coroners and Regional Supervising Coroners refer cases to the committee for review. At least one member of the committee reviews the information submitted by the coroner and then presents the case to the other members. After discussion by the committee, a final case report is written consisting of a summary of events, discussion and recommendations (if any), intended to prevent deaths in similar circumstances. The report is then sent to the referring Regional Supervising Coroner who may conduct further investigation (if necessary). Recommendations are distributed to agencies and organizations which may be in a position to effect the implementation of such recommendations. Organizations are asked to respond back within six months with the status of implementation of recommendations.

Where a case presents a potential or real conflict of interest for a committee member, the committee reviews the case in the absence of the member with the conflict.

When a case requires expertise from another discipline, an external expert reviews the case, attends the meeting and participates in the discussion and drafting of recommendations, if necessary.

## Limitations

This committee is advisory to the coroner system and will make recommendations to the Chief Coroner through the chairperson.

The consensus report of the committee is limited by the data provided. Efforts are made to obtain all relevant data.

The MPDRC case reports are prepared for the Office of the Chief Coroner and are therefore governed by the provisions of the Coroners Act, the Vital Statistics Act, the Freedom of Information and Protection of Privacy Act and the Personal Health Information and Protection of Privacy Act. Cases referenced in the annual report do not include identifying details.

It is important to acknowledge that these reports rely upon a review of the written records. The Coroner/Regional Supervising Coroner conducting the investigation may have received additional information that rendered one or more of the committee's conclusions invalid. Where a fact was made known to the chair of the committee prior to the production of the annual report, the case review was revised to reflect these findings.

Recommendations are made following a careful review of the circumstances of each death; they are not intended to be policy directives and should not be interpreted as such.

This report of the activities and recommendations of the MPDRC is intended to provoke thought and stimulate discussion about obstetrical care and maternal and perinatal deaths in general in the province of Ontario.

## Statistical Overview (2004-2017)

The MPDRC (and previously the Obstetrical Care Review Committee) has generated recommendations since being established in 1994. Over time, not only has the committee evolved, but so too have medical technologies, policies, procedures and public and professional attitudes towards maternal and perinatal care in the province. In order to provide an analysis that is reflective of more current values and attitudes, the statistical analysis contained within this annual report will focus on cases reviewed and recommendations made since 2004.

From 2004-2017, the MPDRC has reviewed a total of 403 cases. Of these cases, 136 (34%) were maternal, 177 (44%) were neonatal and 90 (22%) were stillbirths. These numbers reflect the policy of the Office of the Chief Coroner to review all maternal deaths. Commencing in 2015, deaths involving women who are pregnant, but where the pregnancy did not cause or contribute to the death, are noted and undergo an “executive” review. The executive review is conducted by a core team of representatives of the MPDRC and includes an analysis of the circumstances surrounding the maternal death. The results of the review are discussed with the full committee for any additional investigation or comment. If necessary and suggested by the broader committee, an executive review may result in a full review. The statistics below reflect the total number of reviews (i.e. executive and full), conducted by the MPDRC.

Neonatal and stillbirth reviews are conducted only when the family, investigating coroner or Regional Supervising Coroner have concerns about the care that the mother or child received.

