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Beyond the Hospital: the New Frontier of Patient Safety

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Perspective

The frontier of patient safety outside the hospital has yet to be fully explored, and it is far from being settled. The urban sprawl of inpatient care has dominated the research and the improvement efforts to date. But what happens when the patient goes home? Over the past 13 years there have been recurrent calls for an intensified focus on patient safety outside the acute care setting.(1-3)

The first question to ask ourselves: Is it worth our time (and our funding) to focus on safety in ambulatory care? I have often heard people justify our lack of attention to outpatient safety by suggesting that inpatient errors are more important—i.e., more serious, more common, or more costly. Current research tells us that this is probably not true. In 2009, 52% of paid medical malpractice claims were for outpatient events; two-thirds of them resulted in disability or death.(4) In a study of 400 patients discharged from a tertiary academic hospital, 19% had an adverse event within 3 weeks of discharge, and 30% of these resulted in a nonpermanent disability or worse.(5) A review of 14,700 discharge records found 31 preventable ambulatory care adverse events. Extrapolating from these data, an estimated 75,000 hospitalizations per year are due to preventable adverse events that occur in outpatient settings in the United States, resulting in 4829 serious permanent injuries and 2587 deaths.(6) Physicians write approximately 3.6 billion prescriptions annually in the ambulatory setting.(7) If the rate of prescribing errors that have potential for patient injury is 3%, that's about 108,000 potentially harmful prescription errors per year.(8) Another estimate is 3 preventable adverse drug events per 100 outpatients per year.(9) And that is just medication errors.

One of the least understood and most important areas of ambulatory medical error is diagnostic errors. In one review of 212,165 outpatient visits, 190 diagnostic errors were found.(10) That is approximately 1 in 1000 outpatient primary care visits. With 0.5 billion primary care visits annually, that extrapolates to 500,000 diagnostic errors annually. If you add another 0.5 billion visits to subspecialists, that's 1,000,000 diagnostic errors annually in the outpatient setting. That's about 10 jumbo jets per day, just in diagnostic errors, most of which are associated with harm. So the conclusion regarding whether we should focus on ambulatory safety is: yes, it is worth it. It's time to saddle up and head out into this new frontier.

A second issue to consider before we head into this realm: Is it possible that we have focused on inpatient errors because they just seem easier to fix? Outpatient medicine has so much variation, it can seem like the "Wild West." Central to this variation is the wild card of the patient, who, in the outpatient world, vexingly spends most of his or her time at home, not under our direct supervision. Somehow we are going to have to get our arms around how to do patient safety and include the patient.

Applying Principles From Inpatient Safety to Ambulatory Safety

What can we expect to discover in this new landscape? Is ambulatory patient safety just like inpatient patient safety? If so, then all we need to do is to apply what we know to this setting. Or is it different, requiring not just application of already understood principles, but vigorous exploration of a whole new realm of safety issues?(11) It seems a little bit of both.

Research is important. We need to understand the nature of the problem. We know how to do the research, but it needs to be organized and funded in the outpatient setting. Specifically, we need much more information about the degree of the outpatient safety problem, the nature of outpatient errors, and the risk factors for these errors. It has been suggested that a network of primary care settings be created to carry out the basic epidemiologic research in outpatient patient safety, to help us understand incidence and prevalence, and much more about the risk factors for outpatient medical errors. This seems like a reasonable idea.

Quick wins are attainable. There is no need to wait for additional data to get started on error reduction in the outpatient setting. What do we already know from the inpatient arena and from early work in the outpatient setting that can be applied right now to improve care?

Event reporting and response. In outpatient medicine, error reporting can be a rich source of information about the nature, frequency, and risk factors for medical errors. It can also be a way of engaging all clinicians working in the outpatient setting in the process of improving patient safety.(12) How might it change our practices if every clinic started a clinician-based patient safety group that reviewed error reports, unexpected deaths, admissions within one week of an office visit, and hospital readmissions? This process would also generate meaningful cases for outpatient M&M, which should be a routine part of outpatient care. From these processes we would begin to identify those events in outpatient care that will drive universal improvement efforts across all clinics and home care agencies.

Procedural checklists. Checklists are underutilized in outpatient procedures and understudied in terms of impact on infection rates and other complications.

Electronic health records (EHR) with decision support. Electronic health records have now been implemented in many outpatient settings, but the benefits of the EHR will not be realized until advanced decision support tools have been integrated into our clinic-based EHRs.(13,14) In one study that used a simulation tool to assess the capability of hospital computerized physician order entry (CPOE) and decision support systems to detect and prevent important ordering errors, only 53% of the medication orders that would have resulted in fatality were either detected or prevented by the hospital's existing CPOE system. On the other hand, hospitals with advanced decision support systems were able to detect or prevent 70% to 80% of these simulated errors.(15) Linking lab, diagnosis, and medication order entry, and creating

reminder and tracking systems that push alerts and reminders to the clinicians (and eventually to the patient), could potentially prevent some of the most important errors in the outpatient setting. Unfortunately, even though many EHRs include the theoretical capability for advanced decision support, it takes effort and money to build this functionality. This is low hanging fruit, and clinicians must begin to insist that their EHRs make use of these capabilities. Advanced decision support alone may not be sufficient to eliminate these errors completely, and further work needs to be done to discern what human systems will be needed to eliminate all ambulatory errors.(16)

Electronic (or paper) tracking systems for high-risk events. Every outpatient clinical setting needs to have active tracking systems for things that we know can fall through the cracks—things like abnormal pap smears, colon polyps, pulmonary nodules, inferior vena cava (IVC) filters, or preventive services. All of these devices and tests must be tracked over months to years, and they all need tracking systems that push important reminders out to both clinician and patient. There is no consensus about what should be on that high-risk list that requires active tracking. Part of the challenge is that some of these high-risk issues span the inpatient and outpatient world (i.e., IVC filters and pulmonary nodules), requiring coordination between departments and even between health systems.

