



Paul R. LePage, Governor

Mary C. Mayhew, Commissioner

**Maine CDC
Maternal, Fetal
& Infant
Mortality Review
Panel (MFIMR)**



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Submitted to the Joint Standing Committee on Health and Human Services

**2013 Annual
Report**

**Maine CDC
Maternal, Fetal and Infant Mortality Review Panel (MFIMR)
2013 Annual Report to the Legislature**

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EXECUTIVE SUMMARY

Background

In 2005, the 122nd Legislature passed *An Act to Establish a Maternal and Infant Death Review Panel* to examine issues related to maternal and infant deaths in Maine. In 2010, the 124th Legislature amended this statute to authorize the Maternal and Infant Death Review Panel to review fetal deaths occurring after 28 weeks gestation, i.e., stillborn infants. With this change, the Panel is now referred to as the Maternal, Fetal and Infant Mortality Review Panel.

Purpose

The overall purpose of the Maine CDC Maternal, Fetal and Infant Mortality Review Panel (MFIMR), using a public health approach, is to strengthen community resources and enhance State and local systems and policies affecting women, infants and families, in order to improve health outcomes in this population and prevent maternal, fetal and infant mortality and morbidity. The infant mortality rate is a sensitive public health indicator of social health and well-being and of the extent to which a society invests in children as its most precious natural resource. By understanding the factors associated with maternal, fetal, and infant deaths, we will improve our ability as a State to most effectively direct prevention efforts and to take actions to promote healthy mothers and infants.

Highlights

This 2013 report summarizes relevant data contributing to perinatal outcomes, challenges, activities and plans of the MFIMR Panel.

The MFIMR Panel identified the following issues as needing in-depth investigation over the next five years (2013-2018):

- Factors that contribute to preterm birth, pregnancy loss, and strategies for prevention.
- Barriers to delivery of the highest risk infants (e.g. very low birth weight/premature) at Level III facilities.
- Sudden Infant Death and Sudden Unexpected Infant Death as emerging issues, including sleep related deaths.

Recommendations

Recommendations of the MFIMR Panel include facilitating educational efforts to increase awareness of the MFIMR Panel and factors contributing to maternal, fetal and infant deaths in Maine: preterm birth risk, access to high risk birth facility and to promote appropriate health, behavior and safety screening for all pregnant women, promote infant safe sleep practices, and screening of infants for Critical Congenital Heart Disease. Other recommendations include: conducting a comprehensive assessment of the MFIMR process to achieve a representative sample of cases.

For more information on activities of the MFIMR Panel:

Contact Ellie Mulcahy, Panel Coordinator, Maine CDC, elleanor.a.mulcahy@maine.gov, or 207-287-4623 www.maine.gov/dhhs/mecdc/population-health/cshn/maternal-infant/index.html

FULL REPORT

Background

In 2005, the 122nd Legislature passed *An Act to Establish a Maternal and Infant Death Review Panel*. As stated in the Panel's *Procedures Manual and Guidelines* its purpose is to:

“...conduct thorough examinations of maternal and infant deaths in Maine. By understanding the factors associated with infant and maternal deaths, we will expand our capacity as a state to direct prevention efforts to the most effective and humane strategies possible and be able to take actions to promote healthy mothers and infants. The overall purpose of the program, using a public health approach, is to strengthen community resources and enhance state and local systems and policies affecting women, infants and families, in order to improve health outcomes in this population and prevent maternal and infant mortality and morbidity.”ⁱ

In 2010, the 124th Legislature amended this statute to authorize the Maternal and Infant Death Review Panel to review fetal deaths occurring after 28 weeks gestation, i.e., stillborn infants. With this change, the Panel is now referred to as the Maternal, Fetal and Infant Mortality Review Panel. The Legislature also repealed the sunset on the Panel allowing the Panel to continue its work beyond the original end date of January 1, 2011.

The legislation requires that an annual report be presented to the Department of Health and Human Services and to the legislative committee having jurisdiction over health and human services. This 2013 report discusses the MFIMR Panel's activities and areas of focus for State Fiscal Year 2013 (7/1/12-6/3/13) and provides some related state and national data regarding fetal, infant and maternal mortality.