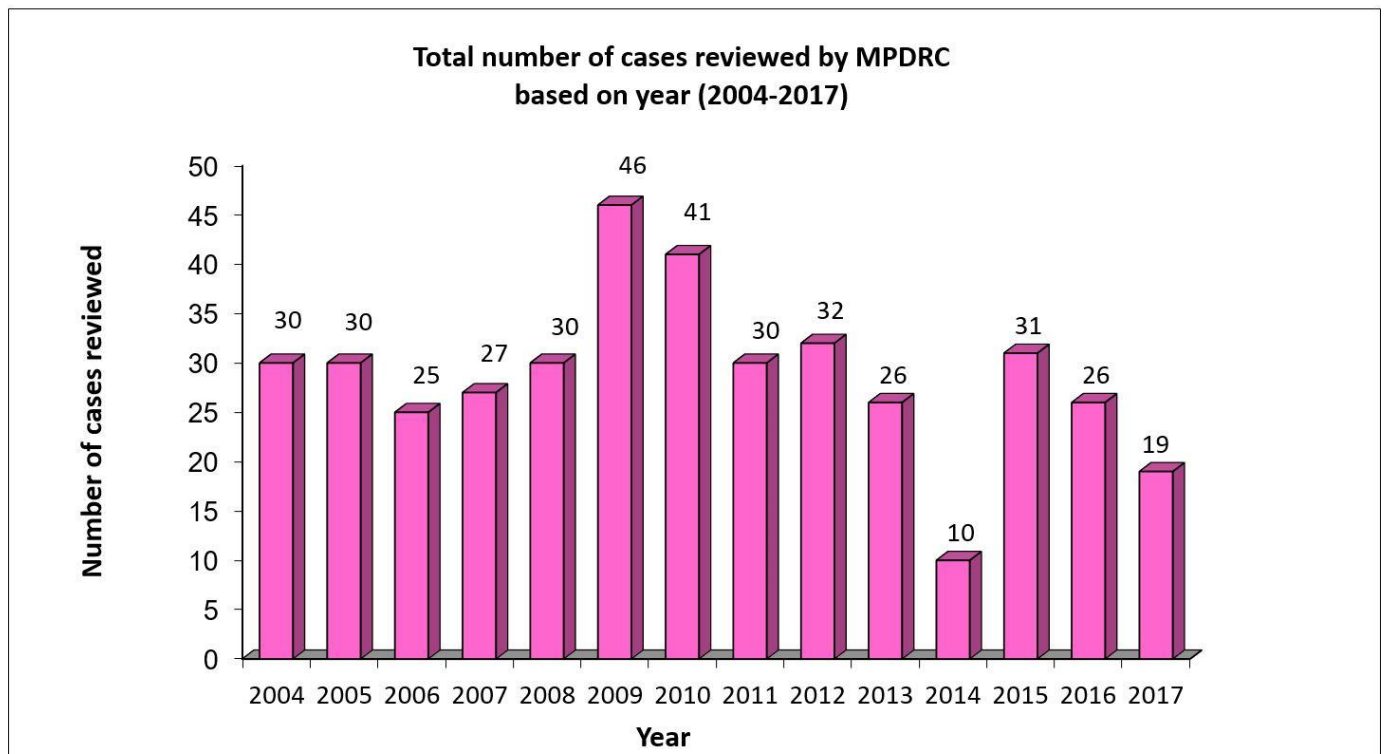
The number of cases noted in **Chart One** is based on the year the case was reviewed, which, in many cases, is not the same year in which the death actually occurred.

**Chart One: MPDRC - # of Cases Reviewed (2004-2017)**

|                                    | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | Total | %   | avg/yr |
|------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-----|--------|
| <b>Total # of cases reviewed</b>   | 30   | 30   | 25   | 27   | 30   | 46   | 41   | 30   | 32   | 26   | 10   | 31   | 26   | 19   | 403   |     | 29     |
| <b>Maternal - executive review</b> |      |      |      |      |      |      |      |      |      |      |      | 7    | 9    | 7    | 23    |     | 8      |
| <b>Maternal - full review</b>      | 10   | 12   | 4    | 15   | 8    | 21   | 11   | 3    | 3    | 11   | 3    | 5    | 4    | 3    | 113   | 28% | 8      |
| <b>Maternal - total</b>            | 10   | 12   | 4    | 15   | 8    | 21   | 11   | 3    | 3    | 11   | 3    | 12   | 13   | 10   | 136   | 34% |        |
| <b>Neonatal</b>                    | 12   | 11   | 13   | 12   | 12   | 16   | 19   | 14   | 20   | 10   | 5    | 15   | 10   | 8    | 177   | 44% | 13     |
| <b>Stillbirth</b>                  | 8    | 7    | 8    | 0    | 10   | 9    | 11   | 13   | 9    | 5    | 2    | 4    | 3    | 1    | 90    | 22% | 6      |

