

## **Patient Safety and Medical System Errors in Diabetes and Endocrinology Consensus Conference: Position Statement**

Innovations in healthcare treatment and technology have led to significant improvement in life quality and longevity. However, with these innovations have come increased complexity and more hazards for patients as well as challenges for healthcare professionals.

On January 9, 2005, the American College of Endocrinology (ACE) and American Association of Clinical Endocrinologists (AACE) convened a two-day consensus conference to discuss patient safety in patients with diabetes and other endocrine diseases. The conference brought together experts from diabetes and endocrinology, general internal medicine, anesthesiology, surgery, pediatrics, nursing societies, governmental and regulatory agencies and key national organizations focused on healthcare quality and safety. This report presents a summary of their findings and recommendations.

### **Scope of the Problem**

Although the conference focused primarily on diabetes and endocrinology, it is important to understand that patient safety has long been a significant concern. One recent report estimates that over 195,000 avoidable deaths occur annually in the U.S. (1) Although one-eighth of the adult population experience a medical error, annually, approximately 50% of all people with chronic conditions experience a medical error in either their own care or that of a family member; this is far more than those without chronic illness (30%). (2) However, the issue of patient safety is not limited to the U.S. Studies from Canada, New Zealand, Denmark, Australia and the United Kingdom show that approximately 10% of all patients in acute care settings experience significant injury from medical care. (3)

Patients with diabetes have a 2.2 – 4-fold increase in hospitalization rate versus the non-diabetic population. (4) In 2001, more than 4.6 million hospitalizations were associated with diabetes, accounting for nearly 17 million hospital days at a cost of over \$40 billion. (5) Patients often have several other associated medical conditions (heart disease, obesity, high blood pressure, kidney disease). In addition to insulin, which is considered a high-risk drug, patients frequently take many medications that increase the risk for medication-related errors.

A recent study of errors in diabetes care showed that 20% of patients studied who died had a significant error during the course of their care. (6) For every patient who died, approximately 6.5 had an error resulting in excessive morbidity, 4.2 had an error resulting in a complication, and 1.3 had an error resulting in a disability.

## **Specific Areas of Concerns**

### *Diabetes*

All hypoglycemic drugs carry some risk, but insulin is especially risky (7) Many deaths related to insulin have occurred in the inpatient setting; issues such as confusion with heparin have been associated with increased risk. (8) Increasing data suggest that tighter control of glucose in hospitalized patients can result in better outcomes, particularly in the intensive care unit and following cardiac surgery. However, as the protocols for tight control are implemented in more settings, it will be essential to implement safeguards to minimize the risk of hypoglycemia, which is especially pronounced in patients who are sedated. Typical “sliding scale” insulin is not effective and may be dangerous in the manner that it is typically used (9), yet it remains part of our common medical practice. (10) Some of the approaches for decreasing insulin risk in the hospital include minimizing use of sliding scales, implementing backup checks in critical areas, use of computerized physician order entry (CPOE), and bar-coding. Insulin safety is also an important issue in the outpatient setting, with patient education and improved communication between providers and patients representing important strategies for improving safety.

### *Osteoporosis*

Osteoporosis is responsible for over 1.5 million fractures annually. The Surgeon General’s report on osteoporosis showed that about 10 million Americans have osteoporosis and another 34 million have low bone mass. (11) A woman over age 50 has about a 50% lifetime risk for fracture. There are about 250,000 hip fractures a year; approximately 20% of senior citizens who suffer a hip fracture will die within one year. There are many causes of low bone density and appropriate evaluation is necessary. The patient population at highest risk for fracture includes those who have already had an osteoporotic fracture.

Established guidelines exist for bone density testing (12) and for prevention and management of postmenopausal osteoporosis (13, 14) Nevertheless, only 18% of women 67 years and older who suffered a fracture, have had either a bone mineral density test or prescription for a drug to prevent or treat osteoporosis in the six months after the date of fracture (15) Furthermore, although males make up approximately 20% of the osteoporotic population, they are even less likely to be recognized, evaluated, and treated for this condition. A team approach is essential in this setting involving the orthopedic surgeon, primary care physician, and endocrinologist. In addition to appropriate drug therapy, sufficient calcium and vitamin D supplementation is essential.

### *Pediatric Endocrinology*

Delayed diagnosis of congenital hypothyroidism was identified as a significant problem; screening for neonatal hypothyroidism is only mandated in 21 states. Meticulous management of congenital hypothyroidism is critical to brain development and achieving normal intelligence.

## *Thyroid*

Errors in thyroid management are also an important issue. One recent study found that of patients receiving thyroid medication, only 56% got the recommended minimum monitoring. (16) Patients who received recommended monitoring had fewer preventable adverse drug events, with a rate of only 1% versus 6% in those that did not get minimum monitoring. Minority status and language other than English were associated with the presence of an adverse drug event. Additionally, untreated hypothyroidism can masquerade as severe depression that is refractory to treatment.

