Office of the Chief Coroner
Province of Ontario

December 2019

Maternal and Perinatal Death Review Committee

2018 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 430 cases and generated 748 recommendations towards the prevention of stillbirths and deaths involving mothers and neonates. In 2018, 27 cases were reviewed and 35 recommendations were made. The top areas of concern identified in recommendations made in 2018 related to obstetrical care providers, communications/documentation and diagnosis/testing.

Copies of full, redacted reports are available to the public by contacting occ.inquiries@ontario.ca.

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 2018 Annual report of the MPDRC.

Rick Mann, MD, CCFP, FCFP
Chair, Maternal and Perinatal Death Review Committee
Committee Membership (2018)

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. 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

Ms. Kathy Kerr  
Executive Lead
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 430 cases and generated 748 recommendations aimed towards the prevention of future similar deaths.

- On average, 29 cases are reviewed and 50 recommendations are made each year by the MPDRC.

- The top areas of concern identified in recommendations made from 2004-2018 relate to: obstetrical care provider issues; policy and procedures; communications/documentation; and diagnosis and testing (including electronic fetal monitoring).

- In 2018, 27 cases were reviewed and 35 recommendations were made.

- Of the 27 cases reviewed in 2018, 15 were maternal (six executive reviews and nine full reviews), 10 were neonatal and two 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. 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.¹

¹ 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 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. 
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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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.

Responses received to recommendations are available to the public by contacting occ.inquires@ontario.ca.

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.

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 2004-2018, the MPDRC has reviewed a total of 430 cases. Of these cases, 151 (35%) were maternal, 187 (43%) were neonatal and 92 (21%) 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.


<table>
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<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total # of cases reviewed</td>
<td>30</td>
<td>30</td>
<td>25</td>
<td>27</td>
<td>30</td>
<td>46</td>
<td>41</td>
<td>30</td>
<td>32</td>
<td>26</td>
<td>10</td>
<td>31</td>
<td>26</td>
<td>19</td>
<td>27</td>
<td>430</td>
<td>29</td>
</tr>
<tr>
<td>Maternal - executive review</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>29</td>
<td>7</td>
</tr>
<tr>
<td>Maternal - full review</td>
<td>10</td>
<td>12</td>
<td>4</td>
<td>15</td>
<td>8</td>
<td>21</td>
<td>11</td>
<td>3</td>
<td>3</td>
<td>11</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>9</td>
<td>122</td>
<td>28%</td>
</tr>
<tr>
<td>Maternal - total</td>
<td>10</td>
<td>12</td>
<td>4</td>
<td>15</td>
<td>8</td>
<td>21</td>
<td>11</td>
<td>3</td>
<td>3</td>
<td>11</td>
<td>3</td>
<td>12</td>
<td>13</td>
<td>10</td>
<td>15</td>
<td>151</td>
<td>35%</td>
</tr>
<tr>
<td>Neonatal</td>
<td>12</td>
<td>11</td>
<td>13</td>
<td>12</td>
<td>12</td>
<td>16</td>
<td>19</td>
<td>14</td>
<td>20</td>
<td>10</td>
<td>5</td>
<td>15</td>
<td>10</td>
<td>8</td>
<td>10</td>
<td>187</td>
<td>43%</td>
</tr>
<tr>
<td>Stillbirth</td>
<td>8</td>
<td>7</td>
<td>8</td>
<td>0</td>
<td>10</td>
<td>9</td>
<td>11</td>
<td>13</td>
<td>9</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>92</td>
<td>21%</td>
</tr>
</tbody>
</table>

Chart One indicates that the total number of cases reviewed from 2004-2018 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 demonstrates how the number of cases reviewed from 2004-2018 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 (2004-2018)

Graph Two demonstrates that, overall, from 2004-2018, the majority of cases reviewed are neonatal or maternal deaths. It is the policy of the Office of the Chief Coroner to review all maternal deaths in the province. Neonatal and stillbirth cases are reviewed when issues or concerns are identified.