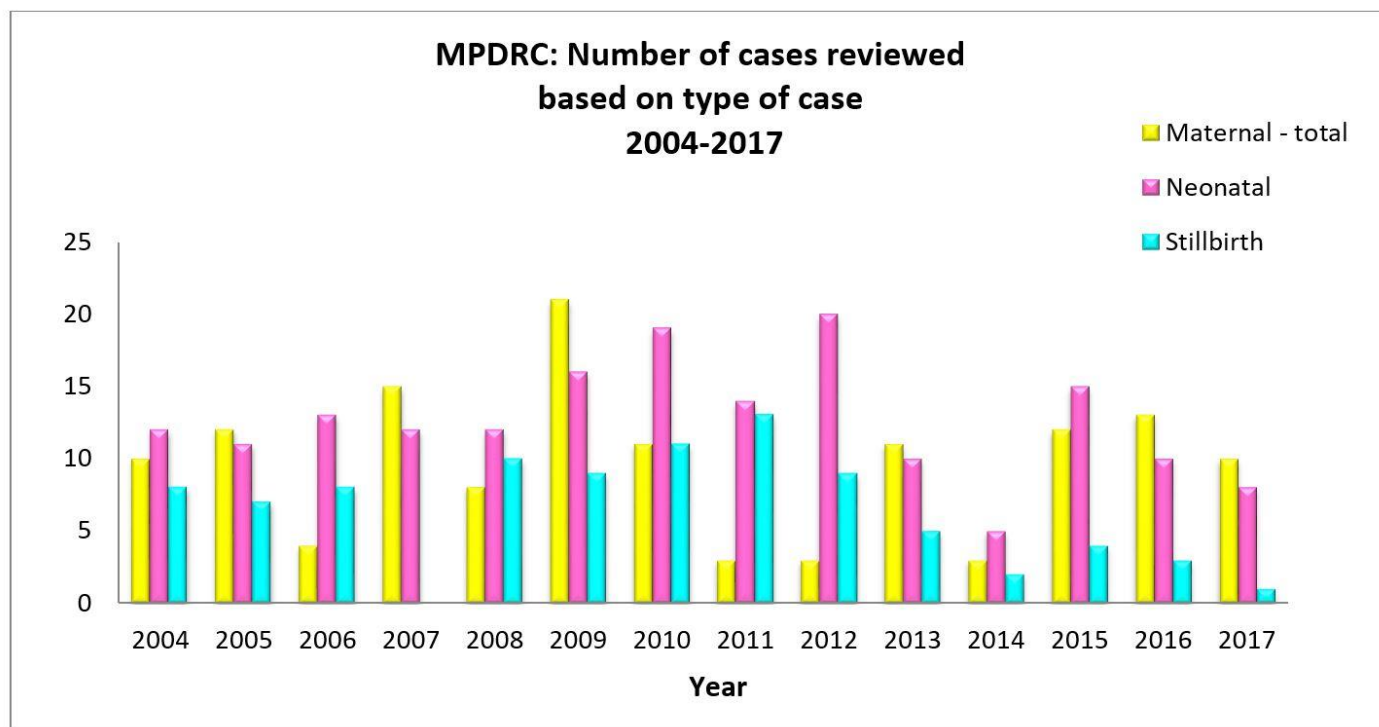
**Chart One** indicates that the total number of cases reviewed from 2004-2017 has varied from a low of 10 cases in 2014, to a high of 46 cases in 2009. This variance is likely reflective of committee administrative practices (e.g. time required for processing of review materials and compilation of final reports).

**Graph One: Total number of cases reviewed by the MPDRC based on year (2004-2017)**



**Graph One** demonstrates how the number of cases reviewed from 2004-2017 from a low of 10 in 2014, to a high of 46 in 2009. This variance is due to the subjective nature of referrals to the committee (i.e. only maternal deaths result in mandatory referrals and all others are at the discretion of the regional supervising coroner) and administrative issues. On average, the MPDRC reviews 29 cases per year.

**Graph Two: Number of cases reviewed based on type of case (2004-2017)**



**Graph Two** demonstrates that, overall, from 2004-2017, the majority of cases reviewed each year are neonatal deaths, followed by maternal deaths.

