

Sliding Scale No More

The American Diabetes Association Consensus Statement

by Jennifer Oestreich

A 55-year-old man is rushed into the emergency room with chest pain, sweating and shortness of breath; he is suffering from a myocardial infarction. Once stable, he is moved to the intensive care unit (ICU) for further evaluation and testing. The patient's past medical history includes a diagnosis of type 2 diabetes made five years earlier. The patient is prescribed sliding scale insulin for blood glucose control and is given the appropriate amount of insulin whenever his blood glucose reaches a pre-specified range. After initial evaluation and tests are completed, the patient undergoes successful triple bypass surgery and returns to the ICU for close observation. His glucose is monitored throughout the day, and he is administered insulin as per the sliding scale in his chart prior to surgery. This patient has endured a great amount of stress during the past 24 hours, resulting in vastly increased amounts of circulating glucose in his blood. At morning rounds the next day, it is discovered that the patient has an infection at the surgical closure site and his blood glucose is nearly 300 mg/dL. In addition, the patient has impaired kidney function and vascular disease resulting in increased time spent in the hospital.

It has been hospital practice for many years to use the insulin sliding scale as a way to monitor and treat hyperglycemia in diabetic and non-diabetic patients. Sliding scale insulin is traditionally viewed as the practice of measuring a patient's blood glucose concentration and administering the prescribed scale amount of regular insulin to achieve a lower blood glucose value regardless of meals or the patient's sensitivity to insulin. The resulting seesaw effect of glucose "control" observed in recently published trials confirms that

the traditional administration of sliding scale insulin in the hospital setting is causing harm to patients and the health care system.¹⁻³ One hospital performed a cost analysis on the implementation of a tight glycemic control protocol in the ICU. Of the 1,600 subjects in the study, the intensive glucose control group had a cost savings of \$1,580 per subject relative to the group that received the hospital standard of care. This cost savings was attributed to shorter lengths of stay in the ICU (from two days to 1.7 days, $p=0.005$) as well as in other post-ICU units, fewer ventilator days, and less need for pharmacy, laboratory and radiology services.⁴

Hyperglycemia in the hospital setting occurs in the majority of critically ill patients regardless of a previous diagnosis of diabetes.¹ The elevation in blood glucose values due to stress from acute illness is generally considered a secondary problem with regard to the patient's presenting condition, and it may therefore be ignored in a large number of patients.² Recent trials have revealed the consequences of inpatient hyperglycemia. Hyperglycemia is directly linked to an increased risk of sepsis, cardiac death after a heart attack or heart surgery, organ rejection after transplant, hospital-acquired infections, an increase in the size of dead brain tissue in stroke patients, a prolonged hospital stay, increased costs throughout the health care system and in some cases even patient death.^{1,5,6} A meta analysis of recent trials proved that short-term mortality can be decreased by 15% when

rigorous insulin therapy is initiated in critically ill hospitalized patients.⁸



A Partner in Diabetes Prevention and Treatment in Wisconsin

CONSENSUS STATEMENT PROPOSES CHANGES

The American Diabetes Association (ADA) in collaboration with the American Association of Clinical Endocrinologists (AAACE) held a consensus conference in Washington DC at the end of January 2006 to discuss reasons for the lack of strict glycemic control in the hospital patient population. This consensus conference followed the publication of position statements by both the American College of Endocrinology (ACE) and the ADA in 2004. Despite the attention given to inpatient management of hyperglycemia in 2004, many hospitals have continued to use sliding scale insulin administration as the sole mechanism to control blood

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glucose. The consensus statement, released Feb. 1, 2006, proposes removal of the insulin sliding scale as the sole hyperglycemic order for hospitalized patients.⁷ Health system barriers preventing the achievement of this goal were discussed in great detail as they are considered the fundamental cause for the current lack of strict blood glucose control protocols in hospitals. A central barrier identified

was concern about hypoglycemic events. After careful investigation, it was shown that the cost and health-related benefits of attaining blood glucose goals vastly outweighed the slight increase in the number of hypoglycemic events.¹⁻⁸ Other barriers that appear to impede adequate glycemic control in hospitalized patients include time, money, lack of communication between staff members and the movement of patients from one unit to another.⁷