Chart Two: MPDRC - # of Recommendations (2004-2018)

Chart Two indicates that the MPDRC has generated a total of 748 recommendations from 2004-2018. From this total, 146 (20%) were related to maternal cases, 417 (56%) from neonatal cases and 185 (25%) from stillbirth cases. Consistently over the years, the majority of cases and recommendations relate to reviews of neonatal deaths. On average, 50 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 2004-2018

Graph Three demonstrates that from 2004-2018, most recommendations pertained to neonatal cases.
## Chart Three: MPDRC – Number and percentage of recommendations based on area of concern/theme and type of case (2004-2018)

<table>
<thead>
<tr>
<th>Theme</th>
<th>Maternal</th>
<th>Neonatal</th>
<th>Stillborn</th>
<th>Total</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obstetrical care provider</td>
<td>57</td>
<td>73</td>
<td>40</td>
<td>170</td>
<td>22%</td>
</tr>
<tr>
<td>Policy and procedure</td>
<td>30</td>
<td>83</td>
<td>35</td>
<td>148</td>
<td>19%</td>
</tr>
<tr>
<td>Communications/documentation</td>
<td>16</td>
<td>74</td>
<td>34</td>
<td>124</td>
<td>16%</td>
</tr>
<tr>
<td>Quality</td>
<td>17</td>
<td>38</td>
<td>12</td>
<td>67</td>
<td>9%</td>
</tr>
<tr>
<td>Diagnosis and testing</td>
<td>14</td>
<td>58</td>
<td>21</td>
<td>93</td>
<td>12%</td>
</tr>
<tr>
<td>Diagnosis and testing - EFM</td>
<td>1</td>
<td>50</td>
<td>27</td>
<td>78</td>
<td>10%</td>
</tr>
<tr>
<td>Education/Training</td>
<td>3</td>
<td>24</td>
<td>9</td>
<td>36</td>
<td>5%</td>
</tr>
<tr>
<td>Resources</td>
<td>3</td>
<td>15</td>
<td>3</td>
<td>21</td>
<td>3%</td>
</tr>
<tr>
<td>Transfer</td>
<td>5</td>
<td>10</td>
<td>5</td>
<td>20</td>
<td>3%</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>1%</td>
</tr>
</tbody>
</table>

*Some recommendations touch on more than one theme.

**Chart Three** demonstrates that 22% of all recommendations made by the MPDRC from 2004-2018 relate to improving or addressing obstetrical care provider issues. An additional 19% 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
- 19% of all recommendations from neonatal cases had a policy and procedure theme
- 17% 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 2004-2018, there have been 78 (10% of the total) recommendations made specifically pertaining to EFM.
Executive Summary of Cases Reviewed in 2018

Cases reviewed by the MPDRC in 2018 may involve deaths that occurred in previous years.

Total number of cases reviewed (executive and full reviews): 27

Total number of recommendations: 35

Number of maternal full case reviews: 9

Number of maternal executive reviews*: 6

Number of recommendations from the maternal deaths reviewed: 17

Number of neonatal cases reviewed: 10

Number of recommendations from the neonatal deaths: 18

Number of stillborn cases reviewed: 2

Number of recommendations from the stillborn cases: 0

* 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 2018, 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. This year, recognition of early warning signs and risk assessment seem to be common threads in our reviews.

Abnormal vital signs of the mother, fetus or neonate, or the difficult delivery, may be signals that require special attention and consideration. Risks of thromboembolism, Group A Streptococcus sepsis or risks associated with labour after multiple Caesarian sections must be weighed carefully in caring for mothers and neonates.

Thoughts from the Society of Obstetricians and Gynaecologists Of Canada (SOGC)

In Canada, maternal mortality is an infrequent event with devastating consequences. In many cases, there were no interventions that could have saved the mother’s life, but in others, there were opportunities for prevention. There is absolute consensus that the upper limit of tolerance for a preventable maternal death is zero.

The World Health Organization’s 2010 report indicated a rise in maternal mortality in Canada and prompted the Society of Obstetricians and Gynaecologists of Canada (SOGC) to work with partners to review national maternal mortality surveillance. Since that time, efforts have begun and have stalled, but we are now in the fortunate position to be working with experts and provincial leaders to begin the steps toward implementation of a national system of confidential enquiry into maternal deaths, as well as severe maternal morbidity, in Canada. Canada’s existing data does not tell the true story of maternal deaths; today, we cannot learn from each death and each circumstance to identify measures for prevention in the future. But a dedicated network of leaders has been working hard to leverage their collective expertise. Recommendations for definitions, processes, knowledge translation tools and programs that raise awareness about maternal mortality in Canada have been developed and are being piloted.