**Chart Two: MPDRC - # of Recommendations (2004-2017)**

|                                 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | Total | %   | avg/<br>yr |
|---------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-----|------------|
| Total # of Recommendations made | 56   | 71   | 58   | 36   | 46   | 69   | 83   | 47   | 76   | 31   | 28   | 52   | 38   | 22   | 713   |     | 51         |
| Maternal                        | 11   | 19   | 5    | 16   | 3    | 12   | 15   | 2    | 0    | 10   | 10   | 14   | 1    | 11   | 129   | 18% | 9          |
| Neonatal                        | 30   | 31   | 31   | 20   | 24   | 41   | 48   | 26   | 58   | 9    | 14   | 29   | 32   | 6    | 399   | 56% | 29         |
| Stillbirth                      | 15   | 21   | 22   | 0    | 19   | 16   | 20   | 19   | 18   | 12   | 4    | 9    | 5    | 5    | 185   | 26% | 13         |

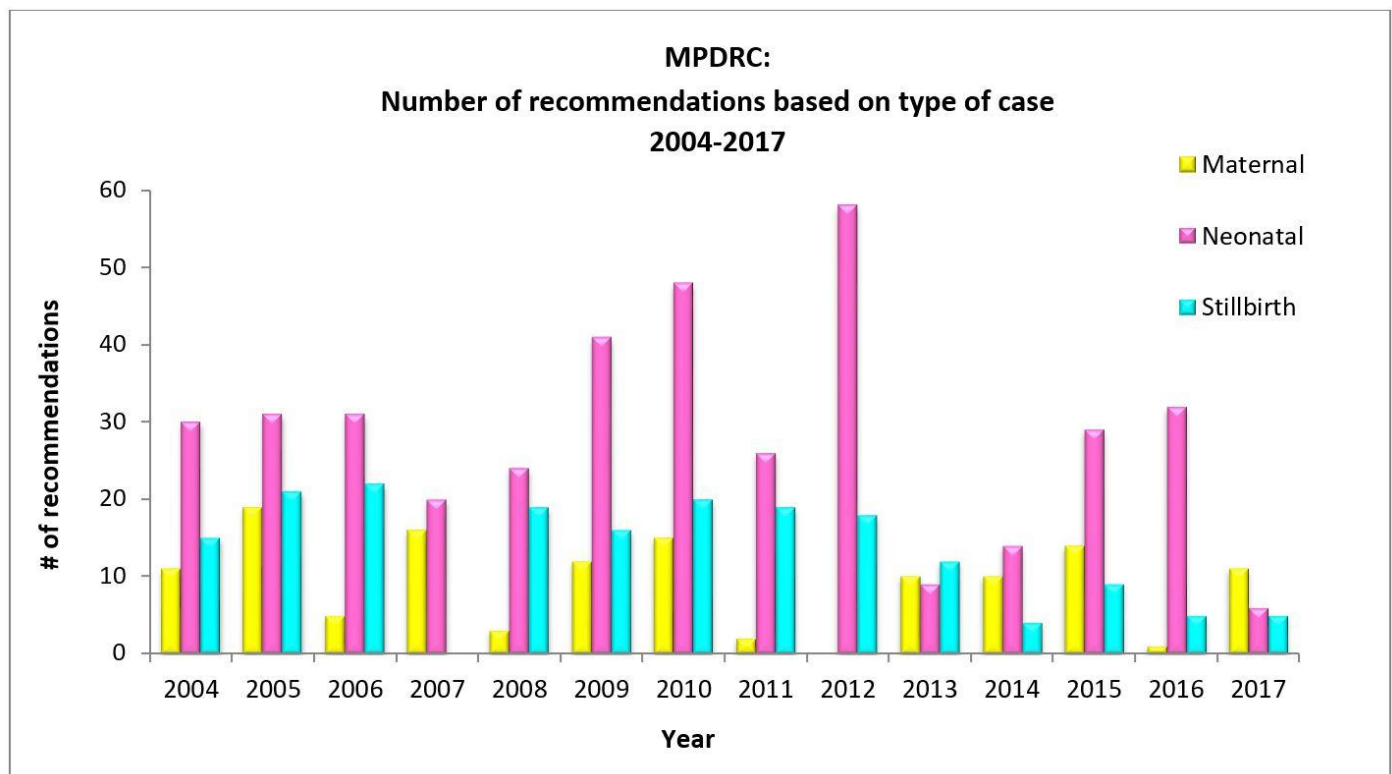
**Chart Two** indicates that the MPDRC has generated a total of 713 recommendations from 2004-2017. From this total, 129 (18%) were related to maternal cases, 399 (56%) from neonatal cases and 185 (26%) from stillbirth cases. Consistently over the years, the majority of cases and recommendations relate to reviews of neonatal deaths. On average, 51 recommendations are made per year.

