Patient Safety Tip of the Week

January 8, 2019

Maternal Mortality in the Spotlight

Whenever we do a presentation on how we don't get our money's worth out of our healthcare system, one of the things we always mention is our relatively poor performance regarding infant mortality. But, much to our surprise, **maternal mortality** has quietly crept up over the past 2 decades and the US now ranks 30th out of the 31 OECD countries for maternal mortality (Lu 2018). Lu and colleagues reported that maternal mortality in the United States more than doubled between 2000 and 2014, from 9.8 to 21.5 maternal deaths per 100,000 live births. Every year in the United States, more than 700 women die of complications related to pregnancy and childbirth and more than 50,000 women experience a life-threatening complication (severe maternal morbidity).

Moreover, racial, ethnic, geographic, and socioeconomic disparities play a major role in maternal mortality. African American women are nearly 3 times as likely to die of complications related to pregnancy and childbirth compared with white women (Lu 2018).

And, it's not just mortality. An AHRQ report shows that, from 2006 through 2015, the rate of deliveries involving any severe maternal morbidity increased 45 percent, from 101.3 to 146.6 per 10,000 delivery hospitalizations (Fingar 2018). This was especially driven by an increase in the rate of deliveries involving blood transfusion. Rates of acute renal failure, shock, ventilation, and sepsis at delivery also more than doubled between 2006 and 2015.

Propublica and NPR (Propublica Lost Mothers Series) actually began to raise attention about maternal mortality in 2017. Their report (Martin 2017) estimated 700 to 900 women in the U.S. died from pregnancy-related causes in 2016 and they began to tell the personal stories of those women.

In commenting on the AHRQ study, Fisher (Fisher 2018) notes there have been some changes in patient-related factors that contribute to the trend. Increases in maternal age, pre-existing medical conditions, and pre-pregnancy obesity are examples of such contributing factors. But they cannot account for all of the increases the AHRQ report describes. Specifically, over the decade of analysis the report indicates that rates of sepsis at delivery, acute renal failure, and shock all more than doubled.

Dalia Sofer highlights the **disparities** in two articles. In "The American Pregnancy: A Tale of Race, Class—and Zip Code" (Sofer 2018b) she notes that black women were the most likely to have births involving severe maternal morbidity, with in-hospital mortality three times higher than for whites. In the other (Sofer 2018a) she notes that, worldwide according to the WHO, high maternal mortality rates correlate with inadequate medical resources, particularly for women living in poor and rural areas. The picture is more complicated in the United States, where black women are three to four times more likely to die of pregnancy-related causes than white women, She does point out the dramatic improvement California made in reducing maternal mortality through the California Maternal Quality Care Collaborative (CMQCC 2018),

Rosindale (Rosindale 2018) notes a 2014 ACOG report that more than half of rural women have to drive over 30 minutes to receive perinatal services from the nearest hospital. We suspect that is even more problematic today. Given the financial strains that rural hospitals are experiencing, labor and delivery services are being dropped. Such services are very difficult to support, since you must have round-the-clock staffing even when the L&D census and newborn nursery census is low (or even zero). Mann et al. (Mann 2017) also suggest that linking such hospitals with tertiary care hospitals through telehealth services, quality-improvement aid, and transport may reduce morbidity and mortality. Note that some have also called for ACOG and the American Academy of Family Physicians to jointly develop an extra year of training for family medicine physicians who want to practice obstetrics in rural areas. (Mann 2018).

Katy Kozhimannil, in a recent Health Affairs article (Kozhimannil 2018), provides a longer time frame and outlines a number of factors contributing to the rising maternal mortality rate and offers strategies for reversing the trend. She notes that in 1955 the maternal mortality rate in the US was approximately 47.0 deaths per 100,000 live births. During the 1960s and 1970s access to health care and the quality of health services improved, and maternal mortality decreased, and by 1978 had dropped to 9.6 deaths per 100,000 live births. But, between 1987 and 2010 the rate more than doubled, reaching 16.0 deaths per 100,000 live births, and ultimately the 21.5 maternal deaths per 100,000 live births noted in the Lu study.

She outlines a number of factors contributing to the rising maternal mortality rate and offers the following strategic steps for reversing the trend:

1. Establishment of a national maternal mortality review committee and support structure for consistent data collection within and across states.
2. Access to care must improve. Health insurance coverage before, during, and after pregnancy helps women afford the care they need. Also, women need access to care in their own communities whenever possible. To keep maternity units open, policy efforts to address workforce shortages and the financial challenges of low-volume obstetrics are needed. More than half of rural counties currently have no hospital that provides maternity care, and in those communities there is a need for housing and transportation support for mothers who travel to give birth in distant communities—as well as for emergency response support locally.
3. Directly confront the unconscionable racial disparities in maternal death.

