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## MORTALITY REVIEW BULLETIN

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# June 2019

<p><b>Hospital deaths</b></p> <p><a href="#">A retrospective analysis of 62,571 cases of perioperative adverse events in thoracic surgery at a tertiary care teaching hospital in a developing country</a></p> <p>Li, Qiongzheng ; et al</p> <p><b>Journal of Cardiothoracic Surgery</b>, 2019, Vol.14</p> <p>Despite a long history of concerns regarding patient safety during clinical care, some patients undergoing thoracic surgery continue to experience adverse events (AEs). AEs are a major significant source of perioperative morbidity and mortality following thoracic surgery. This study analysed the causes, treatment and prognosis of perioperative AEs to provide a reference for further surgical safety. The rate of perioperative AEs after thoracic surgery was 0.2%. AEs must be identified and treated immediately. An important factor in anaesthesia-related events was respiratory management. Two major clinical manifestations of surgery-related events were cardiac arrest and massive haemorrhage. Cardiac arrest was the major factor contributing to AEs, but its adverse consequences could be avoided with timely discovery and proper treatment. Massive haemorrhage is a significant cause of mortality that can be prevented with a surgeon's early diagnosis and appropriate interventions.</p>	<p><b>Neonate, infant and maternal deaths (continued)</b></p> <p><a href="#">Systolic Hypertension, Preeclampsia-Related Mortality, and Stroke in California.</a></p> <p>Judy A.E. et al</p> <p><b>Obstetrics and gynecology</b>. 09 May 2019.</p> <p>Describes the clinical characteristics of stroke and opportunities to improve care in a cohort of preeclampsia-related maternal mortalities in California. Stroke is the major cause of maternal mortality associated with preeclampsia or eclampsia. All but one patient in this series of strokes demonstrated severe elevation of systolic blood pressure, whereas other variables were less consistently observed. Antihypertensive treatment was not implemented in the majority of cases. Opportunities for care improvement exist and may significantly affect maternal mortality.</p> <p><a href="#">Putting the "M" back in maternal-fetal medicine: A 5-year report card on a collaborative effort to address maternal morbidity and mortality in the United States.</a></p> <p>D'Alton ME et al.</p> <p><b>Am J Obstet Gynecol</b>. 2019 Mar 5. pii: S0002-9378(19)30434-X.</p>
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[Stroke mortality audit using the Structured Judgement Review method.](#)

Thomas J, Saw KL, Adie K.

**Clin Med (Lond).** 2019 Mar;19(2):185-187.

Mortality data provided by the Sentinel Stroke National Audit Programme demonstrated the Royal Cornwall Hospitals Trust (RCHT) to have a higher than national average mortality ratio.<sup>1</sup> In response to this, the RCHT stroke department undertook a mortality review of patients admitted with stroke making use of the Structured Judgement Review (SJR) process.<sup>2</sup> The review found all patients were deemed as receiving adequate, good or excellent care. There were no cases where death was deemed as definitely avoidable. The team found the SJR to be a useful, validated tool for mortality review though recognised specific limitations to its use and wider limitations within our review process. Focused areas for improvement derived from the review included improving compliance with local palliative care guides, improved documentation, links with primary care via Care Quality Commission atrial fibrillation group and consideration of improved scanning facilities. We also acknowledged wider unaccounted factors which may impact stroke mortality and thus influence perceived mortality ratios.

[Autopsy Standardized Mortality Review: A Pilot Study Offering a Methodology for Improved Patient Outcomes.](#)

Early CA, et al.

