COMMENTARY

No, Medical Errors Are Not the Third Leading Cause of Death

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The supposed fact that medical errors are the third leading cause of death in the United States has become a meme, spreading virally through society from the scientific literature to the evening news. As they're repeated within the scholarly community and popular media, estimates in the range of 200,000-400,000 deaths per year look like settled science.

But the methodology applied to arrive at these estimates published in multiple scientific journals falls short of the rigor needed for such an important topic. We are concerned that these estimates are inaccurate, implausible, and encourage unwarranted distrust in the healthcare system. Yet they have spread widely while critiques have not. Lowering our standards of scientific evidence, even for a good cause, sets a dangerous precedent.

Popular estimates of medical harm have faced criticism since the National Academy of Medicine's seminal 1999 "To Err Is Human" report, which estimated the number of preventable medical error deaths at around 44,000-98,000 per year. Two powerful critiques of this report were published in JAMA shortly afterward, but these counterpoints in a top medical journal have only racked up a few hundred citations compared with the tens of thousands that the original report has achieved, according to Google Scholar. Even a critique of the report by an author of the studies it was based on, published in the *New England Journal of Medicine*, has been cited an order of magnitude less than the report itself.

Two newer publications have arrived at even larger estimates. A 2013 paper in the *Journal of Patient Safety* suggested that 440,000 people per year die from preventable medical error, and a 2016 paper in the *BMJ* proposed that 251,454 people die from medical errors yearly. The latter's title declared medical error "the third leading cause of death in the US" — and a meme was born.

That was despite the fact that these papers also faced immediate criticism from experts. In fact, the editors-in-chief of *BMJ Quality and Safety* carefully debunked both of these estimates shortly after their publication. In a polite tone, authors Kaveh Shojania and Mary Dixon-Woods made clear that enormous error estimates distort the underlying studies beyond credibility. This fair counteranalysis has received little attention.

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The rebukes point out many fatal flaws: Medical error death rates extrapolate from small samples, generalize local data to national contexts, ignore the limited life expectancy of many patients, and gloss over the myriad uncertainties in defining error, preventability, and causality. Yet the idea that "medical errors are the third leading cause of death" has become a powerful cultural meme immune to correction. This claim shows up in newspaper articles and TV shows. It's been repeated on the floor of the Senate. Nursing unions have used the "third leading cause of death" mantra to advocate for new legislation. A sensational patient safety documentary relies on it. It's even been spotted in a college sociology textbook.

The Medical Error Meme

In an analysis we recently published in the *Journal of General Internal Medicine*, we propose a few reasons for why these debatable estimates of medical error have become so well accepted. First, the "third leading cause of death" phrase has proved an easy rallying cry for a growing patient safety effort. Patient safety is emerging as both an academic discipline and an activist movement, two developments we strongly support. But all new disciplines and political movements need justification, and a hidden epidemic of medical error deaths is a powerful one. We also suggest that ever-increasing estimates of medical error deaths play into the compelling narrative of a worsening crisis, even though these estimates were not designed to analyze change over time.

Poor understanding of the number of overall deaths and hospital-based deaths probably leads people to underrate how outlandish these estimates truly are. If we take the 440,000 medical error deaths estimate at face value, it

suggests that the majority (about 62%) of hospital deaths are caused by preventable medical errors. This estimate also implies that preventable medical errors kill about as many people as tobacco. Put like that, this estimate is hard to swallow.

We agree that medical errors occur all too often, remain underreported, and that systemic changes can improve patient outcomes. But we also recognize that there are no useful fictions in medicine. A misleading statistic shared for righteous reasons is still dangerous.

Memes don't stay in the hands of their creators. The concept of "preventable adverse events" is conflated with the altogether different idea of "medical malpractice." The National Rifle Association recently downplayed the gun violence epidemic by suggesting in a video viewed by over 100,000 people that "medical malpractice deaths stand at over 500 times higher than accidental gun-related fatalities with as many as 400,000 deaths per year." Did the authors of these studies want their estimates politicized in this way? Or how about when law firms drum up business by claiming "medical malpractice is the third leading cause of death"? As we argue in our analysis, "those who have a financial or philosophical agenda to discredit physicians can bolster their arguments if they seem to originate from within the medical community."

Inaccurate memes also pose a risk because they anchor us to higher estimates, producing unwarranted skepticism over more realistic calculations. When our article came out, we received immediate criticism from patient safety activists. One person even seemed to ask us to prove a negative — that medical errors were *not* the third leading cause of death. Because medical errors are underreported, it's easy to cling to inflated estimates rather than accept gaps in our knowledge. Shojania and Dixon-Woods call this "the bottomless well of medical error" in their *BMJ Quality and Safety* critique.

Fewer Memes, More Context

The memeification of medical errors has rallied more resources and attention to an important problem, but it masks some key questions: What makes something an "error" beyond simply a negative outcome? When was an error truly "preventable," and can we accurately assess these things in retrospect? These questions can be approached with more rigorous science, but we need better communication to achieve public understanding.

We are encouraging less memeification and more contextualization. The experiences we have as doctors are confusing, compelling, frustrating, and moving all at once. We witness and make mistakes, but we also know there are cultural and administrative barriers to preventing them. No single number will ever capture that varied experience or suggest a solution to medicine's most entrenched problems. We encourage all medical professionals, as well as patients, to speak up about their experiences with adverse events. In this way, a nuanced understanding of modern medical practice can come out and we can work on solutions. Putting patient safety first is no reason to oversimplify the truth and spread misleading statistics.

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