

Improving Patient Safety in Diabetes Care: The Importance of Reducing Medical Errors

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In 1999, at the President's Poster Session of the American Diabetes Association's 59th Annual Meeting and Scientific Sessions, we presented our findings on the importance of medical errors in diabetes care.¹ We found that errors in diabetes care were a common cause of significant morbidity and complications and not uncommonly resulted in disability and even death. The data were straightforward and well accepted, although, privately, many physicians commented to us that the absolute number of errors in care resulting in poor clinical outcomes was even higher than we had reported.

The general problem facing health care providers is now generally well accepted by the public. The Institute of Medicine report² catapulted the issue of medical errors onto the front pages of magazines and newspapers throughout the United States. The public believes that our system can and should be improved. But how?

Earlier this year, at the American Association of Clinical Endocrinology Annual Scientific Sessions, I presented a workshop titled "Sleuthing Strategies: Improving Patient Safety by Reducing Medical Errors."³ Our earlier work⁴ had made it clear to us that the real challenge is not to document how bad it has been, but instead to focus on how to help those who are actually providing care to patients. This task is much more difficult but much more important and likely to be what we will need to improve care.

Among the many misconceptions that people have about medical errors, particularly in diabetes care, is the mis-

taken belief that there is always someone to be held accountable for the error and that the focus should be disciplining and ultimately removing the "bad apple" from the system so that it can function properly.⁵

In truth, most of the important medical errors are multifactorial in nature and are the result of numerous small oversights, any one of which, if corrected, might have prevented or reversed the error.⁶ At least half of the errors are probably contributed to by a faulty system of care, which often is the main culprit. A few examples: A patient comes into an emergency room with ventricular fibrillation, but the only defibrillator in the emergency room is defective and cannot discharge. Is the fatal outcome the emergency physician's fault or the hospital and its staff's fault? Another example: A hospitalized patient has hypoglycemia and then develops chest pain, but the hospital is losing money and has cut nursing coverage. The non-nurse technician assigned to the patient does not have the nursing skill to understand that the patient's chest pain is not caused by low blood glucose and so ignores the chest pain, treats the low glucose, and leaves. The patient dies from the initially ignored heart attack.

Both of these cases are real. In both examples, the "system" is providing obstacles that result in blame falling to the individual at the point of care. But these problems really have more to do with the system of care itself—situations in which there is a defective "culture of safety." A culture of safety can be defined as any clinical entity working as

a cohesive unit on behalf of patients' safety.

Another very important misconception is the belief that correcting all errors is the main task. Not so. Most errors are not harmful to anyone and are usually spotted by the very people who make them. We all know this category well. These are primarily the slips and lapses that we have made or the omissions of steps we should have taken. For the most part, we usually correct these types of errors when we review our work. Many of us are under considerable stress in our clinical settings. Because people under stress are more prone to error, it makes sense to be sure that our systems of care allow us enough time to check our own work. Also, it is sound strategy to set up other procedures to routinely check both our work and others. In this way, the vast majority of errors can be caught and corrected without harming patients.

Clearly, the best strategy for preventing errors that cause harm is not to focus on whom to hold accountable for the harm. Instead, we need to provide a system of care in which patients are well protected from even the few accidental errors that we are unable to prevent with our new strategies of error reduction.

A central problem is the need to improve the ways in which we currently handle medical information. We need new methods to document important clinical information and to make the transfer of information as clear and unambiguous as possible. Soon, in many hospital settings, both electronic medical records (EMRs) and hospital electronic medication ordering will play an increas-

ingly important role. The rationale for these changes is that, under our current systems, many medication errors are simply the result of misinterpretation of prescriptions or orders, misreadings that often have catastrophic consequences.⁷ Although many hospitals are moving quickly to electronic systems that will allow clearer medication ordering, it is not certain whether the first systems will be physician-friendly, an important characteristic if this strategy is to succeed.

On the other hand, EMRs in ambulatory settings are already here, and the better software packages are physician-friendly. What they bring to diabetes care is immediate access to very complicated therapeutic planning for patients who have a multitude of clinical problems. Today, much of intensive, modern diabetes care is done in a setting in which teamwork is essential. When precise "hand-offs" from primary care to specialist or from nurse or dietitian to physician and back again are needed, EMRs can aid in communication.

In the 2 years since our practice added a full-featured EMR system and retired our paper charts, our primary care physicians have felt much happier with the prompt and detailed information they receive on our mutual patients. Our patients are also very pleased. They tell us how helpful they find the more detailed and legible communications they now receive from us and from our staff. Also, the pharmacists in our community, who in the past had colorful comments about the poor quality of my handwritten prescriptions, now feel that my prescriptions are always completely clear. This makes their job easier and helps ensure my patients' safety. Additionally, I now routinely run a drug-interaction check on prescriptions before I give them to patients. This is an additional check on safety that can be done instantly with an EMR system but would take much longer if handled manually.

