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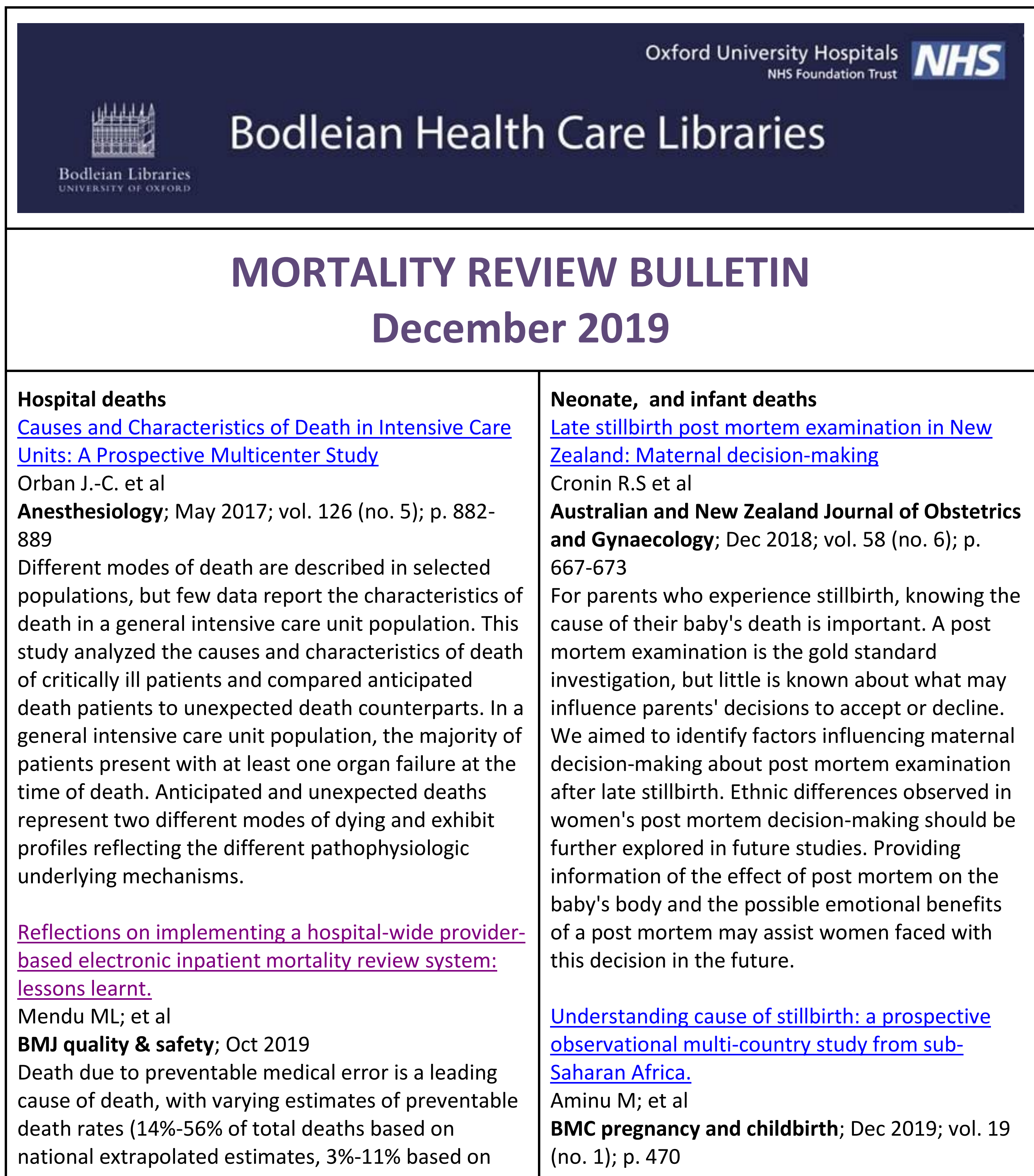

MORTALITY REVIEW BULLETIN
December 2019

Hospital deaths

Causes and Characteristics of Death in Intensive Care Units: A Prospective Multicenter Study
Orban J.-C. et al
Anesthesiology; May 2017; vol. 126 (no. 5); p. 882-889
Different modes of death are described in selected populations, but few data report the characteristics of death in a general intensive care unit population. This study analyzed the causes and characteristics of death of critically ill patients and compared anticipated death patients to unexpected death counterparts. In a general intensive care unit population, the majority of patients present with at least one organ failure at the time of death. Anticipated and unexpected deaths represent two different modes of dying and exhibit profiles reflecting the different pathophysiologic underlying mechanisms.