The Panel

The Maine CDC MFIMR Panel is a multidisciplinary group of health care and social service providers, public health officials, law enforcement officers, parents, and other persons with professional expertise on maternal and infant health and mortality.

The Panel is scheduled to meet four times a year and takes a broad holistic approach to improving the quality of life for all of Maine's women, infants and families. The infant mortality rate is a sensitive public health indicator of social health and well-being and of the extent to which a society invests in children as its most precious natural resource. The Panel gathers and reviews information relevant to infant and maternal mortality, including factors contributing to mortality, considers the strengths and weaknesses of the current maternal and infant health care delivery system, and makes recommendations to prevent future deaths and improve the overall health and safety of Maine's infants and mothers.

The following issues have been identified as needing in-depth investigation over the next five years (2013 to 2018):

- Factors that contribute to preterm birth, pregnancy loss, and strategies for prevention.
- Barriers to delivery of the highest risk infants (e.g. very low birth weight/premature) at hospitals with appropriate facilities and professionals to provide the best chance of survival for the infant (i.e. Level III facilities).

- Sudden Infant Death and Sudden Unexpected Infant Death as an emerging issue, including sleep related deaths.

Maine CDC MFIMR Activities in State Fiscal Year 2013

The Maine CDC Maternal, Fetal and Infant Mortality Review Panel met three times in SFY 2013. During this past year the MFIMR Panel was only able to review one case and focused on improving case ascertainment.

Actions to Strengthen Community Resources

- The Association of State and Territorial Health Officers issued a President’s Challenge to reduce preterm birth rates by 8% by 2014. Maine is collaborating with the Maine Chapter of the March of Dimes (MOD) and representatives from several professional organizations to identify educational opportunities to increase awareness of the importance of preventing prematurity.ⁱⁱ Activities included distribution of March of Dimes materials “Healthy Babies are worth the wait” and the MOD Prematurity Awareness activities in November 2012.
- Maine Association of Women’s Health, Obstetrics and Neonatal Nurses (ME AWHONN) held an annual conference October 2012 with presentations focusing on preventing preterm birth and promoting quality care for pregnant women with addiction.
- Perinatal Nurse Managers of Maine had discussions around eliminating elective deliveries and promoting inter-conception care. Sample protocols and policies are posted on a website used for nurse manager communications. (<http://www.bbch.org/Programs/perinatal-outreach/Pages/Clinical-Guidelines.aspx>). Maine received an “A” on the March of Dimes Report card and was one of only 4 states receiving an “A”) The March of Dimes grades states by comparing each state’s rate of preterm birth to the March of Dimes 2020 goal of 9.6 percent. Preterm birth is the leading cause of newborn death in the US. For more information see www.MarchOfDimes.com
- Safe sleep environments was identified as an issue needing focused attention thus a series of training sessions was developed by the Perinatal Outreach Program to use with community partners including Public Health Nursing, Maine Families, case managers and Medication Assisted Treatment Center staff. Training was provided in Bangor, Waterville and Portland for a total of 145 participants.
- Dr. Jennifer Hayman from Maine Medical Center has developed a Maine Chapter of Cribs for Kids. This program is available statewide through local Home Visiting Programs. A family or a doctor can identify a family with a need for a crib to significantly reduce the risk of an unsafe sleep situation. The DHHS, Maine Families, Home Visiting Program will do a home visit to determine eligibility and to establish a relationship with the family for support and education. So far approximately 350 cribs have been distributed to families in need since July 2010. Most funding has been provided through small grants by the Kohls Cares for Kids Foundation. Another 171 cribs have been acquired through a collaborative through Maine Families/Maine Children’s Trust for future distribution.ⁱⁱⁱ
- Snuggle ME guidelines were developed and disseminated: The goal of the guidelines is to increase the percentage of women with addictions who receive early prenatal care and appropriate medical treatment during their pregnancy, delivery and postpartum. Providers are encouraged to screen all pregnant women and refer to resources, including Public Health Nursing and Women, Infant &

Children Nutrition Program (WIC). Perinatal Nurse Managers of Maine discussed Drug Affected Baby Referrals to Child Protective Services at a quarterly meeting. Legislation was enacted by the Maine Legislature, Public Law 192, An Act to Protect Newborns Exposed to Drugs or Alcohol provided expansion of reporting for babies exposed prenatally to drugs and alcohol to facilitate early intervention.