## *Bariatric Surgery*

The demand and performance of bariatric surgical procedures is increasing dramatically because of its proven efficacy at improving the health and well-being of patients with morbid obesity amidst the current epidemic of obesity. However, there is some question as to whether there are enough qualified surgeons to handle the increased demand. The best centers still report 1-2% total mortality. The potential for surgical injury or death is lessened when bariatric surgery is performed at centers that have been accredited for safe outcomes. This requires a well-trained surgeon with advanced bariatric training in both open and laparoscopic bariatric procedures who serves as the head of a dedicated team. Patient selection, selection of appropriate technical procedure, preoperative comprehensive patient assessment, and focused intraoperative and postoperative care with technologies tailored to the special needs of the obese patient are critical for best operative outcomes.

## **System Problems and Recommendations**

### *1. Create a Culture of Safety*

Problems within the system of care, often far removed from the point of care, may have much more powerful effects than are generally recognized.

It is very difficult to learn from medical incidents. This is because most accidents are blamed on individuals rather than the environment in which they work. As a result, accidents are rarely investigated in sufficient detail to identify the systemic causes. Excessive medical malpractice litigation is a direct threat to efforts to improve quality of care and address the root causes of medical errors.

A culture of safety is one in which a collection of workers work together in a cooperative way to reduce medical errors. They do this by timely communication of important clinical information and presence of “back-up” checks in critical settings. We need to move from a “name, blame and shame” mentality to a culture of safety.

Without a systematic approach to identifying errors when they do occur, followed by a thorough and frank discussion of these problems, we cannot move forward in fully assessing the causes and formulating solutions. This limits our ability to design safer systems of care. A “blame-free” reporting system would produce more insights about the underlying system problems that give rise to medical accidents. Clearly, this would make the system safer.

ACE/AACE strongly supports state and national initiatives to develop a workable medical error reporting system that provides actionable information for addressing identified errors and issues.

2. *Implement electronic patient records/information sharing systems widely*

There was universal endorsement for the broad use of electronic patient records and information sharing systems. Several presenters discussed benefits as well as resistance to use of this technology, including initial outlay, loss of productivity, lack of financial incentives, personnel training time; availability of IT support; standardization of software (ability to interface with other systems); and identification of certified programs.

The consensus of the meeting was that third-party reimbursements must be increased to encourage physicians to adopt this technology.

3. *Reduce medication errors through use of computerized physician order entry (CPOE)*

Medication error rates are high. Adverse drug events represent the single leading cause of injury to hospitalized patients. These adverse events are caused by a number of factors, including illegible handwriting, use of ambiguous abbreviations, inappropriate combination of medications, and wrong medications or dose. Problem lists should be integrated with medication lists in all care settings.

Another strategy for reducing medication errors is to utilize computerized physician order entry (CPOE). CPOE reduced the serious medication error rate by 55% in hospitalized patients in one study (17), and has reduced the overall medication error rate by over 80% in other studies. (18) Computerized prescribing improves medication safety in a variety of ways. Orders must be complete with appropriate doses or they will not be accepted. Perhaps more important, orders can be checked for a variety of issues such as drug allergies, drug-drug interactions, and drug-laboratory issues.

It has become increasingly clear that medication errors and adverse drug events are common in the outpatient setting. (19) However, the causes are somewhat different than in the inpatient setting, and problems with follow-up are especially prominent. Implementation of the electronic health record, including computerization of prescribing, will probably represent the most important strategy for improving outpatient medication safety. (19)

4. *Improve coordination of care*

Coordination of care is an important part of patient safety, particularly in the inpatient setting. Utilization of communication technology, in combination with a focus on teamwork among health professionals and ancillary services, will minimize critical lapses that may result in significant patient injury. Improving coordination of care not only involves better communications, but must include effective, ongoing education among all care givers.

5. *Improve patient self-care through education and communication*

More effective strategies to improve communication between patients and healthcare professionals are essential. Low medical literacy among Americans can be a barrier to care. When practitioners do not effectively communicate with patients, serious and even lethal errors may occur. Communication problems can be especially significant when dealing with ethnic and cultural minorities.

In addition, more individualized, ongoing evidence-based education strategies are needed to ensure that patients can safely and effectively follow their treatment plan. Maintaining personal health records will empower diabetic patients to document their health status and glycemic control and may allow them to interact with their electronic health records.

## **Organizations Participating in the Consensus Conference**

Agency for Healthcare Research and Quality  
American Association of Clinical Endocrinologists  
American Association of Diabetes Educators  
American College of Endocrinology  
American College of Surgeons  
National Committee for Quality Assurance  
American Diabetes Association  
American Medical Association  
American Society of Anesthesiologists  
Endocrine Nurses Society  
International Society of Clinical Densitometry  
Joint Commission on Accreditation of Healthcare Organizations

## **Organizations Attending the Consensus Conference**

American Association of Endocrine Surgeons  
AARP Public Policy  
American College of Cardiology  
American Dietetic Association  
Centers for Medicare and Medicaid, Quality Improvement Group  
Food and Drug Administration (FDA), Division of Endocrine and Metabolic Drugs  
Health and Human Services, Health Information Technology  
Ohio Patient Safety  
National Alliance for Hispanic Health  
National Quality Forum  
Society of Thoracic Surgeons  
Society of Hospital Medicine  
Maryland Health Care Commission  
Veterans Health Administration  
World Medical Association

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