Reflections on implementing a hospital-wide provider-based electronic inpatient mortality review system: lessons learnt.
Mendu ML; et al
BMJ quality & safety; Oct 2019
Death due to preventable medical error is a leading cause of death, with varying estimates of preventable death rates (14%-56% of total deaths based on national extrapolated estimates, 3%-11% based on

Neonate, and infant deaths

Late stillbirth post mortem examination in New Zealand: Maternal decision-making
Cronin R.S et al
Australian and New Zealand Journal of Obstetrics and Gynaecology; Dec 2018; vol. 58 (no. 6); p. 667-673
For parents who experience stillbirth, knowing the cause of their baby's death is important. A post mortem examination is the gold standard investigation, but little is known about what may influence parents' decisions to accept or decline. We aimed to identify factors influencing maternal decision-making about post mortem examination after late stillbirth. Ethnic differences observed in women's post mortem decision-making should be further explored in future studies. Providing information of the effect of post mortem on the baby's body and the possible emotional benefits of a post mortem may assist women faced with this decision in the future.

Understanding cause of stillbirth: a prospective observational multi-country study from sub-Saharan Africa.
Aminu M; et al
BMC pregnancy and childbirth; Dec 2019; vol. 19 (no. 1); p. 470

single-centre estimates). Yet, how best to reduce preventable mortality in hospitals remains unknown. In this article, we detail lessons learnt from implementing a hospital-wide, automated, real-time, electronic mortality reporting system that relies on the opinions of front-line clinicians to identify opportunities for improvement. We also summarise data obtained regarding possible preventability, systems issues identified and addressed, and challenges with implementation. We outline our process of survey, evaluation, escalation and tracking of opportunities identified through the review process. Through implementation, we found that a hospital-wide mortality review process that elicits feedback from front-line providers is feasible, and provides valuable insights regarding potential preventable mortality and prioritising actionable opportunities for care delivery improvements.

Improve healthcare quality through mortality committee: Retrospective analysis of bambino Gesu children hospital's ten years' experience 2008-2017
Offidani C. et al
Current Pharmaceutical Biotechnology; 2019; vol. 20 (no. 8); p. 635-642
Healthcare quality improvements are one of the most important goals to reach a better and safer healthcare system. Reviewing in-hospital mortality data is useful to identify areas for improvement, and to monitor the impact of actions taken to avoid preventable cases, such as those related to healthcare associated infections (HAI). Introduction of the mortality review committee has proved to be a valid instrument to improve the quality of the care provided in a hospital, allowing early identification of care gaps that could lead to an increase in mortality rates.

Using sequential Plan-Do-Study-Act cycles to facilitate implementation of a morbidity and mortality review process.
Davies A; Offer M
Future healthcare journal; Jun 2019; vol. 6 (no. Suppl 2); p. 79
Approximately 50% of deaths occur in hospital and it is estimated that 3–5% of these deaths are preventable. Morbidity and mortality (M&M) meetings allow these deaths, in addition to expected deaths and cases leading to morbidity to be reviewed. Implementation of an M&M process provides an ideal opportunity to use a Plan-Do-Study-Act (PDSA) framework. A PDSA cycle enables small-scale change to occur before widespread implementation of a process. Using sequential PSDA cycles it is possible for stakeholders to feedback throughout the process and adjustments to be made accordingly.

Every year, an estimated 2.6 million stillbirths occur worldwide, with up to 98% occurring in low- and middle-income countries (LMIC). There is a paucity of primary data on cause of stillbirth from LMIC, and particularly from sub-Saharan Africa to inform effective interventions. This study aimed to identify the cause of stillbirths in low- and middle-income settings and compare methods of assessment. For the majority of stillbirths, an underlying likely cause of death could be determined despite limited diagnostic capacity. In these settings, more diagnostic information is, however, needed to establish a more specific cause of death for the majority of stillbirths. Existing computer-based algorithms used to assign cause of death require revision.

Learning from loss for professionals and parents.
McEwan, Tom
British Journal of Midwifery; Nov 2019; vol. 27 (no. 11); p. 677-677
The author discusses the first annual report from the perinatal mortality review tool published on October 10, 2019 titled "Learning from standardised reviews when babies die." Topics mentioned include percentage of parents who expressed any concern about the care they had received, monitoring failures that were identified, and students' fear of a mother or baby dying in their care.