- Grand rounds re: Maternal and Child Health programs: A series of grand rounds presentations have begun to highlight Maine CDC's Maternal and Child Health programs, including MFIMR. The goal is to engage health care providers in discussions about public health issues and identify resources for hospitals, providers and families. Providers were given MFIMR brochures to share with colleagues and bereaved families to increase awareness and acceptance of invitations to allow case review.
- The Maine CDC has convened a multi-disciplinary workgroup to focus on high quality obstetric and newborn care for families planning a home birth. The Continuum of Care Collaborative is developing a communication tool for the transfer of care that has a potential impact for any transfer of care (home to hospital, community hospital to tertiary care center).

Additional Actions to Enhance State and Local Systems and Policies

- Maine CDC Data, Research and Vital Statistics has completed implementation of an electronic death certificate system. This new system includes information indicating if a woman's death was related to a pregnancy or a birth thus improving identification of maternal deaths. Electronic submission will improve the timeliness and quality of the information on Maine death certificates and support a shorter turnaround time for obtaining certified copies for families and will promote uniformity in cause-of-death statistics. Fetal deaths will continue to be filed using the paper version.
- Maine CDC Data, Research and Vital Statistics is completed upgrades to Maine's birth registration system. This will allow for birth and death certificates to be rapidly matched.
- A comprehensive infant mortality analysis was completed during this fiscal year. The in-depth look at infant mortality in Maine examined data for deaths during 1999-2010, including trends over time, age at death, leading causes and variation across select maternal, pregnancy and infant characteristics. <http://www.maine.gov/dhhs/mecdc/population-health/cshn/maternal-infant/index.html>
- A review of cases at the Chief Medical Examiner's Office is continuing to include infant deaths in unsafe sleep environments for 2009-2011. There continue to be 10-12 deaths fitting this definition per year. There continue to be multiple unsafe aspects of the sleep setting in each death (multiple things in crib + known substance use, or bed-sharing). The data collected will be analyzed and compared to a previous study done for 2002-2006.
- A previous case reviewed by the Panel involved an infant that died from a rare immune disorder, Severe Combined Immune Deficiency (SCID). A new screening test is being implemented in many states that can identify affected infants in the first week of life with this type of disorder allowing for treatment reducing mortality related to specific primary immune deficiencies. The Maine CDC Newborn Screening Program has convened a multidisciplinary workgroup to help with planning for implementation of SCID screening in early 2014.
- Screening for Critical Congenital Heart Disease (CCHD) for all newborns offers early identification of at risk infants with the opportunity for further evaluation and potential to reduce infant deaths to

some congenital heart disease. Legislation was enacted by the Maine Legislature Public Law 397, An Act to Protect Newborns from Critical Congenital Heart Disease. Education has been provided to birthing hospitals in Maine to promote consistent and quality screening. Many Maine hospitals are already screening babies for CCHD.

- The MFIMR Panel began a quality improvement process to identify factors affecting case ascertainment. The overall goal is to increase the cases that can be reviewed by the Panel. Factors include timely access to death certificates, locating families, timing of contact, consent, staffing, public and provider awareness. Recommendations based on this process include increasing awareness of providers, exploring alternative data sources for family addresses, revising the packet of materials sent to families, and requesting technical assistance from the National Fetal Infant Mortality Review Program at the American College of Obstetricians and Gynecologists.

Challenges Experienced by the MFIMR Panel

- The number of MFIMR Panel meetings was less than planned due to a very limited number of cases available for Panel review. In addition, the Panel coordinator's workload did not support more active case identification.
- Statutory requirements providing a four-month waiting period before contacting the family and requiring family consent to review records present challenges.
- Identifying accurate contact information for families four or more months following a death continues to be difficult. Research to assure valid mailing address is a time consuming process and is performed using web and programmatic resources to avoid sending materials to the wrong family.
- Challenges to inviting families to participate in the review process, include the fact that some families have moved since the death and many have unlisted phone numbers or only use cell phones.
- Approximately twenty families were contacted by mail with no responses. All cases reviewed by the Panel were referred to the Panel coordinator by a healthcare provider or the family contacted the Panel coordinator after viewing the website.
- Initial consultation with the National Fetal & Infant Mortality Review (NFIMR) coordinator and staff included a review of Maine CDC MFIMR statute, rules, protocols and materials. A follow-up call with Panel leadership and ACOG covered the following areas:
 - Discussed the role of public health in monitoring the health of citizens and evaluate mortality,
 - Currently there are too few cases reviewed by the Panel to identify generalizable recommendations. The small number of cases creates a biased sample representing those families that have already accessed services and do not represent the underserved and minority populations;
 - Maine needs to identify opportunities to increase awareness of the work of the MFIMR Panel to allow providers to introduce the process to bereaved families and improve information available for families.