Upon reviewing the recommendations that have been made, certain areas of concern have consistently emerged over time. The following general areas of concern have been identified:

- medical (e.g. obstetrical care provider decisions)
- policy and procedure (e.g. adherence or development of policy and procedures)

- communication/documentation (e.g. sharing and documenting information)
- quality (e.g. quality of care reviews)
- diagnosis and testing (e.g. interpretation of laboratory results)
- diagnosis and testing – specifically electronic fetal monitoring (EFM) (e.g. interpretation of results)
- education/training (e.g. continuing education)
- resources (e.g. access and allocation of resources)
- transfer (e.g. movement of patients)
- other (e.g. referral to another committee for review)

**Graph Three: Number of recommendations based on type of case 2004-2017**



**Graph Three** demonstrates that from 2004-2017, most recommendations pertained to neonatal cases.

**Chart Three: MPDRC – Number and percentage of recommendations based on area of concern/theme and type of case (2004-2017)**

|                                     | Maternal  | Neonatal  | Stillborn | Total | % of Total |
|-------------------------------------|-----------|-----------|-----------|-------|------------|
| <b>Obstetrical care provider</b>    | 52<br>40% | 70<br>17% | 40<br>21% | 162   | 22%        |
| <b>Policy and procedure</b>         | 28<br>21% | 82<br>20% | 35<br>19% | 145   | 20%        |
| <b>Communications/documentation</b> | 14<br>11% | 67<br>16% | 34<br>18% | 115   | 16%        |
| <b>Quality</b>                      | 16<br>12% | 35<br>9%  | 12<br>6%  | 63    | 9%         |
| <b>Diagnosis and testing</b>        | 7<br>5%   | 56<br>14% | 21<br>11% | 84    | 12%        |
| <b>Diagnosis and testing - EFM</b>  | 1<br>1%   | 50<br>12% | 27<br>14% | 78    | 11%        |
| <b>Education/Training</b>           | 3<br>2%   | 23<br>6%  | 9<br>5%   | 35    | 5%         |
| <b>Resources</b>                    | 3<br>2%   | 14<br>3%  | 3<br>2%   | 20    | 3%         |
| <b>Transfer</b>                     | 5<br>4%   | 10<br>2%  | 5<br>3%   | 20    | 3%         |
| <b>Other</b>                        | 2<br>2%   | 2<br>0.5% | 1<br>1%   | 5     | 1%         |

\*Some recommendations touch on more than one theme.

**Chart Three** demonstrates that 22% of all recommendations made by the MPDRC from 2004-2017 relate to improving or addressing obstetrical care provider issues. An additional 20% of the recommendations pertain to the development of, or adherence to, policies and procedures and 16% to communication and/or documentation and in particular, the timely and accurate sharing of information between healthcare providers and with the patient.

Chart three also demonstrates the following key areas (based on type of case and theme):

- 17% of all recommendations from neonatal cases had an obstetrical care provider theme
- 20% of all recommendations from neonatal cases had a policy and procedure theme
- 16% of all recommendations from neonatal cases had a communication/documentation theme

One area of specific concern that has been identified over the past few years relates to the use of electronic fetal monitoring (EFM) technology, how EFM results are interpreted by obstetrical care providers and what follow-up actions are taken in response to the findings. From 2004-2017, there have been 78 (11% of the total) recommendations made specifically pertaining to EFM.

## Executive Summary of Cases Reviewed in 2017

Cases reviewed by the MPDRC in 2017 may involve deaths that occurred in previous years.