Culture of safety, communication, and teamwork. Combining good communication and teamwork principles with a robust local error reporting and unit-based improvement team could go a long way toward creating a culture of safety in every clinic. The effects of these are fairly well-documented from inpatient settings, and there is no reason to think that they will not be just as effective with outpatient teams.(17)

These efforts represent a not-so-new frontier; namely, the application of what we already know to the outpatient arena. This application should be done systematically, with appropriate adaptation for the specifics of the settings and patients, and with attention to outcomes to develop the evidence base for the effects of these interventions in the outpatient setting.

Improving Safety in the Outpatient Setting

While much of our progress will come from adapting the things we have learned from the hospital, some advances in ambulatory patient safety will come from our growing knowledge regarding how to best prevent mistakes that are unique to the outpatient setting or most significantly affect outpatient medicine. Research in this arena may help us not only improve outpatient safety but, in an ironic turnaround, may help inform future improvement efforts in the hospital.

Including the patient in patient safety. In the outpatient setting, we physically see the patient at most one hour out of every month. If we really want to influence patient safety, we must find ways to include the patient in this work.(18) We should be including the patient not just in the plan of care, but in our clinical thought process. Perhaps we should think of it as a *clinician–patient handoff,* and include our "if, then" contingency plans and expectancies in our communication with patients. This concept is entirely new territory, and it is likely to be quite challenging given how difficult it has been to improve our clinician–clinician handoffs! There are other ways including the patient in patient safety, such as assessing and mitigating the effects of poor health literacy, and building in surveillance systems for problems with adherence, medication misuse, and medication adverse effects.

Diagnostic error. Diagnostic error may be the most important category of error in the outpatient setting—it is the largest contributor to malpractice claims in ambulatory medicine (19) and the least studied. The recent study by Singh and colleagues using trigger tools to study diagnostic errors and their contributing factors found that although there were a wide variety of diagnoses missed, contributing factors identified most frequently involved the patient–practitioner clinical encounter (78.9%), including problems related to history-taking (56.3%), examination (47.4%), or ordering diagnostic tests for further work-up (57.4%).(10) Of note, no differential diagnosis was recorded in 81% of the cases of diagnostic error, and copy-and-pasting was found to be a contributing factor in 37% of cases.(10) We need to know much more about diagnostic errors, and the trigger tool may be one way that practices can begin to understand them better. Proposed ways of reducing diagnostic errors range from crosscutting interventions to enhance decision-making (interventions to promote metacognition, for example), or more specific symptom-directed interventions including checklists and electronic decision support tools.

Doing more by doing less: reducing over testing and over treating. The high-value care movement is questioning our use of tests and treatments, for good reason. One of the most powerful things we might be able to do to improve safety in the ambulatory setting is to do less. But this needs to be studied to be sure that our efforts to reduce resource use are improving safety and not causing new types of harm.

Leveraging the EHR to help improve safety longitudinally. Systems need to be able to track tests and procedures over the course of months or even years, helping patients and physicians remember to come back (for example) for the follow-up chest computed tomography (CT) scan, or to repeat the pap smear.

Leveraging the EHR to increase adherence. By closing the loop on referrals, tests ordered, and medication refills, an EHR can help the physician know when a patient is having difficulty with adherence, offering an opportunity to intervene before an adverse event occurs. New ways of alerting patients via smart phones, using gamification to improve adherence to medications, and linking to social networks to promote peer-to-peer education and encouragement are some innovations that may help overcome traditional barriers.(20)

So much to do, so little time. What is the effect of time (or lack of time) on errors? In outpatient medicine, time in the patient encounter has been significantly restricted. If what Singh and colleagues discovered about contributing factors to diagnostic errors is true, then what happens in the face-to-face clinician–patient encounter is critical to diagnostic accuracy. Time spent in that face-to-face encounter may be one of the key factors in improving our chances of making a correct diagnosis. This is not to mention the effects of time on non-diagnostic errors in medicine, including medication errors. As we investigate how teams of people can help reduce error, we need to ponder how to mitigate the effects of ever-shrinking time available to clinicians in the face-to-face patient encounter. It is certainly worth studying.

So, is patient safety outside the hospital really a Wild West? The answer is both no and yes. No, it is familiar territory in that there are principles and interventions, based on the evidence for both inpatient and outpatient safety, that we can apply right now to improve safety in outpatient medicine. They include CPOE with advanced decision support, basic tracking systems, and event reporting and clinician-based (or unit-based) systems improvement teams. But yes, it is a new landscape in that there is a great need for more information about the incidence and types of outpatient events, and particular areas must be explored:

diagnostic errors, the role of patients in improving safety, leveraging EHRs in increasing adherence and in tracking important tests and interventions longitudinally, accomplishing more by doing less, and the effects of time on medical error. Focusing on patient safety outside the hospital will bring us deeper into the complexities of keeping patients safe, where the world of health care meets the real world of patients' everyday lives. Saddle up for this important trip into the Wild West.

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