



Maternal and Perinatal Death Review Committee

2016 Annual Report

**Office of the Chief Coroner
Province of Ontario**

November 2017

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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 368 cases and generated 691 recommendations towards the prevention of stillbirths and deaths involving mothers and neonates. In 2016, 17 cases were reviewed and 38 recommendations were made. The top areas of concern identified in recommendations made in 2016 related to policy and procedure and communications/documentation.

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 2016 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 (2016)

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 377 cases and generated 691 recommendations aimed towards the prevention of future similar deaths.
- On average, 28 cases are reviewed and 53 recommendations are made each year by the MPDRC.
- The top areas of concern identified in recommendations made from 2004-2016 relate to: medical and nursing issues; policy and procedures; communications/documentation; and diagnosis and testing (including electronic fetal monitoring).
- In 2016, 17 cases were reviewed and 38 recommendations were made.
- Of the 17 cases reviewed in 2016, nine were maternal, 10 were neonatal and three were 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, but do not undergo formal review (and thus are not reflected in these statistics). 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.

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 only and a condensed, executive review (as opposed to full committee 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 20th 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.¹
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.).

¹ 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 one year with the status of implementation of recommendations. Effective January 2017, organizations are being asked to respond back within six months.

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 (2004-2016)

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 2004-2016, the MPDRC has reviewed a total of 368 cases. Of these cases, 110 (30%) were maternal, 169 (46%) were neonatal and 89 (24%) were stillbirths. These numbers reflect the policy of the Office of the Chief Coroner to review all maternal deaths. 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, but do not undergo formal review (and thus are not reflected in these statistics). 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.

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.

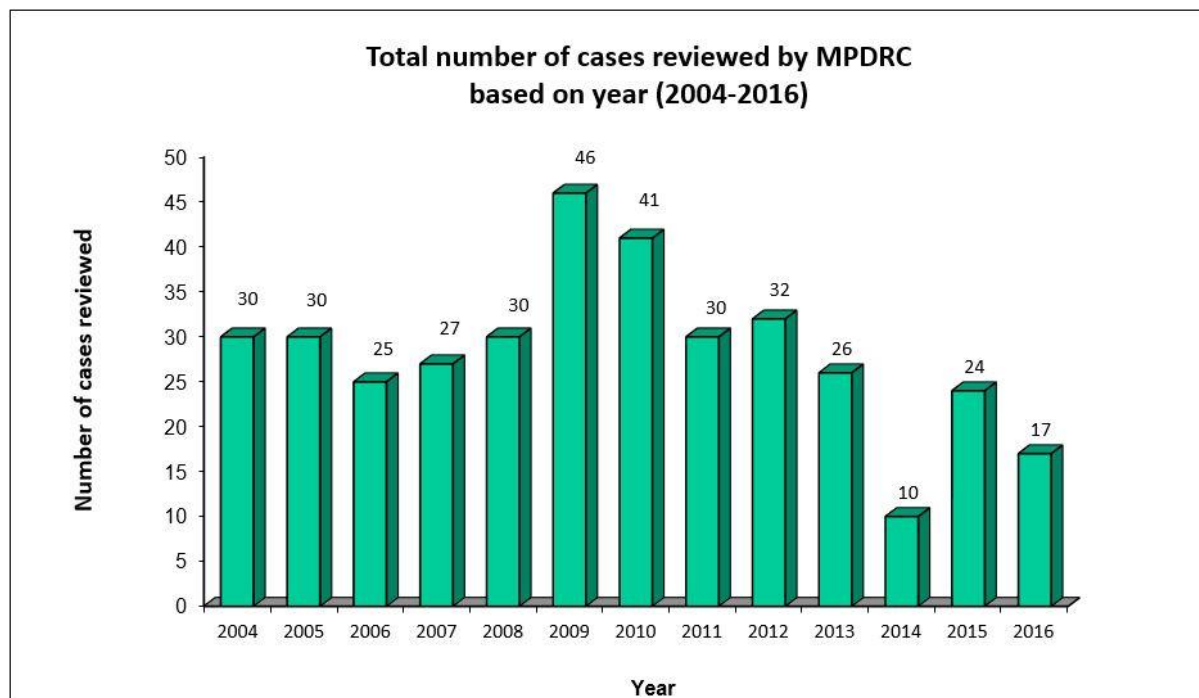
The number of cases noted in **Chart One** is based on the year the case was reviewed, which, in many cases, is not the same year in which the death actually occurred.

