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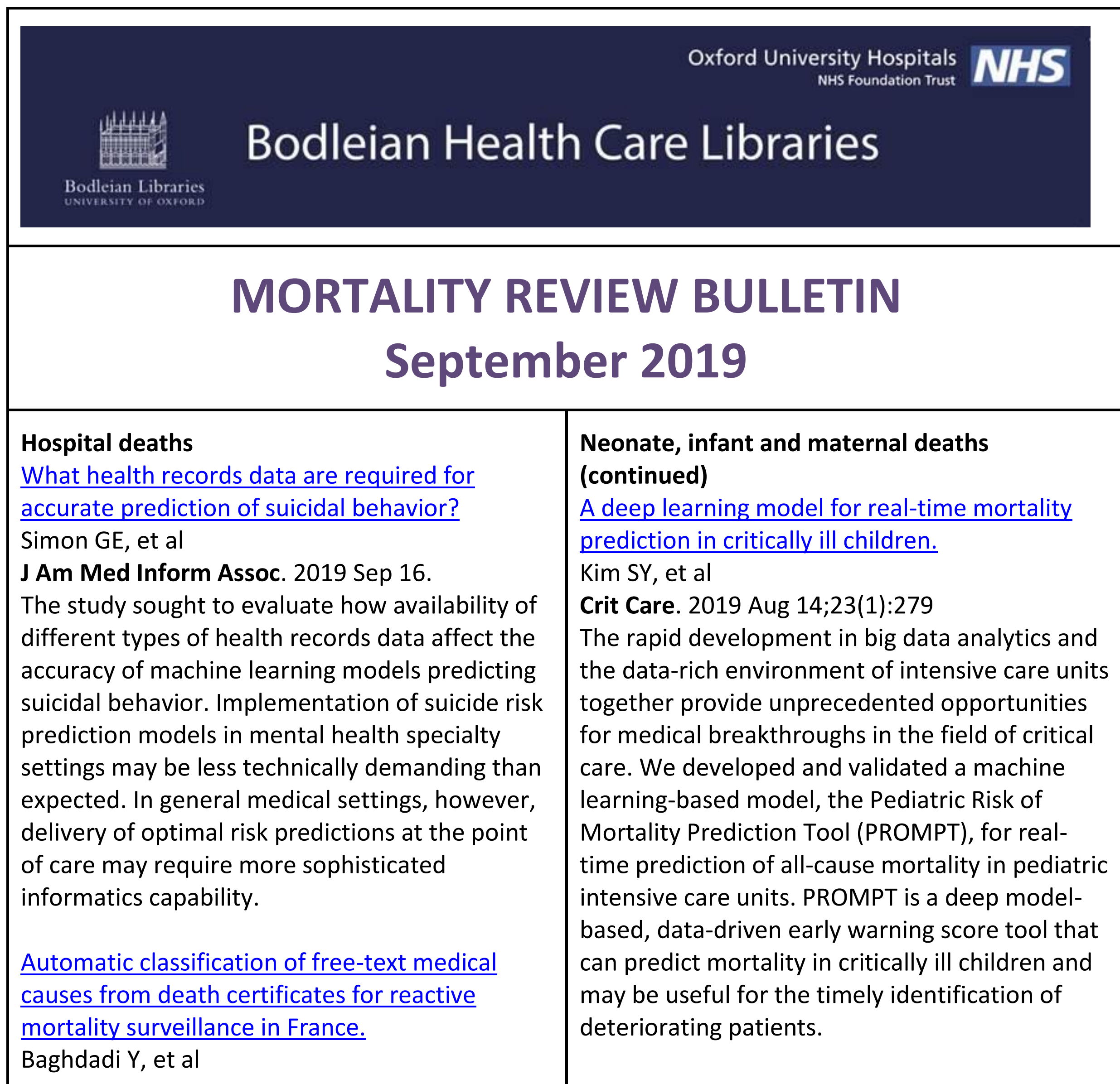

MORTALITY REVIEW BULLETIN
September 2019

Hospital deaths

What health records data are required for accurate prediction of suicidal behavior?
Simon GE, et al
J Am Med Inform Assoc. 2019 Sep 16.
The study sought to evaluate how availability of different types of health records data affect the accuracy of machine learning models predicting suicidal behavior. Implementation of suicide risk prediction models in mental health specialty settings may be less technically demanding than expected. In general medical settings, however, delivery of optimal risk predictions at the point of care may require more sophisticated informatics capability.