**Total number of cases reviewed (executive and full reviews): 19**

**Total number of recommendations: 22**

**Number of maternal full case reviews: 3**

**Number of maternal executive reviews\*: 7**

Number of recommendations from the maternal deaths reviewed: 11

**Number of neonatal cases reviewed: 8**

Number of recommendations from the neonatal deaths: 6

**Number of stillborn cases reviewed: 1**

Number of recommendations from the stillborn cases: 5

\* Deaths involving women who are pregnant, but where the pregnancy did not cause or contribute to the death, are noted and undergo an “executive” review. The executive review is conducted by a core team of representatives of the MPDRC and includes an analysis of the circumstances surrounding the maternal death. The results of the review are discussed with the full committee for any additional investigation or comment.

A summary of all cases reviewed and subsequent recommendations made in 2017, is included as Appendix A.

## Lessons Learned from MPDRC Reviews

Over the years, the MPDRC has identified trends in issues identified through the review process. Consistently, the key areas where concerns continue to be identified relate to obstetrical care provider issues, policies and procedures and communication/documentation. Responding to atypical or abnormal fetal heart rate tracings, differentiating between fetal and maternal heart rates, communication between obstetrical care providers and transportation, are specific areas where concerns continue to be identified.

The MPDRC continues to strive to help identify the presence or absence of systemic issues, problems, gaps, or shortcomings in order to facilitate appropriate recommendations for prevention. Through the identification of trends, risk factors and patterns that emerge through the review process, the MPDRC will generate recommendations for effective intervention and prevention strategies. This includes the promotion of research and the development of educational and policy initiatives focusing on the care provided to pregnant and post-partum women and their newborns.

## Appendix A

### Summary of 2017 Case Reviews

| Case number | Type               | Summary                                                                                                                                                                                                                                                                                                                                                        | Themes | Recommendations |
|-------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------|
| EX-01       | Maternal Executive | This case involved the death of a 33-year-old woman who had been 10 weeks pregnant just prior to her death. The cause of death was ischemic bowel due to portal vein and superior mesenteric vein thrombosis. The manner of death was natural. It was felt that this death may have been at least partially related to the hypercoagulable state of pregnancy. | N/A    | None            |
| EX-02       | Maternal Executive | The decedent was a 31-year-old woman who was the victim of a homicide. At the time of her death, she was 6-7 months pregnant. The homicide was not considered to be domestic in nature.                                                                                                                                                                        | N/A    | None            |
| EX-03       | Maternal Executive | The decedent was a 33-year-old pregnant woman who sustained a gunshot wound and was the victim of a homicide.                                                                                                                                                                                                                                                  | N/A    | None            |
| EX-04       | Maternal Executive | The decedent was a 28-year-old woman who was four months pregnant at the time of her death. Cause of death was mass effect with brain herniations and hypoxic ischemic encephalopathy due to left intracerebral hemorrhage due to ruptured left front lobe arteriovenous malformation. Recent cocaine use was noted as a contributing factor.                  | N/A    | None            |
| EX-05       | Maternal Executive | The decedent was a 42-year-old woman who had recently given birth to her third child. The decedent collapsed six days after delivery and was diagnosed with an extensive subarachnoid hemorrhage                                                                                                                                                               | N/A    | None            |

| Case number  | Type               | Summary                                                                                                                                                                                                       | Themes                                                                                      | Recommendations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |                    | (SAH). The source of the SAH was a ruptured berry aneurysm.                                                                                                                                                   |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>EX-06</b> | Maternal Executive | The decedent was a 21-year-old Indigenous woman who had recently found out that she had conceived a pregnancy. She was found lying in the snow. Cause of death was hypothermia. Manner of death was accident. | N/A                                                                                         | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>EX-07</b> | Maternal Executive | The decedent was a 22-year-old pregnant Indigenous woman who lived in a remote community. Manner of death was suicide.                                                                                        | N/A                                                                                         | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>M-01</b>  | Maternal           | The deceased was a 32-year-old G2P1. Cause of death was brain-acute intracerebral hemorrhage in left frontal lobe extending to subarachnoid space.                                                            | <p>Diagnosis and testing</p> <p>Communications/ documentation</p> <p>Education/Training</p> | <p>1. Obstetrical care providers are reminded that abruptio placenta causing a stillbirth is likely of significant size and warrants urgent assessment for coagulopathy. Abruptio is a significant cause of maternal and neonatal morbidity and mortality.</p> <p>2. Obstetrical care providers are reminded of the significance of abnormal uterine artery dopplers and the need for maternal fetal medicine (MFM) referral and close monitoring. (SOGC Guidelines, Sept. 2007, Antenatal fetal surveillance).</p> <p>3. Obstetrical care providers are reminded of the management of preeclampsia and the need for close collaboration and communication with all teams involved in the maternal care.</p> <p>4. Obstetrical care providers are reminded that women should be screened for clinical risk factors for intrauterine growth restriction by documenting a complete and thorough history. Low-dose aspirin (initiated between 12 and 16 weeks gestational age and continued until 36 weeks) should be recommended to women with a previous history of placental insufficiency syndromes, including intrauterine growth</p> |

