

Perinatal Mortality Guideline 6 MATERNAL MORTALITY REVIEW

1. INTRODUCTION

In the Special Report on Maternal Mortality and Severe Morbidity in Canada¹ it was identified that many provinces, including British Columbia, did not (at the time of publication) have provincial maternal death review committees. Key recommendations of that report included establishing specific maternal death review committees that have authority to review reports on maternal death and seek additional, pertinent case information as necessary. In British Columbia, the Provincial Perinatal Mortality Review Committee is currently designated in B.C. (Regulation 363/95, paragraph (c) of 51(1) of the Evidence Act) for the purpose of quality review of perinatal and maternal mortality.

In Canada (excluding Quebec), the maternal mortality rate from 1997-2000 was 6.1 per 100,000 live births, and the leading causes of death were pulmonary embolism and pre-eclampsia / hypertension during pregnancy (direct), cardiovascular (indirect), and motor vehicle collisions (incidental).¹ In B.C. from 1987-2004, the maternal mortality rate was 4 per 100,000 live births and the leading causes of death were hemorrhage, embolism and infection.²

2. PURPOSE OF THIS GUIDELINE

The purpose of this guideline is to provide a framework for maternal mortality review within B.C. and guidelines for completion of a Maternal Mortality review Report. With consistency of the review process, data may be aggregated at the provincial and national levels for data synthesis.

3. DEFINITIONS^{3,4}

Maternal deaths: deaths of women while pregnant or within 42 days of termination of the pregnancy, irrespective of the site or duration of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.

Late maternal deaths: deaths in women from direct or indirect obstetric causes occurring between 42 days and one year after end of pregnancy.

Direct obstetric deaths: maternal deaths resulting from obstetric complications of the pregnant state (pregnancy, labour, and puerperium); interventions, omissions, or incorrect treatment, or a chain of events resulting from any of the above.

Indirect obstetric deaths: maternal deaths resulting from previous existing disease or disease that developed during pregnancy, which was not due to direct obstetric causes but which was aggravated by the physiologic effects of pregnancy.

Incidental deaths: maternal deaths due to conditions occurring during pregnancy, where the pregnancy is unlikely to have contributed significantly to the death, although it is possible to postulate a distant association.

4. MATERNAL MORTALITY CASE REVIEW

4.1 CASE REVIEW: ROLES AND RESPONSIBILITIES

A. Role of Care Providers:

The most responsible care provider reports the maternal death to the Chair of the regional Perinatal Mortality Review Committee (or equivalent), and to the Coroner's Office within 24 hours of the death.

All perinatal care providers facilitate the provision of information about the circumstances of the maternal death during the investigation, if asked or compelled to do so.

The most responsible care provider meets with the woman's family at the time of death or as soon as possible thereafter.

B. Role of Coroner's Office:

The Coroner's Office initiates a review within 72 hours of the death.

C. Role of Office of Vital Statistics

The Office of Vital Statistics contacts the Chair, BCPHP Provincial Perinatal Mortality Review Committee of maternal deaths in B.C., within two weeks after the event.

D. Role of PMR Review Committees (or equivalent) within Health Authorities

The Chair of the PMR Review Committees (or equivalent) initiates an confidential investigation (protected under Section 10, Evidence Act) following the Maternal Mortality Data Collection Tool as soon as possible (within 3 working days) of the maternal death. Data sources will include chart review, practitioner interview of those involved in the case, and other sources relevant to systems issues identified. Part 1: Maternal Information and Part 11: Care Systems and Processes will be completed in their entirety, preferably within 3 working days of the death. Part 111: Pathological Findings and Part 1V: Conclusions should be completed once the Autopsy Report is available.

A copy of the completed Maternal Mortality Review Form will be submitted to the BCPHP PMR Review Committee when it is completed and signed. It should be mailed to the BCPHP, and not emailed, due to its confidentiality.

The Chair of the PMR Review Committees (or equivalent) contacts the BCPHP Chair, Provincial Perinatal Mortality Review Committee or Program Director within 72 hours of the death to advise that a maternal death has occurred in B.C.

Should the Chair of the PMR Review Committees (or equivalent) so choose, (s)he may request that the Chair, BCPHP Provincial Perinatal Mortality Review Committee conduct the investigation of the maternal death.