Automatic classification of free-text medical causes from death certificates for reactive mortality surveillance in France.
Baghdadi Y, et al

Neonate, infant and maternal deaths (continued)

A deep learning model for real-time mortality prediction in critically ill children.
Kim SY, et al
Crit Care. 2019 Aug 14;23(1):279
The rapid development in big data analytics and the data-rich environment of intensive care units together provide unprecedented opportunities for medical breakthroughs in the field of critical care. We developed and validated a machine learning-based model, the Pediatric Risk of Mortality Prediction Tool (PROMPT), for real-time prediction of all-cause mortality in pediatric intensive care units. PROMPT is a deep model-based, data-driven early warning score tool that can predict mortality in critically ill children and may be useful for the timely identification of deteriorating patients.

Int J Med Inform. 2019 Jul 6;131:103915.
Mortality surveillance is of fundamental importance to public health surveillance. The real-time recording of death certificates, thanks to Electronic Death Registration System (EDRS), provides valuable data for reactive mortality surveillance based on medical causes of death in free-text format. Reactive mortality surveillance is based on the monitoring of mortality syndromic groups (MSGs). An MSG is a cluster of medical causes of death (pathologies, syndromes or symptoms) that meets the objectives of early detection and impact assessment of public health events. The aim of this study is to implement and measure the performance of a rule-based method and two supervised models for automatic free-text cause of death classification from death certificates in order to implement them for routine surveillance. The high performance of the rule-based method and SVM2 model will allow us to set-up a reactive mortality surveillance system based on free-text death certificates. This surveillance will be an added-value for public health decision making.

Medical Student Involvement and Learning Objectives in Morbidity and Mortality Conferences: A National Survey of the Association for Surgical Education's Committee of Clerkship Directors.
Leraas HJ, et al
J Surg Educ. 2019 Sep 6. pii: S1931-7204(19)30312-5.
Despite implementation of Morbidity and Mortality (M&M) Conference across surgical graduate medical education, sparse literature exists regarding the attendance and involvement of medical students. We sought to examine student involvement and learning objectives for M&M on a national level. It is the national standard for medical students to attend weekly M&M. Student learning objectives reflect desires to improve exposure to this style of teaching conference and understanding the gravity of medical error.

Morbidity and mortality meetings to improve patient safety: a survey of 109 consultant surgeons in London, United Kingdom.
Sinitsky DM, et al

Child death review statutory and operational guidance: maximising learning from child deaths.
Fraser J, et al
Arch Dis Child. 2019 Sep 6. pii: archdischild-2019-317431.
A total of 4015 deaths of children aged between 0 and 18 years were registered in England and Wales in 2017.1 Every one of these deaths was a devastating loss that profoundly affected parents as well as siblings, grandparents, extended family and friends. Each death also affected the professionals involved in caring for the child during or at the end of their life. If child mortality rates are regarded as a 'yardstick' of a country's ability to care for the most vulnerable in society, then the UK has fallen far behind its European neighbours.2 3 While the reasons for this are complex, we are not performing well as a nation in addressing known modifiable factors that impact on children's deaths. This paper summarises the background to child death review in England, the evolving regulatory and legislative landscape and highlights the essential aspects of the new statutory and operational guidance pertinent to practising clinicians.

Monitoring severe acute maternal morbidity across Europe: A feasibility study.
Chantry AA, et al
Paediatr Perinat Epidemiol. 2019 Sep 9.
Monitoring severe acute maternal morbidity (SAMM) appears essential for optimising care and informing health care policies, especially given changes in obstetric practices and mother profiles. International comparisons can identify areas where improvement is needed, but the comparability of indicators must be evaluated. In association with diagnosis codes indicating obstetric haemorrhage, hysterectomy and RBC transfusion appear to be good candidates for surveillance of maternal morbidity in Europe.

Changing the conversation: Applying a health equity framework to maternal mortality reviews.
Kramer MR, et al.
Am J Obstet Gynecol. 2019 Sep 6. pii: S0002-9378(19)31104-4
The risk of maternal death in the U.S. is higher than peer nations and rising, and varies dramatically by the race and place of residence

Patient Saf Surg. 2019 Aug 19;13:27.
Morbidity & Mortality (M&M) meetings are a critical component of clinical governance. They have the potential to improve patient outcomes, quality of care, attitudes towards patient safety and they contribute to the education of clinical staff. This study aimed to evaluate individual surgeons' experience of these meetings, and to explore their perceived usefulness and barriers to open discussion of adverse outcomes. Many surgeons in London do not routinely attend M&M meetings, despite these occurring within 'protected time'. There may be a willingness to talk openly about complications, though there exists a fear of litigation. The nature, content and learning potential of such open M&M discussions should be explored in future research.