| Case number | Type     | Summary                                                                                                                                                                                                                                                                                                                                                                      | Themes                                                                     | Recommendations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |          |                                                                                                                                                                                                                                                                                                                                                                              |                                                                            | <p>restriction and preeclampsia. (SOGC CPG #295 intra Uterine Growth Restriction: Screening, Diagnosis and Management August 2013.)</p> <p>5. The obstetrical care providers involved in this case should conduct a lessons learned case review of the circumstances surrounding this death. The review should include, but not be limited to:</p> <ul style="list-style-type: none"> <li>• prenatal care</li> <li>• referral process</li> <li>• communication and documentation of decisions/actions</li> <li>• policies for Most Responsible Physician (MRP)</li> <li>• transfer of accountability</li> <li>• documentation of patient awareness</li> <li>• follow-up with patient</li> <li>• delay in initiating delivery and administering blood products</li> <li>• management of hypertension</li> <li>• training supervision</li> </ul> |
| <b>M-02</b> | Maternal | The decedent was a 36-year-old G <sub>2</sub> P <sub>1</sub> who had a laparoscopic Roux-en-Y procedure two years prior. The decedent died due to small bowel obstruction causing ischemic necrosis of a segment of small bowel and aspiration pneumonitis at the time of surgery performed to relieve the obstruction. She was approximately 25 weeks pregnant at the time. | <p>Medical</p> <p>Quality of Care</p> <p>Communications/ documentation</p> | <ol style="list-style-type: none"> <li>1. Obstetrical care providers are reminded of the risk of bowel obstruction during pregnancy in patients who have previously undergone gastrointestinal surgery.</li> <li>2. Obstetrical care provides should consider consultation with a tertiary care center for an acutely ill patient and premature fetus.</li> <li>3. A Quality of Care Review of this case should be undertaken by both hospitals involved in this patient's care.</li> <li>4. Anesthesia care providers are reminded to document thoroughly all aspects of intraoperative care of the patient.</li> <li>5. Anesthesia care providers are reminded to employ strategies for optimizing critically ill patients</li> </ol>                                                                                                        |

| Case number | Type     | Summary                                                                                                                                                                                                                                                                                                            | Themes                                                                | Recommendations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |          |                                                                                                                                                                                                                                                                                                                    |                                                                       | <p>prior to, and throughout the intraoperative course.</p> <p>6. Anesthesia care providers are reminded to consider risk reduction strategies for patients at risk of pulmonary aspiration and management strategies for intraoperative aspiration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>M-03</b> | Maternal | The decedent was a 42-year-old G <sub>3</sub> P <sub>0</sub> . The cause of death was determined to be massive cerebral edema leading to cerebral herniation and cerebral death secondary to a left temporal meningioma invaginating into the left temporal lobe and almost completely surrounded by brain tissue. | N/A                                                                   | No recommendations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>N-01</b> | Neonatal | The deceased infant was a one-month-old male who died of Hypoplastic Left Heart Syndrome. The mother was a 29-year-old primiparous woman with a history of increased BMI, a fatty liver and type 2 diabetes.                                                                                                       | <p>Communications/<br/>documentation</p> <p>Diagnosis and testing</p> | <p>1. Primary and obstetrical care providers are reminded of the importance of pre-conception counseling for women with diabetes, specifically related to glucose control and folic acid supplementation.</p> <p>2. Obstetrical care providers are reminded of the importance of a routine anatomic assessment and fetal echocardiogram due to the increased risk of congenital anomalies in the offspring of women with diabetes.</p> <p>3. Obstetrical care providers and radiologists are reminded that current guidelines for routine anatomic cardiac assessment include a four chamber view and outflow tracks as the minimal fetal cardiac assessment. (ISUOG Practice Guidelines (updated): sonographic screening examination of the fetal heart, Ultrasound Obstet Gynecol 2013; 41: 348 – 359)</p> |