Chart One: MPDRC - # of Cases Reviewed (2004-2016)

Cases	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total	%	avg/yr
Total # of cases reviewed	30	30	25	27	30	46	41	30	32	26	10	24	17	368		28
Maternal	10	12	4	15	8	21	11	3	3	11	3	5	4	110	30%	9
Neonatal	12	11	13	12	12	16	19	14	20	10	5	15	10	169	46%	14
Stillbirth	8	7	8	0	10	9	11	13	9	5	2	4	3	89	24%	7

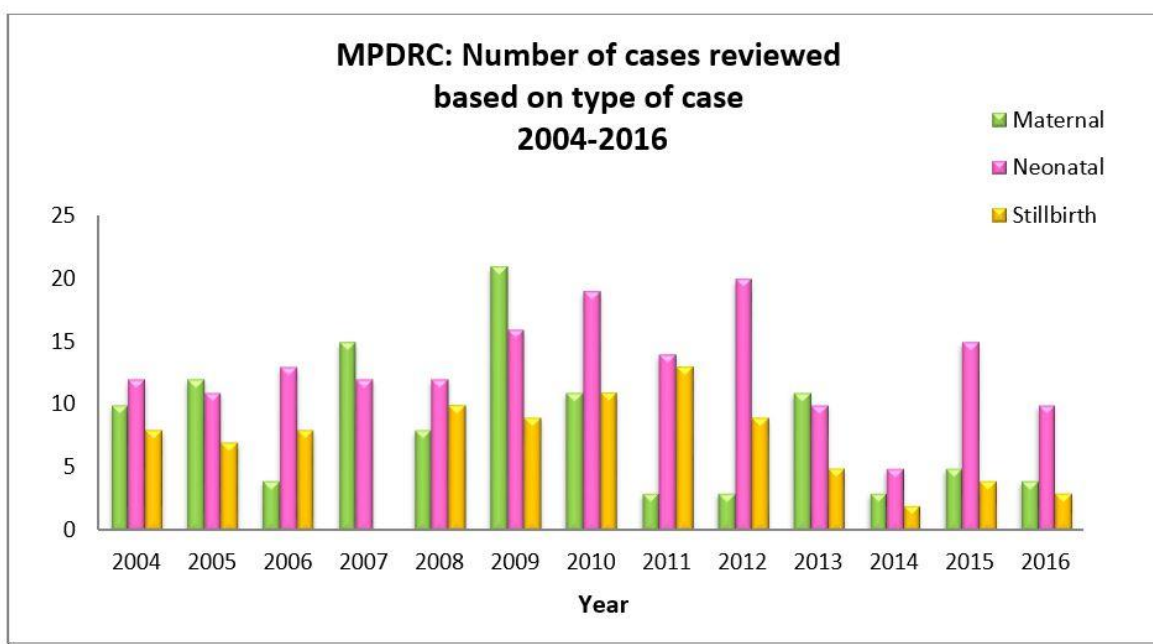
Chart One indicates that the total number of cases reviewed from 2004-2016 has varied from a low of 10 cases in 2014, to a high of 46 cases in 2009. This variance is likely reflective of committee administrative practices (e.g. time required for processing of review materials and compilation of final reports).

Graph One: Total number of cases reviewed by the MPDRC based on year (2004-2016)



Graph One demonstrates how the number of cases reviewed from 2004-2016 has remained relatively consistent, with a low in 2014 due to committee administrative issues. On average, the MPDRC reviews 28 cases per year.

Graph Two: Number of cases reviewed based on type of case (2004-2016)



Graph Two demonstrates that, overall, from 2004-2016, the majority of cases reviewed each year are neonatal deaths, followed by maternal deaths.

Chart Two: MPDRC - # of Recommendations (2004-2016)