Community pharmacy medication review, death and re-admission after hospital discharge: a propensity score-matched cohort study.
Lapointe-Shaw L, et al
BMJ Qual Saf. 2019 Aug 8. pii: bmjqs-2019-009545.
In-hospital medication review has been linked to improved outcomes after discharge, yet there is little evidence to support the use of community pharmacy-based interventions as part of transitional care. We wanted to determine whether receipt of a postdischarge community pharmacy-based medication reconciliation and adherence review is associated with a reduced risk of death or re-admission. Among older adults, receipt of a community pharmacy-based medication reconciliation and adherence review was associated with a small reduced risk of short-term death or re-admission. Due to the possibility of unmeasured confounding, experimental studies are needed to clarify the relationship between postdischarge community pharmacy-based medication review and patient outcomes.

Nurse staffing, nursing assistants and hospital mortality: retrospective longitudinal cohort study.
Griffiths P. et al
BMJ Qual Saf. 2019 Aug;28(8):609-617

of the woman. Critical efforts to reduce maternal mortality include patient risk stratification and system-level quality improvement efforts targeting specific aspects of clinical care. These efforts are important for addressing the causes of an individual's risk, but research to date suggests that individual risk factors alone do not adequately explain between-group disparities in pregnancy-related death by race, ethnicity, or geography. By considering evidence-informed community and regional resources and policies for addressing these factors, novel prevention recommendations, including recommendations that extend outside the realm of the formal health care system, may emerge.

Inconsistent classification of unexplained sudden deaths in infants and children hinders surveillance, prevention and research: recommendations from The 3rd International Congress on Sudden Infant and Child Death.
Goldstein RD, et al
Forensic Sci Med Pathol. 2019 Sep 9.
This report details the proceedings and conclusions from the 3rd International Congress on Unexplained Deaths in Infants and Children, held November 26-27, 2018 at the Radcliffe Institute at Harvard University. The Congress was motivated by the increasing rejection of the diagnosis Sudden Infant Death Syndrome (SIDS) in the medical examiner community, leading to falsely depressed reported SIDS rates and undermining the validity and reliability of the diagnosis, which remains a leading cause of infant and child mortality. We describe the diagnostic shift away from SIDS and the practical issues contributing to it.

Inequalities and stillbirth in the UK: a meta-narrative review
Kingdon C, et al
BMJ Open. 2019 Sep 12;9(9):e029672.
We review what is known about the relationship between stillbirth and inequalities from different disciplinary perspectives to inform stillbirth prevention strategies. Research investigating inequalities and stillbirth in the UK is underdeveloped. This is despite repeated evidence of an association between stillbirth risk and poverty, and stillbirth risk, poverty and

We determine the association between daily levels of registered nurse (RN) and nursing assistant staffing and hospital mortality. Lower RN staffing and higher levels of admissions per RN are associated with increased risk of death during an admission to hospital. These findings highlight the possible consequences of reduced nurse staffing and do not give support to policies that encourage the use of nursing assistants to compensate for shortages of RNs.

Morbidity and Mortality Conference Can Reduce Avoidable Morbidity in Neurosurgery: Its Educational Effect on Residents and Surgical Safety Outcomes.
Kashiwazaki D
World Neurosurg. 2019 Sep 12. pii: S1878-8750(19)32448-9.
Morbidity and mortality conferences (MMCs) are an established feature of clinical practice. They enable all surgical staff to share their experiences to promote constructive criticism for finding ways to prevent the repetition of errors. With the emergence of the management of patient safety in the healthcare system in the 1990s, several authors suggested that MMCs could be conducted to improve the quality and safety of healthcare. However, up until the last decade, such conferences were relatively unstructured and predominantly focused on individual "mistakes" rather than system-based errors. Since their inception around 2000, MMCs have played a pivotal role in resident education. Commensurate with the patient safety movement, the focus of practice improvement has changed from a focus on individual errors to quality and systems-based process improvements, establishing them as core training competencies. MMCs are now widely implemented in hospitals. However, evidence supporting their effectiveness to educate neurosurgeons is still limited. This study aimed to assess the efficacy of MMCs on education in neurosurgical practice.

Neonate, infant and maternal deaths
PARENTS 2 study: consensus report for parental engagement in the perinatal mortality review process.

ethnicity. A specific research forum is required to lead the development of research and policy in this area, which can harness the multiple relevant research perspectives and address the intersections between different policy areas.