Quality of investigations into unexpected deaths of infants and young children in England after implementation of national child death review procedures in 2008: a retrospective assessment.
Fleming P; et al
Archives of disease in childhood; Sep 2019
In 2008, new statutory national procedures for responding to unexpected child deaths were introduced throughout England. There has, to date, been no national audit of these procedures. Statutory procedures need to be followed more closely. The implementation of a national child mortality database from 2019 will allow continuing audit of the quality of investigations after unexpected child deaths. An important area amenable to improvement is increased involvement by paediatricians.

Overview and Development of the Child Health and Mortality Prevention Surveillance Determination of Cause of Death (DeCoDe) Process and DeCoDe Diagnosis Standards.
Blau DM; et al
Clinical infectious diseases : an official publication of the Infectious Diseases Society of America; Oct 2019; vol. 69 (no. Supplement_4); p.

Maternal deaths

The way to move beyond the numbers: the lesson learnt from the Italian Obstetric Surveillance System.
Donati S; et al
Annali dell'Istituto superiore di sanita; 2019; vol. 55 (no. 4); p. 363-370
We describe the Italian Obstetric Surveillance System (ItOSS) investigating maternal death through incident case reporting and confidential enquiries. A maternal mortality surveillance system, including incidence reporting and confidential enquiries along with a retrospective analysis of administrative data sources, emerged as the best option for case ascertainment and for preventing avoidable maternal deaths.

Maternal drug-related death and suicide are leading causes of postpartum death in California.
Goldman-Mellor S; Margerison CE
American journal of obstetrics and gynecology; Nov 2019; vol. 221 (no. 5); p. 489.e1-489.e9
Reducing maternal mortality is a priority in the United States 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 caused by drugs and suicide are a major contributor to mortality in the postpartum period and warrant increased clinical attention, including recognition by physicians and Maternal Mortality Review Committees as a medical cause of death. Importantly, emergency department and inpatient hospital visits may serve as a point of identification of, and eventually prevention for, women at risk for these deaths.

Impact of State-Level Changes on Maternal Mortality: A Population-Based, Quasi-Experimental Study.
Hawkins SS; et al
American journal of preventive medicine; Dec 2019
Recent increases in maternal mortality and persistent disparities have led to speculation about why the U.S. has higher rates than most high-income countries. The aim was to examine the impact of changes in state-level factors plausibly linked to maternal mortality on overall rates and by race/ethnicity. Recent fiscal and legislative changes reducing women's access to family planning and reproductive health services have contributed to rising maternal mortality rates.

Comparison of four prognostic scales for predicting mortality in patients with severe maternal morbidity.
Jonguitud López B; et al
Medicina intensiva; Dec 2019
We compare the prognostic validity of the APACHE II-M and O-SOFA scales versus the APACHE II and SOFA to predict mortality in patients with severe maternal morbidity. The APACHE II-M exhibited the greatest

S333-S341
Mortality surveillance and cause of death data are instrumental in improving health, identifying diseases and conditions that cause a high burden of preventable deaths, and allocating resources to prevent these deaths. The Child Health and Mortality Prevention Surveillance (CHAMPS) network uses a standardized process to define, assign, and code causes of stillbirth and child death (<5 years of age) across the CHAMPS network. A Determination of Cause of Death (DeCoDe) panel composed of experts from a local CHAMPS site analyzes all available individual information, including laboratory, histopathology, abstracted clinical records, and verbal autopsy findings for each case and, if applicable, also for the mother. Using this information, the site panel ascertains the underlying cause (event that precipitated the fatal sequence of events) and other antecedent, immediate, and maternal causes of death in accordance with the International Classification of Diseases, Tenth Revision and the World Health Organization death certificate. Development and use of the CHAMPS diagnosis standards-a framework of required evidence to support cause of death determination-assures a homogenized procedure leading to a more consistent interpretation of complex data across the CHAMPS network. This and other standardizations ensures future comparability with other sources of mortality data produced externally to this project. Early lessons learned from implementation of DeCoDe in 5 CHAMPS sites in sub-Saharan Africa and Bangladesh have been incorporated into the DeCoDe process, and the implementation of DeCoDe has the potential to spur health systems improvements and local public health action.