The Office of the Chief Coroner has played a critical role in shaping the way forward and has illustrated the potential power of recommendations following a maternal mortality review. For example, over the past year, the Maternal and Perinatal Death Review Committee has been increasingly concerned about maternal deaths due to sepsis in Ontario. They reached out to organizations of obstetrical care providers, including the SOGC, with recommendations related to development of a national guideline for a standard early warning system (e.g. MEOWS) that would be applicable to maternity care.

As a direct result of these recommendations, the SOGC’s Infectious Disease Committee drafted and issued two statements that were distributed to all SOGC members (4,000 women’s health providers) in Summer 2018 and another in Spring 2019, emphasizing the importance of obstetrical care providers having awareness of the signs and symptoms of sepsis and implementing a maternal warning system.

An expert working group was also struck and conducted a survey to determine specific early warning systems currently in place across Canada. They subsequently developed recommendations related to use and
implementation of a maternal early warning system, which are being released by publication in the Journal of Obstetrics and Gynaecology Canada in Winter 2020.

Finally, the SOGC is developing and disseminating training, education, tools and resources that focus on the issues raised by the coroners recommendations and will offer them to members through hands-on skills training, CMEs, e-learning and/or checklists, patient-order sets or clinical practice guidelines, where relevant.

Recommendations from the Maternal and Perinatal Death Review Committee play a critical role in our ability to mobilize expertise and influence policy and practice in priority areas. The SOGC will continue to monitor recommendations and identify opportunities to work together to reduce maternal and perinatal mortality in Ontario and across Canada – we very much appreciate the review committee’s thoughtful analysis.
## Appendix A