| Case number | Type     | Summary                                                                                                                        | Themes               | Recommendations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| <b>N-02</b> | Neonatal | The decedent was a two-day-old female. Cause of death was unascertained and manner of death was undetermined.                  | N/A                  | No recommendations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>N-03</b> | Neonatal | The decedent was a six-day-old female who died of Hypoxic Ischemic Encapopathy.                                                | Quality of Care      | <p>1. The Regional Supervising Coroner, together with the obstetrical care providers (i.e. nurses, physicians and residents) at the hospital involved, should conduct a review of the obstetrical care provided to the mother of the deceased infant. Areas to be addressed include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Policies and protocols relating to the supervision of residents;</li> <li>• Medical management and assessment of adequate progress in labour;</li> <li>• Identification and management of atypical fetal heart tracings.</li> </ul> |
| <b>N-04</b> | Neonatal | The decedent was a 13-day-old female who died of Hypoxic-Ischemic Brain Injury .                                               | N/A                  | No recommendations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>N-05</b> | Neonatal | The decedent was a 23-day-old male infant who died of Citrobacter Koseri Infection of the central nervous system.              | Medical              | 1. Neonatal care providers are reminded of aggressive fluid replacement, broad spectrum antibiotic coverage from gram negative septicemia and early transfer to a level III unit when dealing with very ill infants.                                                                                                                                                                                                                                                                                                                                                                          |
| <b>N-06</b> | Neonatal | The decedent was a two-day-old female infant who died from complications of Medium Chain Acetyl-CoA Dehydrogenase Deficiency.  | N/A                  | No recommendations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>N-07</b> | Neonatal | The decedent was a one-hour-old female infant who died of Complex Congenital Cardiopulmonary abnormalities with Gastroschisis. | N/A                  | No recommendations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>N-08</b> | Neonatal | The decedent was a 24-hour-old male infant who died from intrapartum head injury. .                                            | Policy and procedure | 1. Recognizing the challenges inherent in the management of the second stage of labour, the SOGC should consider reviewing the evidence to guide practice.                                                                                                                                                                                                                                                                                                                                                                                                                                    |

| Case number | Type       | Summary                                                                                                 | Themes                                                                | Recommendations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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| S-01        | Stillbirth | The cause of death for the stillborn was severe fetal Macrosomia with Presumed Placental Insufficiency. | <p>Medical</p> <p>Diagnosis and testing</p> <p>Education/Training</p> | <p>1. Obstetrical care providers are reminded to counsel women about nutrition, weight gain and exercise in pregnancy, particularly when risk factors are present. BMI should be determined from height and confirmed pre-pregnancy weight or the first weight of the pregnancy. Obesity class and risk should be determined as outlined in the 2010 SOGC Clinical Practice Guideline, "Obesity in Pregnancy." Women should also be counselled about the health risks of pregnancy and increased risks of obstetrical anesthesia, Caesarean section delivery and obstetrical complications, particularly shoulder dystocia.</p> <p>2. Obstetrical care providers are reminded to repeat screening for gestational diabetes at a later gestation for those at increased risk due to obesity.</p> <p>3. Healthcare facilities providing obstetrical services should develop an interdisciplinary plan that takes into account their available resources to safely manage the obese parturient and their neonates. This should include early consultation with anesthesia and obstetrics, documented discussion of the risks, and BMI limits which may necessitate referral for delivery at another centre with appropriate resources.</p> <p>4. Obstetrical care providers are reminded to evaluate each parturient for the need for post-partum venous thromboprophylaxis.</p> <p>5. Further educational opportunities for obstetrical care providers on how to effectively and respectfully counsel the obese patient about nutrition, exercise and weight gain in pregnancy should be developed.</p> |

Questions and comments regarding this report may be directed to:

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