Results of full postmortem examination in a cohort of clinically unexplained stillbirths: undetected fetal growth restriction and placental insufficiency are prevalent findings.
Blythe C; et al
Journal of perinatology : official journal of the California Perinatal Association; Sep 2019; vol. 39 (no. 9); p. 1196-1203
We analyze a cohort of clinically unexplained stillbirths (CUS) referred for postmortem. In total, 60.5% of CUS were diagnosed at postmortem to have fetal growth restriction and/or placental insufficiency. The mean gestational age of death in which these conditions presented was 32.7 weeks and 35.5 weeks, respectively, suggesting a critical time-frame to monitor to potentially reduce stillbirth occurrence.

prognostic validity in predicting maternal mortality. This difference was given by its improvement in calibration.

Rural-Urban Differences In Severe Maternal Morbidity And Mortality In The US, 2007-15.
Kozhimannil KB et al
Health affairs (Project Hope); Dec 2019; vol. 38 (no. 12); p. 2077-2085
In the United States, severe maternal morbidity and mortality is climbing-a reality that is especially challenging for rural communities, which face declining access to obstetric services. Severe maternal morbidity refers to potentially life-threatening complications or the need to undergo a lifesaving procedure during or immediately following childbirth. Using data for 2007-15 from the National Inpatient Sample, we analyzed severe maternal morbidity and mortality during childbirth hospitalizations among rural and urban residents. Attention to the challenges faced by rural patients and health care facilities is crucial to the success of efforts to reduce maternal morbidity and mortality in rural areas. These challenges include both clinical factors (workforce shortages, low patient volume, and the opioid epidemic) and social determinants of health (transportation, housing, poverty, food security, racism, violence, and trauma).

Maternal Mortality in the United States: Updates on Trends, Causes, and Solutions.
Collier AY; Molina RL
NeoReviews; Oct 2019; vol. 20 (no. 10); p. e561-e574
The rising trend in pregnancy-related deaths during the past 2 decades in the United States stands out among other high-income countries where pregnancy-related deaths are declining. Cardiomyopathy and other cardiovascular conditions, hemorrhage, and other chronic medical conditions are all important causes of death. Unintentional death from violence, overdose, and self-harm are emerging causes that require medical and public health attention. Significant racial/ethnic inequities exist in pregnancy care with non-Hispanic black women incurring 3 to 4 times higher rates of pregnancy-related death than non-Hispanic white women. Varied terminology and lack of standardized methods for identifying maternal deaths in the United States have resulted in nuanced data collection and interpretation challenges. State maternal mortality review committees are important mechanisms for capturing and interpreting data on cause, timing, and preventability of maternal deaths. Importantly, a thorough standardized review of each maternal death leads to recommendations to prevent future pregnancy-associated deaths. Key interventions to improve maternal health outcomes include 1) integrating multidisciplinary care for women with

"The communication and support from the health professional is incredibly important": A qualitative study exploring the processes and practices that support parental decision-making about postmortem examination.
Lewis C; et al
Prenatal diagnosis; Dec 2019; vol. 39 (no. 13); p. 1242-1253
Consent rates for postmortem (PM) examination in the perinatal and paediatric setting have dropped significantly in the United Kingdom, the United States, and the Western Europe. We explored the factors that act as facilitators or barriers to consent and identified processes and practices that support parental decision-making. We propose a set of recommendations to improve the way PM counselling and consent is managed. Adopting such measures is likely to lead to improved family experience and more consistent and high-quality discussion regarding PM.

Protocols, practices, and needs for investigating sudden unexpected infant deaths.
Cottengim C; et al
Forensic science, medicine, and pathology; Nov 2019
Understanding case identification practices, protocols, and training needs of medical examiners and coroners (MEC) may inform efforts to improve cause-of-death certification. We surveyed a U.S.-representative sample of MECs and described investigation practices and protocols used in certifying sudden unexpected infant deaths (SUID). We also identified MEC training and resource needs. Increased training and use of standardized practices may improve SUID cause-of-death certification, allowing us to better understand SUID.

Vulnerable Adults

Lower Proportion of Fatal Arrhythmia in Sudden Cardiac Arrest Among Patients With Severe Mental Illness Than Nonpsychiatric Patients.
Ishida T; et al
Psychosomatics; Aug 2019
Sudden unexpected deaths occur more frequently among patients with severe mental illness (SMI), but direct evidence on the causes is still scarce. Fatal arrhythmia may account for a relatively small portion in excess of sudden death among patients with SMI. Furthermore, appropriate medical checkups for the patients with SMI at earlier ages would be important to prevent sudden cardiac death.