Recommendations of the MFIMR Panel

Panel discussions identified several recommendations for the Maine CDC.

- Increase awareness of MFIMR Panel and related activities and resources.
- Maine CDC Newborn Bloodspot Screening Program will proceed with planning and implementation of screening newborns for Severe Combined Immune Deficiency.
- Maine CDC will work with stakeholders to draft rules relating to Screening for Critical Congenital Heart Disease for all newborns. Rules will outline screening methodology, follow-up and data collection to promote consistency and quality in screening systems.
- Continue to work with NFIMR to a) review the MFIMR system in Maine to improve case ascertainment to reflect a representative sample of fetal and infant deaths; b) identify gaps and trends and the opportunity to prevent future deaths, and c) identify best practices related to this type of review process.

Plans for Maine CDC MFIMR Panel in 2014

Panel discussions identified several activities to be addressed in the coming year.

- Identify hospital practices related to elective deliveries-avoiding inductions and caesarean births for non-medical indications prior to 39 weeks gestation to reduce prematurity.
- Explore hospital practices re: education of families and modeling safe sleep environments by positioning infants on their back, use of appropriate swaddling and no blankets or other items in the bassinet.
- Continue to work with the Office of Chief Medical Examiner to review cases of babies who die while sleeping. The most recent review covers the years 2009-2011. A plan is in place to review the 2012 deaths once the Medical Examiner has completed their review. Initial data finds that 10-12 babies per year are dying in unsafe sleep conditions, with about 1 baby per year dying of SIDS. The additional year of data will allow for an analysis comparing a previous study that was done for infant sleep deaths that occurred between 2002 and 2006.
- Continue to monitor statistical data for trends in maternal, fetal and infant mortality; specifically the Panel will look at the timing and adequacy of prenatal care, access to care for pregnant teens, and the appropriateness of care for very low birth weight infants including distance from a Level III facility.
- Complete a comprehensive analysis of data related to fetal deaths, including relevant risk factors such as smoking, substance abuse, and chronic disease, such as diabetes and identifying opportunities for preventing future deaths. The Panel will review the findings when available.
- The MFIMR Panel coordinator will work with the Division of Population Health leadership to identify potential approaches and solutions for challenges in case ascertainment.
- Continue working with the NFIMR coordinator to review MFIMR processes and institute best practices for State-level maternal fetal and infant mortality review panels.

Appendix A

Data Highlights

Appendix A

Data Highlights

The Maine CDC MFIMR Panel monitors statistical data for trends in maternal, fetal and infant mortality. Sources of Maine information include data compiled for the annual Maternal and Child Health (MCH) Title V Block Grant report and the MCH Strengths and Needs Assessment, which is updated every five years.^{iv} Summaries of indicators related to several birth trends and infant mortality have been provided below.¹