C. Role of the BCPHP Provincial Perinatal Mortality Review Committee

- Conduct the investigation of maternal deaths, when requested
- Review all maternal deaths in BC
- Contact the Chair of the PMR Review Committees (or equivalent) if the Office of Vital Statistics contacts the Chair, BCPHP Provincial Perinatal Mortality Review Committee re: a maternal death in B.C.
- Compile provincial quantitative and qualitative data on all maternal deaths in BC
- Distribute Maternal Mortality Reports every 3 years

4.2 DIRECTIONS FOR COMPLETION OF MATERNAL MORTALITY DATA COLLECTION TOOL

1. Complete Part 1: Maternal Information and Part 11: Care Systems and Processes in their entirety, preferably within 3 working days of the death.
2. Complete Part 111: Pathological Findings and Part 1V: Conclusions upon receipt of the Autopsy report.
3. Complete all questions, as applicable. Y = Yes; N= No; U = Unknown; and N/A = Not Applicable.
4. Should you have any questions about the form completion, please contact the BCPHP at 604-875-3752.

REFERENCES

1. Canadian Perinatal Surveillance System. (2004). Special Report on Maternal Mortality and Severe Morbidity in Canada. Minister of Public Works and Government Services, Canada: Ottawa.
2. Wong, A., & Etches, D. (2006). Maternal mortality in British Columbia, 1987-2004. *BC Medical Journal*: 48, 2: 76-80.
3. World Health Organization. (1977). *Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death, 9th Revision*. Vol. 1. Geneva: WHO.
4. World Health Organization. (1993). *Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death, 10th Revisions*. Vol. 1: WHO.

MATERNAL MORTALITY DATA COLLECTION TOOL
**** CONFIDENTIAL ****

PART I: MATERNAL INFORMATION **CONFIDENTIAL**

Section A. Background Information (complete for all maternal deaths)

Name: _____ PHN: _____

Date of birth: _____ Medical Record #: _____

Date of death: _____

Age: _____

Date of delivery, abortion, or treatment of ectopic: _____

Place of death if applicable: hospital home other

Coroner's case: Y N

Autopsy: Y N

Apparent cause of death: _____

- Death occurred at < 20 completed weeks GA
 - still pregnant
 - miscarriage, termination of pregnancy, molar pregnancy
 - ectopic

or

- Death occurred at \geq 20 completed weeks GA
 - antepartum
 - intrapartum
 - postpartum \leq 42 days post delivery
 - postpartum > 42 days post delivery

- If patient was pregnant, gestational age: _____ completed weeks

Section B. Reproductive and Medical History

- Obstetrical history

G___ T___ P___ A___ L___

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4. Details of previous pregnancies:

Date (year)	GA (weeks)	Delivery method	Weight	Complications

5. History of ovulation induction? Y N U N/A

6. Coexisting medical disorder complicating pregnancy? Y N U N/A
 If yes, please describe: _____

7. Did this condition arise in pregnancy? Y N U N/A
 If yes, please describe: _____

8. Was there consultation or special care related to the condition during pregnancy? Y N U N/A
 If yes, please describe: _____

9. Relevant past surgical history? Y N U N/A
 If yes, please describe: _____

10. Relevant personal/social circumstances? Y N U N/A
 If yes, please describe: _____

11. History of substance use in pregnancy? Y N U N/A
 street drugs (specify) _____
 alcohol
 tobacco

Section C. Deaths Occurring During Labour, Delivery or Puerperium

(a) Labour

12. Was a qualified attendant present during labour? Y N U N/A
 If yes, was the **primary attendant** was:

- MD
- RM
- RN
- Paramedic
- Other

<p><u>Other Attendant was:</u></p> <ul style="list-style-type: none"> <input type="radio"/> MD <input type="radio"/> RM <input type="radio"/> RN <input type="radio"/> Paramedic <input type="radio"/> Other