Importance of research in reducing maternal morbidity and mortality rates.
Chakhtoura N, et al
Am J Obstet Gynecol. 2019 Sep;221(3):179-182.
Maternal death in the United States is a major public health issue that has captured the attention of the popular press, the US Congress, and the healthcare and scientific communities. Scientists, practitioners, and policy makers have become aware of the lack of valid data, especially given that the previously identified factors that contribute to high levels of maternal complications in the United States (older maternal age, obesity, and comorbid conditions) do not completely explain recent data on severe morbidity and subsequent death.

Strengths and weaknesses of national confidential case reviews of maternal and newborn morbidity and mortality.
Knight M.
Early Hum Dev. 2019 Aug 28:104848.
Confidential case reviews have been established as a means to improve the quality of maternity care for several decades. Impacts of these programmes, while difficult to demonstrate, have been observed on maternal and neonatal mortality rates, maternity policy and clinical practice. At a national level, maternal and newborn case review programmes identify messages to improve care through multidisciplinary review of medical records of all, or a sample, of mothers and infants who have died or have a specific morbidity. The major strength of such national programmes is that they allow lessons to be identified to improve care at all levels of the health system from national government policy to individual clinical practice. However, strengthening translation of recommendations into action, whether through a more active link with implementation processes or further development of dissemination strategies grounded in

Bakhbakhi D, et al
Ultrasound Obstet Gynecol. 2019 Aug;54(2):215-224.
The PARENTS 1 study (Parents' Active Role and ENgagement in The review of their Stillbirth/perinatal death) found that parents would endorse the opportunity to give feedback into the perinatal mortality review (PNMR) process. In subsequent focus groups, healthcare professionals were positive about parental engagement, although they considered that there may be significant challenges. The objective of this study was to develop core principles and recommendations for parental engagement in PNMR in the UK. Key national stakeholders were unanimously supportive of parental engagement in the PNMR process and agreed on core principles to make this process feasible, meaningful and robust. A 6-month pilot of parental engagement in the PNMR process (PARENTS 2 study) in two UK units took place after the consensus on core principles.

New WHO guidelines on paediatric mortality and morbidity auditing.
Duke T, Irimu G, Were W.
Arch Dis Child. 2019 Sep;104(9):831-832.
Although substantial progress has been made in reducing child deaths globally since 1990, many preventable child deaths still occur due to poor quality of care and adverse social and environmental circumstances. Mortality audit and review can help us learn important lessons from child deaths that can guide quality improvement and public policy. Until now there has been no guidance on how to conduct child mortality and morbidity auditing, now the WHO has this in a new publication,10 available at https://www.who.int/maternal_child_adolescent/documents/improving-quality-paediatric-care/en/

Severe maternal morbidity surveillance: Monitoring pregnant women at high risk for prolonged hospitalisation and death.
Dzakpasu S, et al
Paediatr Perinat Epidemiol. 2019 Aug 12.
There is no international consensus on the definition and components of severe maternal morbidity (SMM). implementation science, is an important continuing focus.

Maternal Mortality in the United States and the HOPE Registry.
Grodzinsky A, et al
Curr Treat Options Cardiovasc Med. 2019 Jul 25;21(9):42
Maternal mortality in the United States is highest among all developed nations and continues to rise. The leading cause of morbidity and mortality during pregnancy and the postpartum period is cardiovascular disease. While there are large European and Canadian studies exploring the care and outcomes of moms with heart disease in pregnancy, there are no large prospective studies to guide the care of this growing group of patients in the US. We review the current approach to the management of patients with heart disease in pregnancy and the gaps in knowledge thereof. Currently, antenatal management and delivery planning are highly variable for patients with heart disease in pregnancy and maternal risk models' application to the US patient population is limited by their derivation from an international cohort of patients and their focus on patients with congenital heart disease. As the need for interdisciplinary care between cardiologists and obstetricians becomes evident, and as broad research efforts within this space are very much needed, we propose a research collaborative called the Heart Outcomes in Pregnancy: Expectations (HOPE) for Mom and Baby Registry. The HOPE Registry aims to address key clinical questions surrounding the preconception period, antenatal care, delivery planning and outcomes, and long-term postpartum care and outcomes of these unique patients. We have made progress in recent years by recognizing the clinical need to address and standardize the management of patients with heart disease in pregnancy. We now must initiate and propel US-based cardio-obstetrics research to address key gaps in knowledge and variability in the care of patients with heart disease in pregnancy.

We propose a comprehensive definition of SMM, to create an empirically justified list of SMM types and subtypes, and to use this to examine SMM in Canada. The proposed definition of SMM and associated list of SMM subtypes could be used for standardised SMM surveillance, with rate ratios and PAFs associated with specific SMM types/subtypes serving to inform clinical practice and public health policy.	

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