Indicators of Fetal, Infant, and Maternal Mortality

Indicator	Maine Current Period ^v	US Data	Maine Prior Period	Maine Prior Period
Fetal Mortality Measures- Time Period	2008-2012	2006^{vi}	2007-2011	2006-2010
Fetal mortality rate (per 1,000 live births and fetal deaths) 20+ weeks gestation	4.2	6.1	4.4	4.4
Number of Fetal deaths per year		25,972		
Range	48-62	--	48-65	48-65
Average	56	--	58	60
Gestational age at death				
Between 20 and 27 weeks	46.8%	51.1%	48.0%	50.5%
At 28 weeks or more	53.2%	48.9%	52.0%	49.5%
Infant Mortality Measures- Time Period	2007-2011^{vii}	2009^{viii}	2006-2010^{ix}	2005-2009
Infant mortality rate (number of deaths under 1 year of age per 1,000 live births)	5.8	6.4	5.7	6.1
Neonatal mortality rate (number of deaths to infants less than 28 days per 1,000 live births)	4.1	4.2	4.2	3.9
Number of infant deaths per year	--	26,408	--	--
Range	67-87	--	66-89	74-97
Average	78	--	78	84
Distribution of Timing of Death (percent)				
< 24 hours after birth	44.7%	<7 days 52.1%	43.4%	43.0%
1-7 days after birth	14.4%	--	14.8%	15.1%
8-27 days after birth	11.1%	7-27 days 13.2%	10.5%	10.6%
28-365 days after birth	29.8%	34.60%	31.4%	31.2%
Gestational Age at Birth among Infant Deaths (percent)				
Early preterm infant (< 34 weeks gestation)	60.7%	57.3%	58.2%	58.6%
Preterm (34-36 weeks gestation)	6.9%	9.7%	8.2%	8.5%
Not preterm (37 weeks or more)	30.3%	30.5%	31.1%	30.7%
Unknown	2.1%	-	2.6%	2.1%

¹ Maine birth data (preliminary) and fetal death data from 2012 and infant mortality data from 2011 were the most recent data available at the time of these analyses. In general, U.S. mortality data lag by several years. Five year averages were used for some analyses with small numbers of events.

Indicator	Maine Current Period^v	US Data	Maine Prior Period	Maine Prior Period
Maternal Mortality Measures Time Period	2002-2011^x	2007^{xi}	2001-2010^{xii}	2000-2009
Number of maternal deaths due to pregnancy-related causes	3	548 Rate - 12.7 deaths per 100,000 live births	1	2
Number of maternal deaths, women who died within one year of pregnancy, due to any cause	39	--	40	36
Infant Birth Measures- Time Period	2012^{xiii}	2012^{xiv}	2011^{xv}	2010
Number of live births to Maine residents	12,692	3,952,937	12,700	12,950
Percent of very low birthweight infants delivered at facilities for high-risk deliveries and neonates (Level III facility)	80.5%	<i>States range</i> 48.2% - 99.5% ^{xvi}	82.6%	79.9%
Percent low birthweight births, <2500 grams	6.7%	8.0%	6.7%	6.3%
Low birthweight birth status				
Very low birth weight (<1500 grams)	1.1%	1.4%	1.1%	1.0%
Moderate low birth weight (1500-2499 grams)	5.6%	6.6%	5.6%	5.2%
Normal birth weight (2500+ grams)	93.2%		93.2%	93.7%
Unknown	<1%		<1%	<1%
Percent of women with first trimester prenatal care	88.1%	--	89.4%	89.0%
Percent preterm birth (less 37 weeks gestation)	7.8%	11.5%	8.3%	8.2%
Infant Health Time Period	2011	2010	2010	2009^{xvii}
Sleep Position – (percent and 95% confidence interval) Percent of new moms who most often placed their infants on their backs to sleep	80.3% (77.2-83.0%)	<i>27 state range</i> 65.0-85.6% ^{xviii}	80.9% ^{xix} (77.9-83.6%)	77.5% (76.2-78.7%)
Drug-Affected Newborns - Number and percent of “drug withdrawal syndrome in newborn” coded on Maine birth hospitalization discharge records	273 2.2%	--	274 2.2%	262 2.0%

Appendix B

Indicators/Measures

Appendix B

Indicators/measures monitored by MFIMR

Critical to the work of the MFIMR Panel is maintaining an awareness of data and trends related to fetal, infant, and pregnancy-related maternal deaths and birth outcomes in Maine, as well as nationally. The insights gained through case reviews coupled with population level data guide the MFIMR Panel's efforts to improve the overall health and safety of Maine's infants and mothers.

Fetal Mortality

Although the majority of fetal deaths occur before 20 weeks gestation for unknown reasons, it is important to look at the timing and causes we have the ability to impact for better pregnancy outcomes. In Maine, fetal mortality rates are based on deaths that occur in utero beyond 19 weeks gestation. An average of 56 fetal deaths occur each year in Maine; nearly half of Maine's recorded fetal deaths occur between 20 and 27 weeks gestation. About 43% of fetal deaths of 20+ weeks of gestation have no recorded underlying cause of death. Four leading causes of death account for 53% of recorded fetal deaths in Maine.