### Summary of 2018 Case Reviews

<table>
<thead>
<tr>
<th>Case number</th>
<th>Type</th>
<th>Summary</th>
<th>Themes</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>EX-01</td>
<td>Maternal Executive</td>
<td>The decedent was a 41-year-old woman who was in her first trimester of pregnancy. In the days prior to her death, she had no complaints except pregnancy-related nausea. The decedent was attending a prenatal appointment at a clinic across from the hospital. She was found without vital signs in a washroom at the clinic. Cause of death was acute myocardial infarction.</td>
<td></td>
<td>No recommendations.</td>
</tr>
<tr>
<td>EX-02</td>
<td>Maternal Executive</td>
<td>The decedent was a 34-year-old woman with three children. She had a left ectopic pregnancy nine months prior. She collapsed at home. Cause of death was bilateral pulmonary embolization with saddle embolus.</td>
<td>Diagnosis and testing</td>
<td>1. It is suggested that first degree relatives of the decedent be tested for clotting disorders.</td>
</tr>
<tr>
<td>EX-03</td>
<td>Maternal Executive</td>
<td>The decedent was a 39-year-old woman who was found unresponsive in bed. She had been using drugs the night prior to her death and had a history of long-term drug use. She was four months pregnant at the time of her death. Cause of death was cocaine toxicity.</td>
<td></td>
<td>No recommendations.</td>
</tr>
<tr>
<td>EX-04</td>
<td>Maternal Executive</td>
<td>This case involves the sudden death of a 38-year-old woman who died in her sleep, at home two weeks after giving birth by Caesarean section. Clinicopathological consideration suggested a sudden cardiac rhythm disturbance as the cause of death. Genetic testing was performed and discovered a heterozygous variant of uncertain significance. Genetic counselling was suggested.</td>
<td></td>
<td>No recommendations.</td>
</tr>
<tr>
<td>EX-05</td>
<td>Maternal Executive</td>
<td>The decedent was a 29-year-old woman who was eight weeks pregnant at the time of her death. She suddenly collapsed</td>
<td></td>
<td>No recommendations.</td>
</tr>
<tr>
<td>Case number</td>
<td>Type</td>
<td>Summary</td>
<td>Themes</td>
<td>Recommendations</td>
</tr>
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<td>-------------</td>
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<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>EX-06</td>
<td>Maternal Executive</td>
<td>The decedent was a 42-year-old woman from Nigeria who had been in Canada for four months. Two months prior to her death, she had given birth to a premature infant by Caesarian section due to pre-eclampsia. She was at home when she became dyspneic. Cause of death was massive pulmonary thromboembolism.</td>
<td>Medical/nursing</td>
<td>1. Obstetrical care providers are reminded of the risk for venous thromboembolism (VTE) in pregnancy and postpartum and should consider the SOGC guideline “Venous thromboembolism and antithrombotic therapy in pregnancy” (SOGC CPG June 2014). Consideration should be given for a checklist and/or inclusion of criteria on “order sets” to facilitate consideration of the guidelines.</td>
</tr>
<tr>
<td>M-01</td>
<td>Maternal</td>
<td>The decedent was a 31-year-old primigravida. Cause of death was septic (toxic) shock with multi-organ system failure. The source for the infection was Streptococcus pyogenes Lancefield Group A infection that entered the body through the pelvic organs, likely through the episiotomy site.</td>
<td>Policy and procedure</td>
<td>1. The SOGC should conduct research into the prevalence of Group A streptococcus cases in Canada. It is recommended that the research examine common and unusual features in the cases with a view to developing guidelines for early intervention based upon the “unusual symptom diagnosis.”</td>
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<td>M-02</td>
<td>Maternal</td>
<td>The decedent was a 32-year-old obese $P_2A_0$ woman who died at approximately 30 weeks’ gestation. She was on a methadone maintenance program and did not receive any prenatal care in this pregnancy. Two days prior to presentation, she resumed using methamphetamine. Cause of death was found to be brain herniation due to cerebral edema due to intracranial hemorrhage.</td>
<td>No recommendations.</td>
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<td>M-03</td>
<td>Maternal</td>
<td>The decedent was a 39-year-old woman who died 48 hours after an urgent repeat Caesarean section for premature labour. Imaging studies done on the second day post-operatively were consistent with small bowel obstruction. General surgery was consulted and it was felt that surgery was not indicated at the time. The cause</td>
<td>Medical/nursing</td>
<td>1. Critically ill patients as defined by abnormal vital sign parameters captured by such tools as the SIRS criteria, should be assessed by the hospital’s critical care response team (CCRT). 2. The hospital involved should consider, if not already implemented, an alerting mechanism or early warning system for patients demonstrating critical vital sign levels to identify</td>
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| M-04       | Maternal | The decedent was a 30-year-old G5P3A1 woman who was at approximately 4-5 months’ gestational age. She had found out the previous week that she was pregnant and had no previous prenatal care. Cause of death was Group A Streptococcus Septicemia. | Quality                             | 1. The hospital involved should conduct a lessons-learned case review of the circumstances surrounding the death of this 30-year-old woman. Participants in the review should include EMS, Chief of Staff from the hospital, and staff from the emergency department, obstetrical services and laboratory, as well as an Indigenous community advocate. The review should include, but not be limited to, discussion on the following areas:  
- Notification and communication of abnormal lab results  