4. It is essential to hold health plans, health care delivery systems, and clinicians accountable for what matters and to make it easy to do the right thing. The development and use of evidence-based tool kits and protocols can improve the safety of clinical care for every birth. California provides an instructive example through the efforts led by the California Maternal Quality Care Collaborative (CMQCC 2018),
5. The rise in maternal mortality requires listening to mothers. It is not sufficient for mothers to be present: They need to be front and center in the decision making in each of the areas described above. Women's questions and concerns

Kozhimannil cites the California experience as evidence that reversing the trend is possible. From 2006 to 2013 California bucked the national trend, and maternal mortality declined by 57 percent, from 16.9 deaths to 7.3 deaths per 100,000 live births.

Regarding Kozhimannil's first step, the U.S. House of Representatives recently unanimously approved a bill to fund state committees to review and investigate deaths of expectant and new mothers (Martin 2018). The bill, which awaits a Senate vote, authorizes $12 million a year in new funds for five years for states to create review committees to identify maternal deaths, analyze the factors that contributed to those deaths and translate the lessons into policy changes. (Update: the bill has passsd and has been signed by the President).

A recent "Perspective" in the New England Journal of Medicine (Mann 2018) outlined 4 steps that hospitals should be taking to begin to address the issue:

1. implement the "**bundles**" of **best practices** to improve pregnancy safety that were developed by the Alliance for Innovation on Maternal Health (AIM), an ACOG-led collaboration with 30 other organizations.
2. hold multidisciplinary staff meetings to review each obstetrical patient's risk factors, including hemorrhage risk levels.
3. conduct obstetric emergency **simulations** in their labor and delivery units. This training is similar to the training pilots receive to be prepared for rare events.
4. lower- and higher-resource hospitals need to formalize relationships to allow for transfer of high-risk patients and/or immediate consultation in an unexpected emergency.

We discussed maternal safety bundles in detail in our February 7, 2017 Patient Safety Tip of the Week "Maternal Safety Bundles". The Council on Patient Safety in Women's Health Care sponsors the AIM (Alliance for Innovation on Maternal Health) Program that has links to the maternal patient safety bundles.

Note also that AHRQ has an excellent Toolkit for Improving Perinatal Safety (AHRQ 2017) that has some excellent resources for **simulations** of a variety of circumstances threatening infant or maternal safety.

In addition to the previously mentioned initiatives from Propublica and the state of California (CMQCC 2018) and AHRQ (AHRQ 2017), there are ongoing maternal safety

initiatives from IHI (Institute for Healthcare Improvement) (IHI 2018), NY State (WKBW 2018), Washington State (Washington Statre. Department of Health 2018), and several other states.

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We also hope you'll go back to our February 7, 2017 Patient Safety Tip of the Week "Maternal Safety Bundles". There we not only discussed programs using maternal safety bundles and simulations, but also discussed maternal safety issues such as RSI's (retained surgical items), surgical fires, obstructive sleep apnea, epidural catheter mistaken infusions, unintentional hypothermia, the weekend effect, medication mixups, and other issues.

Some of our previous columns on maternal and ob/gyn issues:

February 5, 2008	"Reducing Errors in Obstetrical Care"
February 2010	"Joint Commission Sentinel Event Alert on Maternal Deaths"
April 2010	"RCA: Epidural Solution Infused Intravenously"
July 20, 2010	"More on the Weekend Effect/After-Hours Effect"
August 2010	"Surgical Case Listing Accuracy"
September 7, 2010	"Patient Safety in Ob/Gyn Settings"
January 2011	"Surgical Fires Not Just in High Risk Cases"
February 8, 2011	"Inducing Too Early"
April 2011	"Ob/Gyn Patient Safety Programs"
April 24, 2012	"Fire Hazard of Skin Preps Oxygen"
July 2012	"WHO Safe Childbirth Checklist"
December 4, 2012	"Unintentional Perioperative Hypothermia: A New Twist"
September 2013	"Full-Time Laborists Reduce C-Section Rates"
October 2013	"Challenging the 39-Week Campaign"
November 2013	"The Weekend Effect: Not One Simple Answer"
January 2014	"It MEOWS But Doesn't Purr"
May 13, 2014	"Perioperative Sleep Apnea: Human and Financial Impact"
August 19, 2014	"Some More Lessons Learned on Retained Surgical Items"
November 3, 2015	"Medication Errors in the OR - Part 2"
February 7, 2017	"Maternal Safety Bundles"
January 23, 2018	"Unintentional Hypothermia Back in Focus"

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