By rank, the leading causes of fetal deaths in Maine between 2008 and 2012 were:

1. Complications of the placenta, umbilical cord and membranes
2. Congenital malformations, deformations, chromosomal abnormalities
3. Maternal complications of pregnancy
4. Disorders related to short gestation and low birth weight

Infant Mortality

The infant mortality rate includes all deaths of infants from birth to 365 days of life. An average of 78 Maine babies die before their first birthday. Five leading causes of death account for 61.4% of infant deaths in Maine. Nearly 15% of infant deaths have no underlying cause of death recorded on the death certificate.

By rank, the leading causes of infant deaths in Maine between 2007 and 2011 were:

1. Congenital malformations, deformations, and chromosomal abnormalities
2. Disorders related to short gestation and low birth weight, not elsewhere classified (low birth weight)
3. Newborn affected by maternal complication of pregnancy (maternal complications)
4. Sudden infant death syndrome (SIDS)
5. Newborn affected by complications of placenta, cord and membranes

Maternal Mortality

Although rare in Maine, across the country for every 100,000 births there are about 13 maternal deaths per year^{xx}. Maternal deaths attributed to direct obstetric causes include eclampsia and pre-eclampsia, hemorrhage and placenta previa, obstetrical tetanus, obstetric embolism, and other direct causes. Possible explanations for an observed national increase include a rise in the number of caesarean sections, particularly among women who have undergone several previous C-sections, and the rise in obesity.

Maternal mortality can also be measured using a more inclusive definition, that is, deaths to women within one year of pregnancy from any cause. Between 2002 and 2011 there were 39 deaths to Maine women who died in Maine within one year of pregnancy; 35.9% of these deaths were attributed to illness or disease, 46.2% to unintentional injuries such as motor vehicle crashes, 15.8% to assault or suicide, and 2.5% of undetermined intent. Of the deaths directly related to pregnancy or childbirth in the last decade in Maine, one death was due to an obstetric embolism, one death resulted from hemoperitoneum/ruptured tubular ectopic pregnancy and one death resulted from peripartum cardiomyopathy.

Infant Birth and Health

Maine's MFIMR Panel examines local, state, and national data on risk factors for poor birth and infant health outcomes to inform case selection and review. Many infant birth and health indicators are associated with infant health, illness, disability and death, and are among the objectives of Healthy People 2020^{xxi}, Healthy Maine 2020, and the Maternal and Child Health Bureau's Title V Program.^{xxii} Emerging issues and those with the potential to improve infant outcomes through public health and policy approaches are monitored on a regular basis. Three of these issues are summarized below.

Delivery Facility for High Risk Births: Research has shown that very low birth weight and very preterm infants not born in level III hospitals are at increased risk of neonatal or pre-discharge death.^{xxiii} Increasing the number of very low birth weight babies born at Level III hospitals may improve health outcomes for these infants. In Maine, 80.5% of very low birth weight infants were delivered at a Level III facility in 2012. MFIMR Panel members have reviewed high-risk infant delivery patterns to determine the feasibility of system-related improvements in access to appropriate birth facilities.

Sleep position: For nearly two decades, the American Academy of Pediatrics (AAP) has recommended that infants be placed on their backs to sleep, because infants who sleep prone have an increased risk of dying from sudden infant death syndrome (SIDS).^{xxiv} More than eight of ten Maine mothers most often placed their infants on their backs to sleep (80.3%) in 2011.^{xxv} Using the recommended sleeping position is more common among mothers over the age of 20 and among women with higher educational attainment.

Drug affected babies: Another emerging issue that may impact infant and maternal health is the number of infants born who have been exposed to drugs in utero. This population is of concern because they are at increased risk for preterm birth, sudden unexpected infant death (SUID) and other causes of death. Based on Maine hospital discharge data, "drug withdrawal syndrome in newborn" (based on ICD-9-CM 779.5) was noted on 273 (2.2%) of the Maine birth hospitalization discharges in 2011.^{xxvi} This is similar to the numbers reported in 2009 and 2010, but it represents a 20-fold increase since 2000, when 13 birth hospitalization discharges were noted to involve drug withdrawal syndrome. It is difficult to determine whether this noted increase represents true change in the incidence of drug withdrawal syndrome in newborns or is due, at least in part, to required reporting resulting in better recognition and diagnostic coding of the syndrome in more recent years.