The consensus statement identifies specific strategies for achieving improved diabetes management in hospital patients. Suggestions include identifying hyperglycemia in affected hospitalized patients; assessing current glycemic control processes;

detecting barriers to change; attaining administrative support; identifying a leader or champion for the initiative; forming a multidisciplinary team approach to the management of inpatient hyperglycemia; developing standardized order sets, protocols, policies and algorithms; and educating both patients and practitioners about the initiative. The proposed solution to achieving euglycemia is through the vigilant administration of basal replacement insulin (NPH, glargine, or detemir) by subcutaneous injection in addition to a predetermined amount of fast- or rapid-acting insulin at mealtimes.⁷ The final suggestion in the consensus statement addresses the discharge plan for any patient with newly recognized blood glucose abnormalities. The advice is that patients should be involved in the creation of a clear and concise health care plan with proper and frequent supervision and follow-up.⁷

Diabetes is the most expensive chronic disease in the United States, and the cost of inpatient diabetes care has reached a level far exceeding the amount spent on ambulatory diabetic patients.⁷ The disproportionate increase in the number of people admitted to the hospital with diabetes suggests that action is necessary to ensure patient safety while containing health care costs.⁷ With the recent "Inpatient Diabetes and Glycemic Control: a Call to Action Conference" as a guide, the goal of achieving optimal blood glucose *as well as* cost savings in hospitalized patients may soon become a reality. ●

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The Wisconsin Health Information Exchange

PSW joins effort to create shared electronic health information database

by Tom Woller, MS, FASHP

Imagine being able to access medication history and allergy information for all of your patients via a secure, shared database. That is the vision of the Wisconsin Health Information Exchange (WHIE). The stated mission of WHIE is "to provide a system where diverse stakeholders collaborate to enable secure, confidential exchange of health information between authorized users."

WHIE is a project that is designed to establish a multipurpose health information exchange system. When in place, WHIE will allow medical caregivers to access critical patient information via a secure portal. The database of patient information will be populated by hospitals, laboratories, pharmacies, clinics, physician's offices and other sources of clinical data. Although the current focus is on southeastern Wisconsin, it is expected that, over time, the system will expand across the state.

The start-up of WHIE is being funded by a grant from the Foundation of E Health Initiative's Connecting Communities for Better Health (CCBH) program. The CCBH is sponsored by the Health Resources Services Agency (HRSA), a federal agency. The intent of the funding is to seed development of regional health information exchange programs. Successful programs exist in several cities including Indianapolis and the Washington, D.C. metropolitan area. Southeastern Wisconsin is one of nine regions that received a grant from CCBH in 2005. Additional funding for 2006 is being provided by the state of Wisconsin.

WHIE has targeted information-sharing projects in a number of areas. One of the highest priority projects is in medication reconciliation. The vision of WHIE is that patients and health care professionals would have access to a patient's current medication list and accurate allergy information via a secure regional system. This, in turn, would lead to improved safety, quality and efficiency of the health care system and improved public health. The hope is that

hospitals, clinics, retail pharmacies and physicians will be collaborating with a number of other organizations to increase the chance of success with medication reconciliation.

WHIE is being led by Dr. Seth Foldy, former health commissioner for the city of Milwaukee; Dr. Edward

"Receipt, provision and sharing of accurate medical information among health care providers will enable a transformation in health care delivery. Decision making and patient management will be vastly improved as more data is made available to those responsible for providing patient care. PSW is pleased to be involved with the WHIE initiative and we are grateful for the volunteer service of Tom Woller on the WHIE Board."

— Christopher Decker, RPh
PSW Executive VP and CEO

Barthell, an emergency medicine physician; and Dr. Lawrence Hanrahan, chief epidemiologist of the Division of Public Health for the state of Wisconsin.

WHIE is overseen by a broad-based board of directors. Tom Woller serves as the pharmacist representative on the WHIE Board of Directors. WHIE has invited members to join in one or more categories including, but not limited to, hospitals, outpatient clinical practices, skilled nursing facilities, pharmacies and professional organizations. PSW has joined WHIE as a show of support for WHIE's goals. You can learn more about WHIE at WWW.WHIE.IMEDI.ORG. ●

Tom Woller, MS, FASHP is the regional director of pharmacy services for the Metro Region of Aurora Health Care. Dr. Edward Barthell will be presenting a session on the progress of HIEs in Wisconsin during the PSW Annual Meeting.