Working with your system of care may be more problematic, but is no less important. In the past 15 years, physicians have often deferred control of hos-

pitals to business-oriented administrators, and it is important to re-enter the fray on the behalf of our patients. It does our diabetic patients no good if a hospital administrator believes they have little need for special services that actually benefit them, and if no one is on hand to advocate on their behalf.

Nursing ratios should be higher when patients with diabetes are hospitalized. Frequent glucose monitoring, wound care, and the clinical needs of those with orthostatic hypotension, renal disease, and retinopathy can lead to increased nursing requirements. We can do a great deal to champion the need for more nurses at the bedsides of our patients and for access to diabetes educators for our inpatients who require instruction.

Hospitals are often hot-beds of intrigue among warring fiefdoms, with surgeons grouching at anesthesiologists and nurses at odds with emergency room personnel, to name just a few common conflicts. We must work to ensure that such disputes do not inadvertently compromise the safety of our patients. As an example, it is well-documented that insulin infusion can be used to achieve normoglycemia and reduce death rates in intensive care settings and in very ill patients. The important protective role of normoglycemia in critical illness has been documented, particularly in reducing infection and improving cardiac function.⁸ Often, when there is a turf issue, the physician most skilled in using insulin infusions is not able to provide this service, and patients' outcomes are much worse.

When trying to make a safer environment for patients, we must also consider the most common and best known source of errors in diabetes care: patients. Much of our traditional emphasis on patient and family diabetes education is a result of our recognition that our therapy should be patient-centered. We have long understood that the greatest burden is on the patients themselves.

But our methods of education do not always take into account the myriad ways even intelligent and interested

patients can misinterpret well-meaning providers' educational efforts. Also, we must remember that patients can forget or distort what they have learned. We must constantly check and probe to clarify what people may have learned at one time but then forgot. Often, patients' errors in self-care can be traced to their misconceptions or their misunderstanding of the process of self-care. This can lead to catastrophic error on their part. Of all of the difficulties we have in patient care, the challenge of helping patients re-clarify what may have been once clear to them is perhaps the most difficult and also perhaps the most important.

But if we are to improve safety for our diabetic patients, where do we need to place our efforts? As a start, we can:

- offer more education that is patient-centered, allowing the patients to demonstrate what they know;
- increase awareness of the need for adequate resources, particularly sufficient time for providers to thoroughly evaluate clinical problems;
- form ad-hoc teams of doctors and nurses to work together more cohesively in the care of diabetic patients;
- change the paradigm so that providers think less about who is to blame and more about how to prevent catastrophes caused by the system in which they work;
- change the tort system so that hospitals and providers can focus on making the system better and not on avoiding frivolous and illogical lawsuits;
- make our system of care as focused on quality as it is on cost containment.

I do not know the order in which these issues should be addressed, but I have a sense that each of them will play an important role in the improvement of our system of care and in the protection of our diabetic patients from the consequences of medical errors.

REFERENCES

- ¹Hellman R, Hellman J, Rosen H: Provider error is an important cause of poor outcomes in

diabetes care (Abstract). *Diabetes* 48 (Suppl. 1):A67, 1999

²Kohn LT, Corrigan JM, Donaldson MS, the Institute of Medicine Committee on Quality of Health Care in America: *To Err is Human: Building a Safer Health System*. Washington, D.C., National Academy Press, 1999

³Hellman R: Improving patient safety by reducing medical errors: sleuthing strategies for the endocrinologist. A workshop presented at the American Association of Clinical Endocrinology 10th Scientific Sessions, San Antonio, Tex., May 3, 2001

⁴Hellman R, Regan J, Rosen H: Effect of intensive treatment of diabetes on the risk of

death or renal failure in NIDDM and IDDM. *Diabetes Care* 27:258–264, 1997

⁵Bogner M, Ed.: *Human Error in Medicine*. Hilldale, NJ, Laurence Erlbaum Associates, 1994

⁶Reason J: *Human Error*. Cambridge, UK, Cambridge University Press, 1990

⁷Bates DW, Leape LL, Cullen DJ, Laird N, Petersen LA, Teich JM, Burdick E, Hickey M, Kleeffeld S, Shea B, Vander Vliet M, Seger DL: Effect of computerized physician order entry and a team intervention on prevention of serious medication errors. *JAMA* 280:1311–1316, 1998

⁸Van den Berghe G, Weekers F, Verwaest C, Schetz M, Vlasselaers D, Ferdinande P, Lauwers

P, Bouillon R: Strict metabolic control with intensive insulin treatment reduces morbidity and mortality of intensive care dependent critical illness (Abstract). In *Endocrine Society 83rd Annual Meeting Program and Abstracts*. Bethesda, Md., Endocrine Society, 2001, p. 37

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