13. Was this patient transferred while in labour? Y N U N/A
 If yes, please describe: _____

14. Duration of labour:

	Hours	Minutes
First stage (length)		
Second stage		
Third stage		

15. Was labour induced? Y N U N/A

16. If labour was induced, the primary method was:

- ARM
- Prostaglandin
- Oxytocin
- Misoprostol

17. Were any of the following used?

external electronic fetal monitoring	<input type="radio"/> Y	<input type="radio"/> N	<input type="radio"/> U	<input type="radio"/> N/A
fetal ECG	<input type="radio"/> Y	<input type="radio"/> N	<input type="radio"/> U	<input type="radio"/> N/A
intrauterine pressure catheter	<input type="radio"/> Y	<input type="radio"/> N	<input type="radio"/> U	<input type="radio"/> N/A

(b) Delivery

18. Was a qualified attendant present during delivery? Y N U N/A
 If yes, **primary attendant** was

- MD
- RM
- RN
- Paramedic
- Other

<p><u>Other Attendant was:</u></p> <ul style="list-style-type: none"> <input type="radio"/> MD <input type="radio"/> RM <input type="radio"/> RN <input type="radio"/> Paramedic <input type="radio"/> Other

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19. Method of delivery:
- spontaneous vaginal
 - forceps assisted vaginal
 - vacuum assisted vaginal
 - Caesarean section – elective
 - Caesarean section – emergency
- indication: _____
indication: _____
indication: _____
indication: _____

20. Episiotomy: Y N U N/A

21. Laceration: Y N U N/A

Degree of laceration 1 2 3 4

(c) Third Stage

22. Placental delivery:
- spontaneous
 - assisted
 - manual removal

23. Oxytocic drugs in third stage: Y N U N/A
Specify, with dose _____

24. Estimated blood loss at delivery: _____ ml

25. Estimated blood loss in first 24 hours: _____ ml

26. Blood transfusion during labour, delivery or puerperium?
Y N U N/A

27. Details of blood products transfused, if applicable:

	Number of units
Packed RBC	
Platelets	
Cryoprecipitate	
Fresh frozen plasma	
Other	

28. ICU admission at any time during labour, delivery or puerperium?
Y N U N/A If yes, please describe: _____

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(d) Infant Outcome

29. Birthweight of infant: _____ g
30. Infant was
 liveborn
 stillborn; if stillborn, death occurred:
 during labour
 before labour
- Apgars _____ 1 minute _____ 5 minutes _____ 10 minutes
31. Was there an adverse infant outcome? Y N U N/A
If yes, please describe: _____

(e) Puerperal Deaths

32. Time between delivery and death (hours/days as applicable): _____
33. Puerperal complications: Y N U N/A
If yes, please describe: _____

34. Readmission to hospital? Y N U N/A
If yes, indication: _____

Section D. Specific Categories of Death (complete applicable section)

(a) Hypertension or **(b) Cerebrovascular accident**

35. Hypertension prior to pregnancy? Y N U N/A
If yes, specify drug(s) and dose(s) _____

36. Treatment with antihypertensive agents during pregnancy? Y N U N/A
37. Treatment with magnesium sulphate? Y N U N/A
38. Treatment with other anticonvulsants? Y N U N/A
If yes, specify drug(s) and dose(s) _____

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39. Seizures/eclampsia? Y N U N/A
Timing of seizures
 antepartum
 intrapartum
 postpartum

Please complete all questions in (a) hypertension section.

(c) Surgical conditions

40. Hemorrhage from organs other than reproductive tract: Y N U
If yes, specify site: _____

41. Did this death follow surgery for a non-obstetric indication? Y N U
If yes, specify site: _____

(d) Obstetrical Hemorrhage (source: reproductive tract)

42. Onset of hemorrhage
 antepartum
 intrapartum
 postpartum

43. Treatment initiated (check all that apply)
 observation surgery
 intravenous resuscitation hysterectomy
 oxytocic drugs embolization
 manual compression blood transfusion
 uterine exploration

44. Time from onset of bleeding to management: _____ hrs _____ min

45. Time from onset of bleeding to death : _____ hrs _____ min

46. Category of postpartum hemorrhage
 atony
 traumatic
 retained products of conception
 coagulopathy

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(e) Thromboembolism ○

47. Timing of diagnosis:
If pregnant, gestational age _____ completed weeks
If postpartum, days since delivery _____
48. Site of thrombosis (specify): _____
49. Site of embolism (specify): _____
50. Past history of thromboembolism? ○Y ○N ○U ○N/A
51. Family history of thromboembolism? ○Y ○N ○U ○N/A
52. Other risk factors? ○Y ○N ○U ○N/A
If yes, describe _____