Appendix C

Panel Membership

Appendix C

Maternal, Fetal and Infant Mortality Review Panel Members

Shannon Bonsey, Chief Operating Officer, Penquis CAP

Sheryl Peavey, Director, Early Childhood Systems Initiative, Maine CDCP

Jay Naliboff, Maine Chapter, American College of Obstetrics and Gynecology, Panel Chair

Kelley Bowden, Perinatal Outreach Education, Maine Medical Center, Panel Co-Chair

Cheri Sarton, CNM, Instructor, University of Maine

Nell Tharpe, CNM, Public Health Nurse Consultant, Maine CDCP

Rick Hobbs, Maine Chapter, Academy of Family Physicians

Mary Connolly, Neonatology Section – Kelley 6, Eastern Maine Medical Center

Peg Bradstreet, Clinical Nurse Specialist, Maine Medical Center

Shannon King, Women's Health, Maine CDCP

Kathy O'Connor, Perinatal Nurse, Southern Maine Medical Center

Ellie Mulcahy, Director, Genetics Program/MFIMR Panel Coordinator, Maine CDCP

Christopher Pezzullo, DO, Medical Director, Div. Population Health, Maine CDCP

Jennifer Hayman, Hospitalist, Maine Medical Center

Doug Dransfield, Retired Neonatologist

Ellen Bridge, Methodist Minister

Denise Yob, Epidemiologist, USM/Maine CDCP

Ad Hoc members

Anna Love, State Police – Public Safety

Margaret Greenwald, Chief Medical Examiner

Lisa Sockabasin, Director, Office of Health Equity, Maine CDCP

Michael Pinette, OB/GYN Associates

Appendix D

End Notes

Appendix D

End Notes

ⁱ Maine Department of Health and Human Services. (2008). Maternal and Infant Mortality Review Panel Procedures Manual and Guidelines. Augusta, ME: Maine Department of Health and Human Services, p 1.

ⁱⁱ Association of State & Territorial Health Officers, President's Challenge: online <http://www.astho.org/healthybabies/>.

ⁱⁱⁱ Personal communication, Jen Hayman, MD, Barbara Bush Children's Hospital, Portland, Maine

^{iv} Maine Department of Health and Human Services, Division of Family Health, Maternal and Child Health Services Title V Block Grant, State Narrative for Maine: Application for 2013. Available from Health Resources and Services Administration. <https://perfddata.hrsa.gov/MCHB/TVISReports/default.aspx>.

^v Maine Center for Disease Control & Prevention, *Maine Vital Records Data (Fetal Death Certificates)*. 2007-2012.

^{vi} MacDorman MF, Kirmeyer SE, Wilson EC. Fetal and perinatal mortality, United States, 2006. National vital statistics reports; vol 60 no 8. Hyattsville, MD: National Center for Health Statistics. 2012. Accessed 11/22/12 from http://www.cdc.gov/nchs/data/nvsr/nvsr60/nvsr60_08.pdf.

^{vii} Maine Center for Disease Control & Prevention, *Maine Vital Records Data (Birth Certificates and Period Linked Birth/Infant Death data set)*. 2005-2011.

^{viii} Mathews TJ, MacDorman MF. Infant mortality statistics from the 2009 period linked birth/infant death data set. National vital statistics reports; vol 61 no 8. Hyattsville, MD: National Center for Health Statistics. 2013. Accessed 10/8/13 from http://www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_08.pdf.

^{ix} Maine Center for Disease Control & Prevention, *Maine Vital Records Data (Birth Certificates and Period Linked Birth/Infant Death data set)*. 2005-2011.

^x Maine Center for Disease Control & Prevention, *Maine Vital Records Data (Death Certificates)*. 2000- 2011.

^{xi} Xu JQ, Kochanek KD, Murphy SL, Tejada-Vera B. Deaths: Final data for 2007. National vital statistics reports; vol 58 no 19. Hyattsville, MD: National Center for Health Statistics. 2010. Accessed 12/05/12 from http://www.cdc.gov/nchs/data/nvsr/nvsr59/nvsr59_10.pdf.