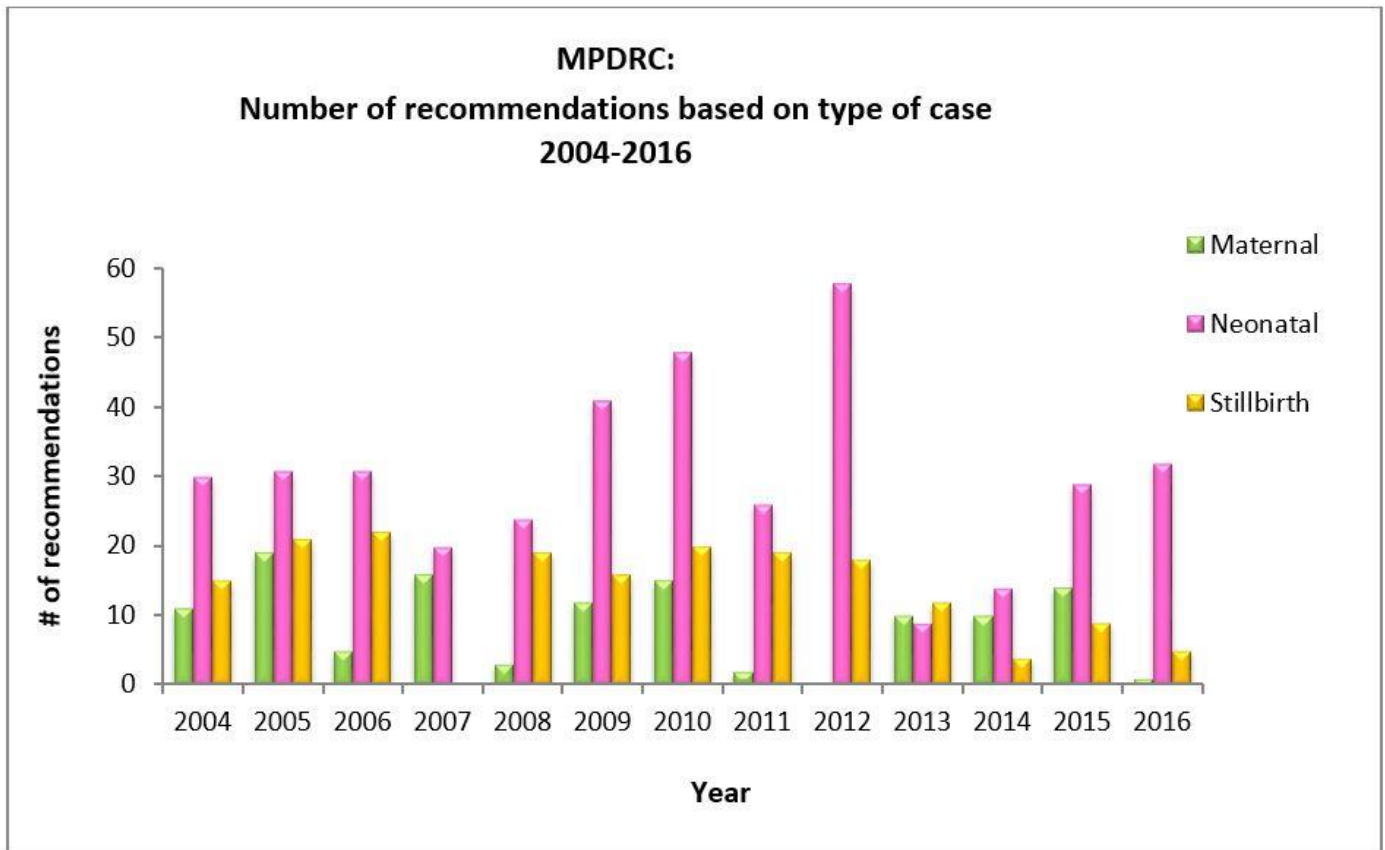
Recommendations	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total	%	avg/yr
Total # of Recommendations made	56	71	58	36	46	69	83	47	76	31	28	52	38	691		53
Maternal	11	19	5	16	3	12	15	2	0	10	10	14	1	118	17%	10
Neonatal	30	31	31	20	24	41	48	26	58	9	14	29	32	393	57%	33
Stillbirth	15	21	22	0	19	16	20	19	18	12	4	9	5	180	26%	15

Chart Two indicates that the MPDRC has generated a total of 691 recommendations from 2004-2016. From this total, 118 (17%) were related to maternal cases, 393 (57%) from neonatal cases and 180 (26%) from stillbirth cases. Consistently over the years, the majority of cases and recommendations relate to reviews of neonatal deaths. On average, 53 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. medical or nursing 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 2004-2016



Graph Three demonstrates that from 2004-2016, the majority of recommendations generated each year pertain to neonatal cases.