- Documentation and communication between healthcare providers  
- Policies and procedures for intra-departmental transfer of patients  
- Triaging procedures and collection of patient information  
- Early recognition of sepsis |
<p>| M-05       | Maternal | The decedent was a 28-year-old G1P0 who died on post-partum day three from complications of a massive post-partum hemorrhage. The cause and treatment focused on uterine atony which failed to respond to uterotonics, Bakri balloon and internal iliac artery ligation. | Diagnosis and testing Communications/documentation | 1. Obstetrical care providers are reminded to inspect the vagina for lacerations following instrumental vaginal delivery and in the investigation of post-partum hemorrhage. 2. The hospital involved should review the process of documentation of medical care, as well as retrieving and providing all medical records (both written and electronic) for quality review and when requested by the Office of the Chief Coroner. |
| M-06       | Maternal | The decedent was a 37-year old P5T3SA1. Cause of death was attributed to complications of lacerations to pregnant uterus and bladder. | Diagnosis and testing Communications/documentation | 1. Obstetrical care providers are reminded of the recognition and management of disseminated intravascular coagulation (DIC). 2. Obstetrical care providers are reminded of the importance of timely and complete documentation. Written and electronic records should be... |</p>
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<td>provide an accurate and complete account of the history, examination, investigations, treatment plan (and informed choice discussions and decisions) and ongoing progress of the patient.</td>
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<td>M-07</td>
<td>Maternal</td>
<td>The decedent was a 30-year-old G4P1SA2 black woman who was in the first trimester of pregnancy. Cause of death was bilateral pulmonary thromboembolisms. Complication of hyperemesis gravidarum, resulting in sedentary activity and dehydration, together with Sickle Cell Trait, are considered to have increased her risk of DVT and PE.</td>
<td>Diagnosis and testing</td>
<td>3. Obstetrical care providers are reminded of the risks associated with labour after multiple Caesarean sections. 4. Obstetrical care providers are reminded to appropriately review laboratory investigations they order. 5. Anesthesia care providers are reminded to employ various strategies for optimizing critically ill patients throughout the intraoperative course.</td>
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<td>M-08</td>
<td>Maternal</td>
<td>The decedent was a 35-year-old G2T2L2 who had given birth to her second child by an uncomplicated spontaneous vaginal birth and postpartum recovery. The decedent had a sudden onset of a septic infection a few days postpartum. Cause of death was Pulmonary Thromboembolism due to (a) Deep Pelvic Vein Thrombosis and Postpartum Group A Streptococcal Infection.</td>
<td>No recommendations.</td>
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<td>M-09</td>
<td>Maternal</td>
<td>The decedent was a 33-year-old G1 TPAL 0000 who died from Postpartum Group A Streptococcal Septicemia.</td>
<td>Medical/nursing</td>
<td>1. Healthcare facilities should discuss their approach to the timely detection and management of sepsis. 2. A validated national obstetrical early warning tool to identify deteriorating maternal conditions and prompt early intervention should be developed by the SOGC, and incorporated into MOREOB, ALARM and residency training programs.</td>
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<td>N-01</td>
<td>Neonatal</td>
<td>The cause of death was determined as ‘Acute perinatal asphyxia due to maternal peripartum haemorrhage and placental abruption.’ Severe RDS was the clinical cause of death.</td>
<td>Medical/nursing</td>
<td>1. Healthcare providers are reminded that endotracheal tube placement remains critical during resuscitation. A chest X-ray with two views of the chest and a definitive CO2 change on the monitor remains crucial for placement confirmation.</td>
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<td>N-02</td>
<td>Neonatal</td>
<td>This infant died shortly after birth due to sepsis resulting from severe chorioamnionitis. The autopsy findings indicative of meconium aspiration and placental insufficiency were contributing factors.</td>
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<td>No recommendations.</td>
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<td>N-03</td>
<td>Neonatal</td>
<td>This baby died as a result of severe cranial injuries sustained during a traumatic vacuum extraction and forceps delivery.</td>
<td>Quality</td>
<td>1. The Chief of Staff of the hospital involved should review its application process for credentialing of obstetrical care providers requesting vacuum extraction and forceps privileges.</td>
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<td>2. The hospital involved should conduct a multi-disciplinary lessons-learned case review of the circumstances surrounding this death including:</td>
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<td>• Timely, accurate and complete documentation of procedures;</td>
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<td>• Management of, and procedure for, the escalation of difficult deliveries;</td>
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<td>• Communication between care providers including the empowerment of providers to share identified concerns;</td>
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<td>• The establishment of a culture that fosters open communication between multi-disciplinary members of the healthcare team.</td>
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<td>N-04</td>
<td>Neonatal</td>