**Acad Pathol.** 2019 Feb 12;6:2374289519826281.

A standardized mortality review of hospital autopsies identified discrepancies between clinical diagnoses and

The Centers for Disease Control and Prevention have demonstrated continuous increased risk for maternal mortality and severe morbidity with racial disparities among non-Hispanic black women an important contributing factor. More than 50,000 women experienced severe maternal morbidity in 2014, with a mortality rate of 18.0 per 100,000, higher than in many other developed countries. In 2012, the first "Putting the 'M' back in Maternal-Fetal Medicine" session was held at the Society for Maternal-Fetal Medicine's (SMFM) Annual Meeting. With the realization that rising risk for severe maternal morbidity and mortality required action, the "M in MFM" meeting identified the following urgent needs: (i) to enhance education and training in maternal care for maternal-fetal medicine (MFM) fellows; (ii) to improve the medical care and management of pregnant women across the country; and (iii) to address critical research gaps in maternal medicine. Since that first meeting, a broad collaborative effort has made a number of major steps forward, including the proliferation of maternal mortality review committees, advances in research, increasing educational focus on maternal critical care, and development of comprehensive clinical strategies to reduce maternal risk. Five years later, the 2017 M in MFM meeting served as a "report card" looking back at progress made but also looking forward to what needs to be done over the next 5 years, given that too many mothers still experience preventable harm and adverse outcomes.

autopsy findings, unexpected deaths, adequacy of diagnostic workup, presence of adverse event, and type of a quality issue if present. The standardized review elements were chosen based on a review of quality metrics commonly used by hospitals. The review was completed by the pathologist based on their initial autopsy findings. The final autopsy report was later reviewed to confirm the initial review findings. Major discrepancies in diagnosis were categorized as class I or II based on the modified Goldman criteria. Ninety-six hospital autopsy cases from January 2015 to February 2018 were included in the study. The overall major discrepancy rate was 27%. Class I discrepancies, where a diagnosis found at autopsy might have improved survival had it been made pre-mortem, were identified in 16% of cases. Categories associated with increased discrepancy rates included unexpected deaths, inadequate workup, abnormal labs or imaging not addressed, and certain quality issues. Deaths not expected at admission but expected at the time of death, those with adverse events, those within 48 hours of a procedure, those within 48 hours of admission, those with physician-specific quality issues, and those with system or process issues were not significantly related to diagnostic accuracy.

#### **Neonate, infant and maternal deaths**

[Severe Maternal Morbidity, A Tale of 2 States Using Data for Action-Ohio and Massachusetts.](#)

Conrey EJ, et al.

**Matern Child Health J.** 2019 May 4.

Describes how Ohio and Massachusetts explored severe maternal morbidity (SMM) data, and used these data for increasing awareness and driving practice changes to

[Review of Maternal Mortality at a Tertiary Care Hospital: What Have we Achieved?](#)

Mittal P, et al

**J Obstet Gynaecol India.** 2019 Apr;69(2):149-154.

Mothers are the nurturing pillar of the family. When a woman dies or becomes ill, either during or after giving birth, the consequences have the potential to affect not only the woman herself, but her family, society and the nation as well. Strengthening of the peripheral centers, hiring competent staffs and adequate blood bank facilities together with reference linkages must be done. Auditing the causes for maternal mortality is extremely helpful to identify the preventable causes and delays.

[Checking the pregnancy checkbox: Evaluation of a four-state quality assurance pilot.](#)

Daymude AEC et al.

**Birth.** 2019 Mar 14. doi: 10.1111/birt.12425.

[Epub ahead of print]

The 2003 revision of the standard United States death certificate included a set of "pregnancy checkboxes" to ascertain whether a woman was pregnant at the time of her death or within the preceding year. Studies validating the pregnancy checkbox have indicated a potentially high number of errors, resulting in inflated maternal mortality rates. In response to concerns about pregnancy checkbox data quality, four state health departments implemented a quality assurance

reduce maternal morbidity and mortality. Despite data access differences, examination of SMM data informed public health practice in both states. Ohio and Massachusetts maximized available state data for SMM investigation, which other states might similarly use to understand trends, identify high risk populations, and suggest clinical or population level interventions to improve maternal morbidity and mortality.