Chart Three: MPDRC – Number and percentage of recommendations based on area of concern/theme and type of case (2004-2016)

Area/Concern/Theme	Maternal	Neonatal	Stillborn	Total	% of Total
Medical/nursing	48 40%	69 17%	37 20%	154	22%
Policy and procedure	28 23%	81 20%	35 19%	144	20%
Communications/documentation	12 10%	66 16%	34 19%	112	16%
Quality	15 13%	34 8%	12 7%	61	9%
Diagnosis and testing	4 3%	54 13%	20 11%	78	11%
Diagnosis and testing - EFM	1 1%	50 12%	27 15%	78	11%
Education/Training	2 2%	23 6%	8 4%	33	5%
Resources	3 3%	14 3%	3 2%	20	3%
Transfer	5 4%	10 2%	5 3%	20	3%
Other	2 2%	2 0.5%	1 1%	5	1%

*Some recommendations touch on more than one theme.

Chart Three demonstrates that 22% of all recommendations made by the MPDRC from 2004-2016 relate to improving or addressing medical/nursing 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 a medical/nursing 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 2004-2016, there have been 78 (11% of the total) recommendations made specifically pertaining to EFM.

Executive Summary of Cases Reviewed in 2016

Cases reviewed by the MPDRC in 2016 may involve deaths that occurred in previous years.

Total number of cases reviewed (i.e. full reviews): 17

Total number of recommendations: 38

Number of maternal full case reviews: 4

Number of maternal executive reviews*: 9

Number of recommendations from the maternal deaths reviewed: 1

Number of neonatal cases reviewed: 10

Number of recommendations from the neonatal deaths: 32

Number of stillborn cases reviewed: 3

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, but do not undergo formal review (and thus are not reflected in these statistics). 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 2016, 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 medical/nursing issues, policies and procedures and communication/documentation. Responding to fetal distress, 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 2016 Case Reviews

Case number	Type	Summary	Themes	Recommendations
EX-01	Maternal Executive	This case involved the homicide of a 29-year-old woman by her husband. At the time of her death, the woman was 20 weeks pregnant. Cause of death was drowning. Manner of death was homicide.		None
EX-02	Maternal Executive	The decedent was a 25-year-old G ₅ P ₃ A ₁ . The woman died while in the bathtub. Potential causes for the drowning include pregnancy-induced hypertension related seizure, cardiac arrhythmia or a fall in the tub.		None
EX-03	Maternal Executive	The decedent was a 35-year-old woman who died of gestational hypertriglyceridemia induced necrotizing pancreatitis.		None
EX-04	Maternal Executive	The decedent was a 42-year-old woman who died nine days postpartum following delivery of her fifth child. Cause of death was postpartum dissection of the left anterior descending coronary artery.		None
EX-05	Maternal Executive	The decedent was a 30-year-old G ₂ P ₂ with a 4-year-old child and one-month-old infant. Cause of death was multiple organ failure due to a) sepsis and b) Strep A infection.		None

Case number	Type	Summary	Themes	Recommendations
EX-06	Maternal Executive	The decedent was a 25-year-old with a past history that included three prior pregnancies, an appendectomy and mild illicit drug use. Her psychosocial history included domestic assault, depression and suicidal ideation. The cause of death was attributed to acute ischemic stroke, associated with pregnancy.		None
EX-07	Maternal Executive	This case involved the homicide of a 33-year-old woman by her husband who subsequently committed suicide. Cause of death was multiple blunt impact trauma in a woman with multiple stab wounds.		None
EX-08	Maternal Executive	The decedent was a 28-year-old woman with a past medical history that included left leg amputation below the knee due to complications of club foot for which she underwent multiple surgeries. Ehlers-Danlos syndrome type IV was diagnosed leading to uterine rupture and haemorrhagic shock.		None
EX-09	Maternal Executive	The decedent was a 31-year-old woman who died from ruptured ectopic pregnancy. The decedent was not aware that she was pregnant.		None

