

## EDITORIAL

# Improving Ambulatory Safety: When Will the Time Come?

David C. Classen, MD, MS

Thirty years ago, the landmark report from the Institute of Medicine, *To Err Is Human*, focused attention on improving the safety of care across the world.<sup>1</sup> Although significant improvements have since been made in a few specific areas, safety problems persist across the continuum of care, with large opportunities for improvement.<sup>2</sup> There are factors that explain these focused successes. For example, health care–acquired infections (HAIs) primarily occur in inpatient settings, where safety efforts have been and continue to be focused. HAIs have previously been clearly defined, and they are continually measured and reported—for the most part, fully electronically.

Unfortunately, none of these conditions exist in the ambulatory setting, which has hampered progress in improving ambulatory safety. Patient safety events in the outpatient area exceed those in the inpatient arena, and ambulatory safety problems account for more than 2,500 deaths, more than 75,000 hospitalizations, and millions of extra outpatient visits per year in the United States.<sup>3,4</sup> Ambulatory diagnostic errors alone affect 12 million US patients every year.<sup>5</sup> A recent review of primary care safety studies from around the world suggested that 2 to 3 safety incidents occur per 100 office visits,<sup>6</sup> and another study suggested that up to 4.5 million office visits annually in the United States are related to medication safety events.<sup>4</sup>

Despite these findings, there are several promising developments on the ambulatory safety front. A study in this issue of the *Journal* by Sharma and colleagues used data from a Patient Safety Organization (PSO) to evaluate the epidemiology of ambulatory safety events.<sup>7</sup> The authors studied safety events from 165 different organizations over a six-year period. Surgical clinics were the most common sites for events, followed by medical clinics, while primary care and home care were the sites of 2.1% and 5.2% of events, respectively. More than half of the events involved moderate or greater harm, and 1.9% led to death. Diagnostic errors and clinical deterioration were associated with higher levels of harm, as were events in psychiatric or mental health facilities.

PSOs are legally protected organizations that allow health care organizations to share legally protected information about and learn from patient safety events. They were created by the Patient Safety and Quality Improvement Act of 2005 and have evolved over the last decade

into a significant force for collecting and analyzing patient safety data. The number of health care facilities sending data to PSOs has also expanded, as various regulators have required their participation.<sup>8</sup>

Although initially inpatient focused, PSOs have begun to collect data in the ambulatory space, as the study by Sharma et al. demonstrates.<sup>7</sup> PSOs report safety information to a federal network of patient safety databases, allowing for national aggregation of data. In addition, the federal Agency for Healthcare Research and Quality (AHRQ), which regulates PSOs, has created a taxonomy for safety events for reporting called the AHRQ Common Formats. This taxonomy was initially inpatient focused but is now expanding to the ambulatory space, overcoming one of the most significant obstacles to addressing ambulatory safety.<sup>8</sup> The Sharma et al. study would have been significantly easier to conduct if these common formats had been in place for ambulatory care. The other important impact of this taxonomy is that it was created for electronic use. All the leading patient safety reporting vendors have adopted it, which helps create a much more standardized operational safety taxonomy.

More than 30,000 studies on ambulatory patient safety have been published in the last decade. At least 25% of these articles are focused on information technology, primarily voluntary reporting systems and electronic health records (EHRs). EHRs have become the source of a new approach in patient safety—automated safety monitoring systems.<sup>9</sup> Several groups have followed the experience of infection control and prevention by using real-time data from EHRs to detect, validate, and report HAIs. This is increasingly occurring for all patient safety problems, allowing for much better detection—10 to 20 times greater—than voluntary reporting systems, providing validation and actionability in real time, when the patient can be helped.<sup>10</sup>

Although initially inpatient focused, these automated systems have followed EHRs into the ambulatory arena and now use predictive analytics to anticipate events before they occur.<sup>11</sup> These systems can also engage patients in safety initiatives. A recent study demonstrated an impact on patient engagement and outcomes by providing real-time electronic patient safety dashboards to patients and families.<sup>12</sup>

Despite prioritization by policy makers, patient engagement in safety has not progressed significantly in the past two decades.<sup>13</sup> Research on the patient's role in ambulatory safety in the past decade has been sparse and suffers from

many of the same limitations found in other research on ambulatory safety: use of uncoordinated methods and non-standard definitions, taxonomies, data sources, and populations. Recent research has focused on how to get patients to detect and report safety problems, but their involvement should go well beyond that, with patients and caregivers activated to participate in the safety of their own care. The American Medical Association (AMA) has suggested that a national ambulatory safety research network be established to support research and implementation that engages patients in safety initiatives.<sup>13,14</sup> This is of critical importance as more care is shifted to the ambulatory setting in which patients and their families carry most of the burden of care.

This network could help fill the gap of evidence on ambulatory patient safety interventions, which has not kept up with the study of inpatient interventions. The network could also be instrumental in development and implementation of these interventions. The Patient-Centered Outcomes Research Institute has begun this journey by creating an ambulatory research network, but much more needs to be done in this field of patient safety.<sup>15</sup>

One noteworthy ambulatory safety intervention is medication reconciliation, which most organizations still find challenging. Medication safety problems remain the number one safety problem in the outpatient setting.<sup>2,6</sup> Electronic medication reconciliation is required for federal incentive programs, and more than 90% of ambulatory clinics have EHRs, but the electronic medication reconciliation process in this setting is still not functioning properly.<sup>16</sup> Medication reconciliation failures may reflect a broader problem in transitions of care, which should also be a focus of efforts to improve safety.

Finally, AHRQ and the AMA both strongly endorse a national ambulatory safety study to determine the epidemiology of safety problems in this arena using a robust approach with common definitions across a broad spectrum of ambulatory care sites.<sup>13,14</sup> This type of study was critical to jump-starting inpatient safety programs and will be required for ambulatory as well. Now that it is much more achievable given the broad adoption of EHRs in the ambulatory space, it is high time for policy makers to step up and conduct this study.

In conclusion, several urgent priorities seem clear. First, because the epidemiology of safety is different in the outpatient setting, we must improve the measurement of patient safety in the ambulatory space using approaches that go well beyond voluntary reporting, into active surveillance and monitoring. Second, we must leverage the significant investment and broad adoption of EHRs in the ambulatory space, not only to improve measurement but to develop, validate, and implement interventions that can markedly improve patient safety. Third, we must engage and activate patients to improve the safety of their own care. These and many more changes will ultimately be needed to provide safe care in ambulatory settings.

**Conflicts of Interest.** The author is a part-time employee of Pascal Metrics, a federally certified Patient Safety Organization in which he has an interest.

**David C. Classen, MD, MS**, is Professor of Medicine, University of Utah School of Medicine, and Chief Medical Information Officer, Pascal Metrics, Salt Lake City. Please address correspondence to David C. Classen, [david.classen@utah.edu](mailto:david.classen@utah.edu).

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