[Neonatal deaths in Cambodia: findings from a community-based mortality review.](#)

Bazzano A.N. et al

**BMC Res Notes.** 2019 Apr 24;12(1):236.

The aim of this study was to describe potential factors contributing to neonatal mortality in Takeo, Cambodia through assessment of verbal autopsies collected following newborn deaths in the community. The mortality review was nested within a trial of a behavioral intervention to improve newborn survival, and was conducted after the close of the trial, within the study setting. The World Health Organization standardized definition of neonatal mortality was employed, and two pediatricians independently reviewed data collected from each event to assign a cause of death.

[Quality Improvement Opportunities Identified Through Case Review of Pregnancy-Related Deaths From Cardiovascular Disease](#)

VanOtterloo, L.R et al

pilot project examining the accuracy of the pregnancy checkbox for 2016 deaths. Implementing quality assurance processes for the pregnancy checkbox may ultimately improve state and national maternal death data quality.

[Pregnancy Outcomes in US Prisons, 2016–2017](#)

Sufrin, C. et al

**American Journal of Public Health,** May 2019, Vol.109(5), pp.799-805

Collects national data on pregnancy frequencies and outcomes among women in US state and federal prisons. Our study showed that the majority of prison pregnancies ended in live births or miscarriages. Our findings can enable policymakers, researchers, and public health practitioners to optimize health outcomes for incarcerated pregnant women and their newborns, whose health has broad sociopolitical implications.

[Examination of a death due to cardiomyopathy by a maternal mortality review committee.](#)

Shellhaas, C.S. et al.

**American Journal of Obstetrics & Gynecology;** Jul 2019; vol. 221 (no. 1); p. 1-8

Deaths related to pregnancy were relatively common in the United States at the beginning of the twentieth century. A dramatic reduction of 99% in maternal mortality rate, from 850.0-7.5 per

**JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing**; May 2019; vol. 48 (no. 3); p. 263-274

After several decades of declining rates, maternal mortality climbed in California from a three-year moving average of 9.4 deaths per 100,000 live births in 1999-2001 to a high of 14.0 deaths per 100,000 live births in 2006-2008 ( $p < 0.001$ ). The Maternal, Child and Adolescent Health Division of the California Department of Public Health developed a mixed method approach to identify and investigate maternal deaths to inform prevention strategies. This paper describes the methodology of the California Pregnancy-Associated Mortality Review (CA-PAMR) and its advantages for improved surveillance, cause of death analysis, and translation of findings.

[Quality Improvement Opportunities Identified Through Case Review of Pregnancy-Related Deaths From Preeclampsia/Eclampsia.](#)

Morton CH, et al

**J Obstet Gynecol Neonatal Nurs.** 2019 May;48(3):275-287.

To analyze quality improvement opportunities (QIOs) identified through review of cases of maternal death from preeclampsia/eclampsia by the California Pregnancy-Associated Mortality Review Committee. Findings from our study suggest numerous opportunities to improve care and outcomes for women who died of preeclampsia/eclampsia in California from 2002 to 2007. Facilities need to adopt and implement standardized policies and protocols about the diagnosis and treatment of preeclampsia/eclampsia. Clinician education about key warning signs is critical, as is ensuring that women understand the signs and symptoms that warrant immediate clinical attention. Death from

100,000 live births from 1900-1982, is 1 of the most noteworthy public health success stories of the time period. This plateau continued until the late 1990s when the maternal mortality rate began to rise again. The reasons for this increase are unclear. Vital statistics data alone cannot answer the many questions surrounding this increase. The need for detailed and reliable information about causes of death and underlying factors has led to the development of state- and urban-based maternal death reviews. Although processes may vary, an expert panel is convened to review individual cases and make recommendations for systems change. Review of maternal deaths is considered to be a core public health function. Documenting both clinical and nonclinical contributors to maternal death are critical to influence public opinion, develop coalitions for collective impact, and engage at risk populations in proposing interventions.