Case number	Type	Summary	Themes	Recommendations
M-01	Maternal	The decedent was a 22-year-old G ₂ P ₀ A ₁ . Her past medical history was significant for cystic fibrosis (CF). Cause of death was pulmonary hemorrhage, complicating cystic fibrosis in a third trimester pregnancy.		None
M-02	Maternal	The decedent was a 34-year-old G ₂ P ₀ A ₁ . The cause of death was hypertensive heart disease which can result in sudden death due to cardiac arrhythmia.		None
M-03	Maternal	The decedent was a 37-year-old G ₅ T ₂ A ₂ . Cause of death was attributed to complications of Group A streptococcus sepsis.		None
M-04	Maternal	The decedent was a 23-year-old G ₃ P ₀ . Cause of death was Group A Streptococcus (GAS) sepsis.	Diagnosis and testing	1. Obstetrical care providers are reminded to consider early consultation with an internist or an intensivist for an unstable patient.
N-01	Neonatal	The deceased infant was two days old. The autopsy found a cephalohematoma and moderately severe subarachnoid hemorrhage. There was global and severe anoxic-ischemic encephalopathy. There was hemorrhagic necrosis of both adrenal glands related to trauma of delivery and/or perinatal hypoxia. No evidence of infection was found.	Education/Training Policy and Procedure Policy and Procedure Communications/documentation	1. Hospital A should regularly practice obstetrical emergencies that also include the time it takes for response to calls and to perform a Caesarean section. 2. Obstetrical care providers at Hospital A should review the SOGC Clinical Practice Guideline No. 148, August 2004, "Guidelines for Operative Vaginal Birth." 3. Hospital A should review the Provincial Council for Maternal and Child Health document Standardized Maternal and Newborn Levels of Care Definitions and determine what level is the

Case number	Type	Summary	Themes	Recommendations
			Policy and Procedure Communication/documentation Policy/Procedure Education/Training Resources	appropriate level for the care they are able to provide. 4. Hospital A should inform the public of the level of care that can be provided for maternal/newborn care. 5. Hospitals providing Caesarean section services should be able to mount the procedure within approximately 30 minutes from the time of decision to proceed. (see - Attendance at Labour and Delivery Guidelines for Obstetrical Care, SOGC Policy Statement, No. 89, May 2000) 6. Obstetrical care providers are reminded of the importance in identifying risk factors and for timely and clear communication with the entire labour and delivery team. Obstetrical care providers must be aware of the availability of obstetric, anesthesia, neonatal and operating room staff. 7. Obstetrical care providers are encouraged to review Fetal Health Surveillance: Antepartum and Intrapartum Consensus Guideline, JOGC, Volume 29, Number 9, September 2007. 8. Hospital health care professionals in Level 1 institutions where obstetrical care is being provided should be encouraged to attend ALARM[®] and NRP or equivalent training on a regular basis. 9. Midwives working in Level 1 hospitals should ensure there are emergency obstetrical

Case number	Type	Summary	Themes	Recommendations
				services available in a timely manner at the site where they are transferring a woman in active labour with risk factors for delivery.
N-02	Neonatal	The decedent was a 17.5-hour-old infant. The cause of death was severe hypoxic ischemic encephalopathy.	Policy and Procedures Communications/documentation	1. Obstetrical care providers are reminded of the criteria for an abnormal fetal heart rate tracing and the action required as defined by SOGC Intrapartum Fetal Surveillance Guidelines published in September 2007. 2. Obstetrical care providers are reminded of the importance of documentation in the operative assisted delivery (SOGC - Guideline for Operative Vaginal Birth, No. 148, August 2004).
N-03	Neonatal	The deceased infant was two days old. Death was attributed to disseminated gram-negative Escherichia coli infection with meningitis due to, or as a consequence of, chorioamnionitis due to, or as a consequence of, preterm premature rupture of the membranes.	Policy and Procedures Communications / documentation	1. Obstetrical care providers are reminded of the criteria for an abnormal fetal heart rate tracing and the action required as defined by SOGC Intrapartum Fetal Surveillance Guidelines published in September 2007. 2. Obstetrical Care providers are reminded of the requirement to document the indications for operative delivery and the details of the surgical procedure.
N-04	Neonatal	The deceased infant was two days old. Death was attributed to traumatic brain injury and hypoxic-ischemic encephalopathy arising as a complication of birth.	Policy and Procedures Medical	1. The SOGC should consider developing a guideline for difficult Caesareans, particularly including difficult extraction of the fetus, to better prepare obstetrical caregivers for these emergency situations. 2. At the time of the "surgical check list", obstetrical care providers should discuss

Case number	Type	Summary	Themes	Recommendations
			Education/Training Communications/documentation	the possibility of difficult extraction and put a plan in place on how to approach it. 3. Those responsible for quality of care for maternal-newborn services at any hospital must ensure that staff is adequately trained and accessible to provide full resuscitative efforts to any newborn as prescribed by Neonatal Resuscitation Program (NRP). 4. Obstetrical and neonatal care providers are reminded of the need to document events related to the management of newborns accurately and contemporaneously.
N-05	Neonatal	The deceased infant was 10 minutes old.	Diagnosis and testing - EFM Policy and procedure Transfer	1. Obstetrical care providers are reminded to measure maternal heart rate to ensure the monitored heart rate is fetal and not maternal. 2. The College of Midwives should review its position on vaginal birth after Caesarean (VBAC) and choice of birthplace. 3. Midwives are reminded to utilize Emergency Medical Services (EMS) for transportation of women in labour when indicated.
N-06	Neonatal	The deceased infant was six hours old. The cause of death was intrauterine asphyxia.	Medical Policy and Procedures	1. Obstetrical care providers are reminded of the importance of having timely progression to Caesarean section as a secondary plan for delivery when using forceps or vacuum. 2. Obstetrical care providers are reminded of the importance of fetal health surveillance, particularly as it relates to the induction and augmentation of labour.