<td>This pregnancy was unremarkable and progressing normally until labour. Shortly after the mother was fully dilated and started pushing, the baseline became ‘indeterminate’ and apart from a few minutes of a normal appearing strip, was abnormal. After the failed vacuum attempt, the mother was allowed to continue pushing despite an abnormal fetal heart.</td>
<td>Communications/ documentation</td>
<td>1. Nursing staff are reminded of the importance in documenting concerns about patient/fetal wellbeing even if a physician is present and ‘in charge.’</td>
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<td>2. Nurses must be empowered to express concerns regarding their patients if they feel alternate care is required.</td>
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<td>The Caesarean delivery was done approximately 64 minutes after the last Kiwi pop off.</td>
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<td>1. Obstetrical care providers are reminded of the importance of complete (e.g. assessment, clinical history and medications) transfer documentation accompanying obstetrical or neonatal patients between centres.</td>
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<td>N-05</td>
<td>Neonatal</td>
<td>The mother of the deceased infant was a 21-year-old G1. Risk factors: pre-pregnancy weight (232 lb), spotting at 11-12 weeks, nausea and vomiting, travel to the Caribbean (risks of Zika virus) and vaginal yeast detected at first visit. Cause of death was ascending infection and marginal placental abruption.</td>
<td>Communications/documentation</td>
<td>1. The hospital involved should review its policy and instructions for patients undergoing cervical ripening and induction of labour. 2. Obstetrical care providers are reminded of the importance of documenting care in the medical record especially when risk factors are a component of the clinical picture and driving clinical care management and decision making. 3. Obstetrical care providers are reminded of the SOGC Fetal Health Surveillance: Antepartum and Intrapartum Consensus Guideline.</td>
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<td>N-06</td>
<td>Neonatal</td>
<td>This two-day-old female infant died due to perinatal asphyxia. The infant’s family expressed concerns regarding hospital resources (i.e. lack of beds) and failure of the hospital to follow up.</td>
<td>Policy and procedure</td>
<td>1. Resource limitations such as inadequate coverage of a skilled obstetrician for breech birth, should be clearly communicated with other care providers with privileges at that hospital so that they may in turn communicate this with their patients/clients for consideration during informed choice discussions. 2. During informed choice discussions with patients/clients about breech vaginal birth, obstetrical care providers should address the availability (or lack thereof) of a skilled care caregiver during labour. This discussion should happen early, particularly if the patient/client in pursuing a vaginal breech delivery. 3. Obstetrical care providers are reminded that a fetal scalp/buttock probe should be used during electronic monitoring when the external monitor gives an inadequate tracing.</td>
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<td>N-07</td>
<td>Neonatal</td>
<td>The mother of the deceased infant had been under midwifery care and had a normal and uncomplicated antenatal course. It was felt that the fetus was in the breech position by clinical assessment from 29 weeks’ gestation. Cause of death was presumed perinatal asphyxia in association with vaginal breech delivery.</td>
<td>Resources</td>
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<td>N-08</td>
<td>Neonatal</td>
<td>From 36 weeks’ gestational age, the mother expressed concerns that there were decreased fetal movements. The autopsy and placental findings of intrauterine growth restriction support the significance of the symptom of decreased fetal movement indicated by the mother.</td>
<td>Communications/documentation</td>
<td>4. The SOGC and CMO should review the challenges of offering breech deliveries in order to ensure a consistent and unambiguous message to obstetrical care providers.</td>
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<td>N-09</td>
<td>Neonatal</td>
<td>The infant girl was born approximately 31 hours after ruptured membranes with meconium. Death was attributed to ascending infection in labour.</td>
<td>Diagnosis and testing</td>
<td>1. Obstetrical care providers are reminded of the importance of listening to, addressing and documenting discussions of client/patient concerns throughout the course of care. When interventions are performed, informed discussion is crucial for consent. These discussions should be documented.</td>
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<tr>
<td>N-10</td>
<td>Neonatal</td>
<td>This infant died at three days of age from severe head injuries sustained at the time of forceps delivery.</td>
<td>No recommendations.</td>
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<td>S-01</td>
<td>Stillbirth</td>
<td>This was a term stillbirth in a pregnancy complicated by limited prenatal care, advanced maternal age, increased BMI, positive FTS, low PAPP-A, cigarette smoking and type 2 diabetes. Intrapartum care was appropriate.</td>
<td>No recommendations.</td>
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<td>S-02</td>
<td>Stillbirth</td>
<td>The cause of death was found to be birth asphyxia due to meconium aspiration and umbilical cord strangulation. Despite the timely and appropriate efforts of the team,</td>
<td>No recommendations.</td>
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<td>this baby was born with a condition that could not be reversed by resuscitative efforts.</td>
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Full, redacted versions of reports and responses to recommendations are available to the public by contacting: [occ.inquiries@ontario.ca](mailto:occ.inquiries@ontario.ca).
Questions and comments regarding this report may be directed to:

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