Murphy SL, Xu JQ, Kochanek KD. Deaths: Final data for 2010. National vital statistics reports; vol 61 no 4. Hyattsville, MD: National Center for Health Statistics. 2013. Accessed 10/8/13 from http://www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_04.pdf.

^{xii} Maine Center for Disease Control & Prevention, *Maine Vital Records Data (Death Certificates)*. 2000- 2011.

^{xiii} Maine Center for Disease Control & Prevention, *Maine Vital Records Data (Birth Certificates)*. 2010, 2011, 2012.

^{xiv} Hamilton BE, Martin JA, Ventura SJ. Births: Preliminary data for 2012. National vital statistics reports web release; vol 62 no 3. Hyattsville, MD: National Center for Health Statistics. 2013. Accessed 10/8/13 from http://www.cdc.gov/nchs/data/nvsr/nvsr62/nvsr62_03.pdf.

^{xv} Maine Center for Disease Control & Prevention, *Maine Vital Records Data (Birth Certificates)*. 2010, 2011.

^{xvi} Maternal and Child Health Bureau. Title V Information System. National Performance Measure #17:

Percent of very low birth weight infants delivered at facilities for high-risk deliveries and neonates. As reported by States in the Title V Block Grant FY 2011 Annual Report and FY 2013 Application; Form 11. Accessed 10/8/13 from <https://mchdata.hrsa.gov/TVISReports/MeasurementData/StandardNationalMeasureIndicatorSearch.aspx?MeasureType=Performance&YearType=MostRecent>

^{xvii} 2000-2009 Maine Hospital Discharge Data, using code ICD-9-CM 779.5. Analyzed by University of Southern Maine, Department of Applied Medical Sciences: Augusta Maine. 2011.

^{xviii} Centers for Disease Control and Prevention, Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion, PRAMS Online Data for Epidemiologic Research, C-PONDERV-2, Sleep Behaviors, 2010 All State data, accessed 10/08/13 from <http://apps.nccd.cdc.gov/cPONDER/default.aspx?page=DisplayAllStates&state=0&year=12&category=23&variable=28>.

^{xix} Maine Department of Health and Human Services , Maine Center for Disease Control and Prevention, Pregnancy Risk Assessment Monitoring System, 2009, 2010, 2011 PRAMS data. Accessed 11/30/2012 and 10/22/2013 from <http://www.maine.gov/dhhs/mecdc/public-health-systems/data-research/prams/>.

^{xx} Xu JQ, Kochanek KD, Murphy SL, Tejada-Vera B. Deaths: Final data for 2007. National Vital Statistics Reports 2009, vol 58 no 19. Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System: Hyattsville, MD.2010. http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58_19.pdf.

^{xxi} Department of Health and Human Services. *Healthy People 2020*. 2011. Accessed 11/29/11 from <http://www.healthypeople.gov/2020/topicsobjectives2020/default.aspx>.

^{xxii} Maternal and Child Health Bureau. Title V Information System. Performance Measure and Indicators. Accessed 11/30/12 from <https://perfdata.hrsa.gov/MCHB/TVISReports/default.aspx>.

^{xxiii} Lasswell S. M., et. al, Perinatal Regionalization for Very Low Birth Weight and Very Preterm Infants, *JAMA*. 2010; 304(9): 992-1000.

^{xxiv} Moon RY; American Academy of Pediatrics, Task Force on Sudden Infant Death Syndrome. Policy statement: SIDS and other sleep-related infant deaths: expansion of recommendations for a safe infant sleeping environment. *Pediatrics*. 2011;128(5): 1030 –103. Available at <http://pediatrics.aappublications.org/content/early/2011/10/12/peds.2011-2284>. Accessed November 2, 2011.

^{xxv} Maine Department of Health and Human Services , Maine Center for Disease Control and Prevention, Pregnancy Risk Assessment Monitoring System, 2009, 2010, 2011 PRAMS data. Accessed 11/30/2012 and 10/22/2013 from <http://www.maine.gov/dhhs/mecdc/public-health-systems/data-research/prams/>.

^{xxvi} 2000-2011 Maine Hospital Discharge Data, using code ICD-9-CM 779.5. Analyzed by University of Southern Maine, Department of Applied Medical Sciences: Augusta Maine. 2013.