Case number	Type	Summary	Themes	Recommendations
N-07	Neonatal	The deceased infant was 24 hours old. The cause of death was hypoxic-ischemic encephalopathy as a complication of perinatal asphyxia.	Communications/documentation Policy and Procedures Transfer	1. Healthcare providers are reminded of the importance of clear and contemporaneous documentation of all conversations, including by telephone, with patients/clients. 2. Midwives are reminded of the CMO requirement to consult in labour for pre-term premature (PPROM) from 34+0 to 36+6 weeks gestation, breech or other malpresentations with the potential to deliver vaginally. (Consultation and Transfer of Care Nov 2015) 3. Midwives are reminded of the need to advise women of appropriate use of EMS for safe transportation to hospital when birth is potentially imminent and/or weather and distance are factors.
N-08	Neonatal	The deceased infant was one hour old. The cause of death was attributed to intrauterine aspiration pneumonia, due to chorioamnionitis, due to prolonged premature rupture of membranes.		None.
N-09	Neonatal	The deceased infant was one month old. The cause of death was total anomalous Pulmonary Venous Circulation with Right Ventricular Hypertrophy	Diagnosis and testing Communications/documentation Policy and procedure	1. Obstetrical care providers are reminded to consider all causes of failure to thrive when assessing babies. 2. Obstetrical care providers are reminded that informed choice discussions and decisions for early discharge of an at-risk infant are required and should be clearly and concisely documented.

Case number	Type	Summary	Themes	Recommendations
			Communications/documentation	3. Canadian Guidelines should be developed regarding SPO2 testing on all newborns to assist in diagnosis of cyanotic congenital heart disease. 4. The midwifery guidelines for Consultation and Transfer of Care should be reviewed to include growth parameters relating to poor weight gain.
N-10	Neonatal	The deceased infant was 20 days old. The autopsy was restricted to the heart only. Cause of death was a congenital heart disease.	Diagnosis and testing Education/Training Communications/documentation	1. Obstetrical imagers, both technologist and radiologists, are reminded of the technical requirements and imaging guidelines for evaluation of the fetal heart in the second trimester. 2. In a level 2 NICU, ability to intubate and provide appropriate respiratory support is crucial. Care providers need to be up to date on the process of intubation and ventilation. 3. Early communication with the tertiary care centre is recommended for guiding the treatment and expediting transfer.
S-01	Stillbirth	This stillborn died from Acute Amniotic Infection Syndrome	Diagnosis and testing - EFM Communications/documentation	1. Obstetrical care providers are reminded that the fetal heart rate needs to be distinguished from the maternal pulse, particularly when there is a maternal tachycardia. 2. Obstetrical care providers are reminded of the importance of clearly communicating and documenting who is the most responsible care provider.
S-02	Stillbirth	Death was attributed to multiple placental factors in the setting of labour. These included placental hypoplasia with infarcts as well as chorioamnionitis		None.

Case number	Type	Summary	Themes	Recommendations
		(not of a degree to be the primary cause).		
S-03	Stillbirth	The cause of death was determined to be <i>Morganella morganii</i> bacteremia.	Policy and procedure Communications/documentation Quality	1. Obstetrical care providers are reminded of the definition and management of abnormal fetal heart tracings as per the SOGC Fetal Health Surveillance: Antepartum and Intrapartum Consensus Guideline (September 2007). 2. Obstetrical care providers are reminded of the importance of complete and appropriate documentation in labour. 3. The hospital involved should conduct a “Lessons Learned Case Review” of the care and management of the mother and stillborn infant. This review should include physicians and nursing staff involved in the care of this mother and her stillborn infant. Suggested areas of focus are: - Fetal health surveillance, including the identification, interpretation and management of abnormal fetal heart tracings - Timely, effective and complete communication and documentation of observations, assessments and decisions.

Questions and comments regarding this report may be directed to:

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