Deaths of young people living in residential aged

high-risk comorbidities during preconception care, pregnancy, postpartum, and beyond; 2) addressing structural racism and the social determinants of health; 3) implementing hospital-wide safety bundles with team training and simulation; 4) providing patient education on early warning signs for medical complications of pregnancy; and 5) regionalizing maternal levels of care so that women with risk factors are supported when delivering at facilities with specialized care teams.

Racial/Ethnic Disparities in Pregnancy-Related Deaths - United States, 2007-2016.
Petersen, Emily E.; et al
MMWR: Morbidity & Mortality Weekly Report; Sep 2019; vol. 68 (no. 35); p. 762-765
Approximately 700 women die in the United States each year as a result of pregnancy or its complications, and significant racial/ethnic disparities in pregnancy-related mortality exist. Significant differences in cause-specific proportionate mortality were observed among racial/ethnic populations. Strategies to address racial/ethnic disparities in pregnancy-related deaths, including improving women's health and access to quality care in the preconception, pregnancy, and postpartum periods, can be implemented through coordination at the community, health facility, patient, provider, and system levels.

Severe acute maternal morbidity trends in Victoria, 2001-2017.
Duke GJ; et al
The Australian & New Zealand journal of obstetrics & gynaecology; Dec 2019
The incidence of severe acute maternal morbidity (SAMM) is one method of measuring the complexity of maternal health and monitoring maternal outcomes. Monitoring trends may provide a quantitative method for assessing health care at local, regional, or jurisdictional levels and identify issues for further investigation. Over 17 years, there was a significant increase in birth rate and SAMM-related events in Victoria. Administrative data may provide a pragmatic approach for monitoring SAMM-related events in maternal health services.

care: a national population-based descriptive epidemiological analysis of cases notified to Australian coroners.
Eastwood K; et al
Disability and rehabilitation; Nov 2019 ; p. 1-6
This study provides a descriptive epidemiological analysis stratified by age of deaths reported to Australian Coroners of residential aged care facility residents aged under 65 years. One in seven (14.1%) deaths of people aged 20-64 years in residential aged care facilities are premature and potentially avoidable. The more common external causes of death include suicide, choking and falls. The prevalence and causes of preventable deaths in this study provide a basis for prompting and developing more specific prevention policies and practices to reduce harm for young people in residential aged care. Specifically, addressing loneliness would improve social inclusion, mental health and suicide risk. Better management of progressive neurological conditions with multidisciplinary team and re-ablement programs would reduce risk of choking and falls. Improving outcomes for young people in residential aged care requires a co-ordinated, multisector approach comprising relevant government departments, aged care providers, researchers and clinicians. Effective planning requires more information about the cause and nature of deaths, and due to the small event counts, this would ideally involve an international collaboration.

Evaluation of a Novel Medicolegal Death Investigator-Based Suicide Surveillance System to the National Violent Death Reporting System.
Repp, Kimberly K.; et al
American Journal of Forensic Medicine & Pathology; Sep 2019; vol. 40 (no. 3); p. 227-231
The abundance of actionable information available in a medicolegal suicide investigation is often inaccessible and underutilized in public health to the detriment of prevention efforts. Epidemiologists obtained the Washington County subset of the Oregon Violent Death Reporting System (OR-VDRS). To determine if additional information beyond the OR-VDRS was available through a standard death investigation, an epidemiologist shadowed medicolegal death investigators (MDIs) for nearly 2 years. The MDIs and epidemiologist developed a novel, real-time, MDI-entered surveillance system, the Suicide Risk Factor Surveillance System (SRFSS), to capture suicide risk factor data with greater timeliness and accuracy than available through the OR-VDRS. To evaluate the performance of each surveillance system, differences in the prevalence of suicide

	risk factor data from SRFSS were compared with the county OR-VDRS subset for the same 133 suicides occurring in 2014-2015. Across 27 suicide risk factors and circumstances, the median difference in prevalence was 10.5 percentage points between the OR-VDRS and the SRFSS, with the higher prevalence in SRFSS. The prevalence was significantly different between the 2 surveillance systems for 21 (78%) of 27 variables. This study demonstrates the truly exceptional data quality and timeliness of MDI information over traditional sources.

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