53. Thromboprophylaxis during labour or delivery? ○Y ○N ○U ○N/A
If yes, describe _____

(f) Psychiatric ○

54. Psychiatric illness during pregnancy? ○Y ○N ○U ○N/A
If yes, please describe: _____

55. Did patient receive assistance from mental health or social services during the pregnancy or puerperium?
○Y ○N ○U ○N/A
If yes, please describe: _____

56. If death was due to suicide, did patient have a history of:
○postnatal depression
○puerperal psychosis
○relapse or recurrence of psychiatric illness

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(g) **Infection**

57. Please Describe _____

(h) **Trauma / Injury**

MVA (Motor Vehicle Accident)

IPV (Interpersonal Violence)

Other

58. Please Describe _____

(i) **Other**

59. Please Describe _____

Indicate sources of data for completion of Section I:

maternal chart

other (specify) _____

Part II: CARE, SYSTEMS, PROCESSES **CONFIDENTIAL**

Section A: Antenatal

60. Were all standards of medical/midwifery/nursing care met during the antenatal period? Y N U N/A
If no, please describe: _____

61. If there was a deviation from the standard of care, can it be explained? Y N U N/A
If yes, please describe: _____

62. Were there any antenatal risk factors that may have predicted this outcome? Y N U N/A
If yes, please describe: _____

63. If yes, were the risk factors recognized and planned for? Y N U N/A

64. Were prenatal investigations offered and done in a timely manner? Y N U N/A
If no, please describe: _____

Section B. Labour, Delivery or Puerperium

65. Were all standards of medical/midwifery/nursing care met during labour, delivery and puerperium? Y N U N/A
If no, please describe: _____

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66. If there was a deviation from the standard of care, can it be explained? Y N U N/A

If yes, please describe: _____

67. Were there any risk factors during labour, delivery or the puerperium that may have predicted this outcome? Y N U N/A

If yes, please describe: _____

68. If yes, were the risk factors recognized and planned for? Y N U N/A

69. Were investigations during labour delivery and puerperium available and done in a timely manner? Y N U N/A

If no, please describe: _____

70. Were all medical interventions carried out in a timely manner? Y N U N/A

If no, please describe: _____

71. Were all nursing interventions done in a timely manner? Y N U N/A

If no, please describe: _____

Section C. Other Clinical Factors

72. Were there other clinical factors not considered above that may have contributed to this death? Y N U N/A

Examples: unusual or obscure disease process, atypical presentation of a common disease process, "difficult patient", non-compliance

If yes, please describe: _____

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Section D. Care Systems

73. Indicate if any of the following systems issues were relevant in this case:

- communication
- MD availability
- delayed MD response
- inadequate RN staffing
- RN shift change
- health care provider fatigue
- lack of education/training/knowledge
- lack of clinical policies/guidelines
- non-adherence to clinical policies/guideline
- equipment availability
- equipment safety
- medication(s)
- physical environment
- patient transport within facility
- patient transfer to another facility
- lack of other resources
- teamwork
- other

If yes to any of the above, please describe: _____

Indicate sources of data for completion of Section II:

- chart
- primary care provider
- assigned RN
- other direct care providers (discipline) _____
- unit/facility manager
- other (specify) _____

PART IV: CONCLUSIONS *CONFIDENTIAL*****

76. Direct obstetric death
or
 Indirect obstetric death
or
 Incidental death

77. Preventability
- Not preventable
All standards of care were met, interventions were available, accessible, appropriate and timely, and circumstances surrounding the death were not preventable.
 - Possibly preventable
One or more standards of care was not met, or interventions were inappropriate, inadequate or untimely.
 - Ideally preventable
A sudden compromising event where intervention was not possible on this occasion.

78. Follow up if standard(s) of care were not met NA

79. Quality Assurance follow up if systems issues were relevant NA

80. In your opinion, can anything be done to minimize the risk of a recurrent event?