[Maternal drug-related death and suicide are leading causes of post-partum death](#)

in California

Goldman-Mellor S. et al

**Am J Obstet Gynecol.** 2019 Jun 4. pii: S0002-9378(19)30747-1.

Reducing maternal mortality is a priority in the U.S. and worldwide. Drug-related deaths and suicide may account for a substantial and growing portion of maternal deaths, yet information on the incidence of and sociodemographic variation in these deaths is scarce. Deaths due to drugs and

preeclampsia/eclampsia is very preventable, and efforts to reduce maternal mortality and morbidity from this serious condition of pregnancy are needed at all levels.

[Quality Improvement Opportunities Identified Through Case Review of Pregnancy-Related Deaths From Venous Thromboembolism.](#)

VanOtterloo LR, et al

**J Obstet Gynecol Neonatal Nurs.** 2019 May;48(3):300-310.

To analyze quality improvement opportunities (QIOs) identified through review of cases of maternal death from venous thromboembolism (VTE) by the California Pregnancy-Associated Mortality Review Committee. To decrease the occurrence of maternal death from VTE in the United States, consistent and thorough education regarding VTE signs and symptoms must be given to all women and their families during pregnancy and the postpartum period. Maternity care facilities and providers should implement preventive measures, including standardized use of VTE prophylaxis, improved methods to recognize the signs and symptoms of VTE, and improved follow-up after hospital discharge.

[Quality Improvement Opportunities Identified Through Case Review of Pregnancy-Related Deaths From Obstetric Hemorrhage.](#)

Seacrist MJ, et al.

**J Obstet Gynecol Neonatal Nurs.** 2019 May;48(3):288-299.

To analyze quality improvement opportunities (QIOs) identified through review of cases of maternal death from

suicide are a major contributor to mortality in the post-partum period and warrant increased clinical attention, including recognition by physicians and Maternal Mortality Review Committees as a medical cause of death. Importantly, ED and inpatient hospital visits may serve as a point of identification of - and eventually, prevention for - women at risk for these deaths.

[Translating Maternal Mortality Review Into Quality Improvement Opportunities in Response to Pregnancy-Related Deaths in California.](#)

Morton CH. et al

**J Obstet Gynecol Neonatal Nurs.** 2019 May;48(3):252-262.

To describe quality improvement opportunities (QIOs) associated with the five leading causes of pregnancy-related death in California and the methods by which the QIOs were collected by the California Pregnancy-Associated Mortality Review committee. Results from our study show the utility and transferability of the first three domains of the 4R Framework as applied to quality improvement data from a large statewide maternal mortality review. Nursing leadership is necessary to support and guide national, statewide, and local efforts to improve the quality of maternity care through the implementation of quality improvement at the system, facility, clinician, and patient levels.

obstetric hemorrhage by the California Pregnancy-Associated Mortality Review Committee. Hemorrhage is the most preventable cause of maternal death in California. Morbidity and mortality from hemorrhage can be prevented if birth facilities and maternity care clinicians align local practices with national safety guidelines.

[Vital Signs: Pregnancy-Related Deaths, United States, 2011-2015, and Strategies for Prevention, 13 States, 2013-2017.](#)

Petersen, E.E. et al

**MMWR Morb Mortal Wkly Rep.** 2019 May 10;68(18):423-429.

Approximately 700 women die from pregnancy-related complications in the United States every year. Data from CDC's national Pregnancy Mortality Surveillance System (PMSS) for 2011-2015 were analyzed. Pregnancy-related mortality ratios (pregnancy-related deaths per 100,000 live births; PRMRs) were calculated overall and by sociodemographic characteristics. The distribution of pregnancy-related deaths by timing relative to the end of pregnancy and leading causes of death were calculated. Detailed data on pregnancy-related deaths during 2013-2017 from 13 state maternal mortality review committees (MMRCs) were analyzed for preventability, factors that contributed to pregnancy-related deaths, and MMRC-identified prevention strategies to address contributing factors. Pregnancy-related deaths occurred during pregnancy, around the time of delivery, and up to 1 year postpartum; leading causes varied by timing of death. Approximately three in five pregnancy-related deaths were preventable.

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