Introduction: Overview of Efforts and Lessons Learned

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Members of the Glycemic Control Task Force are listed in the appendix.

The articles on these pages represent the culmination of 3 years of effort by the Society of Hospital Medicine (SHM) Glycemic Control Task Force. In this brief introduction, we share a few insights and comments about this multidisciplinary collaborative effort to address the care of inpatients with hyperglycemia.

The SHM Glycemic Control Task Force was assembled in 2005, with the intent of improving the care of inpatients with diabetes. We wished to provide hospitalists and quality improvement teams with an understanding of the best practices to achieve safe glycemic control in the hospital. Additionally, this task force sought to identify tools and strategies to obtain improved communication, medication safety, education, and other aspects of care. A distinguished panel of experts attended their inaugural meeting in Chicago, Illinois, in October 2005, including hospitalists, endocrinologists, nurses, case managers, diabetes educators, and pharmacists. A roster of the individuals and organizations is given in the Appendix.

Many members of the SHM Glycemic Control Task Force also participated in the "Call to Action" consensus conference[1] hosted by the American Association of Clinical Endocrinologists (AACE) and the American Diabetes Association (ADA) in January 2006. Both groups identified several barriers to improvement, and methods to overcome these barriers were summarized in this quote from the Consensus Conference,

"Successful implementation of a program to improve glycemic control in the inpatient setting should include the following components:

1. An appropriate level of administrative support.
2. Formation of a multidisciplinary steering committee to drive the development of initiatives.
3. Assessment of current processes, quality of care, and barriers to practice change.
4. Development and implementation of interventions including standardized order sets, protocols, policies, and algorithms with associated educational programs.
5. Metrics for evaluation."

Both groups also called for a web-based compendium of tested tools and strategies to assist local improvement teams.

After countless hours of development and revision by the SHM Glycemic Task Force and the Resource Room team, such a compendium addressing all of these components was launched on the SHM web site in the form of the SHM Glycemic Control Resource Room.[2] A comprehensive implementation guide[3] is

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available for downloading free of charge, and serves as the centerpiece of the Resource Room. Subsequently, this comprehensive but somewhat sprawling implementation guide evolved into these more sophisticated and concise articles.[4–10] The topics include a review of the rationale for improving inpatient glycemic control,[4] an important call for standardizing the metrics of glycemic control,[9] subcutaneous insulin regimens and order sets,[5,6] insulin infusion protocols,[7] transitions of care,[8] and the business case for glycemic control.[10] It has been a long but rewarding and educational journey, drawing on the collective experience from dozens of institutions in all kinds of inpatient care settings. A few key points and insights seem worth sharing.

THE IMPROVEMENT EFFORT IS NOT JUST ABOUT REACHING A GLYCEMIC TARGET

The term "glycemic control team" and the label for the SHM Glycemic Control Task Force itself are somewhat misnomers. Task Force members agree that desirable institutional glycemic target ranges should be established, but many among us believe the glycemic targets endorsed by national guidelines (ref ADA and AACE guidelines)[11,12] are too stringent. Furthermore, we believe that achieving glycemic control is just one small part of the needed improvement efforts. Uncontrolled hyperglycemia is common, potentially dangerous, and largely preventable with safe and proven methods—but so are the iatrogenic hypoglycemia episodes, substandard education, poor communication, lack of care coordination, and inadequate monitoring that typify care of the hyperglycemic inpatient. We address all of these issues and urge the adoption of this broader perspective.

THE EVIDENCE IS INCOMPLETE—BUT ACTION IS REQUIRED

We acknowledge gaps and inconsistencies in the literature surrounding inpatient diabetes management and the controversy around tight glycemic control. In many cases, high level evidence is not available to guide the formulation of protocols, order sets, or other improvement tools. We are all struck by how pervasive the lack of evidence is. What is the best metric for inpatient glycemic control or hypoglycemia? What is the best regimen for a patient on continuous tube feedings? Which insulin infusion protocol is superior in reaching and maintaining a glycemic target range?

Rather than make no recommendations or accept negative inertia on the basis of less than perfect evidence, we make recommendations based on the best evidence available. When we make recommendations based on consensus opinion or the collective experience from dozens of medical centers, rather than randomized trials, we have made every effort to make this clear in the text of the articles. In our view, incomplete evidence is not an adequate excuse to persist in the unacceptable status quo, clinging on to methods (such as sliding scale insulin regimens) that have been shown to be ineffective and potentially dangerous.[13–15]

COLLABORATION PAYS DIVIDENDS

It takes a multidisciplinary approach to make substantial improvement in glycemic control of hospitalized patients. By the same token, it is unlikely that any one group can advance the national agenda for improved care as well as a multidisciplinary coordinated effort. Team members, especially the endocrinologists and hospitalists, collaborated skillfully throughout this effort. The hospitalists learned a tremendous amount from the expertise, insight, and mastery of the literature, offered by the endocrinology members, whereas the endocrinologists appreciated the front line expertise and practical quality improvement approach of the hospitalist members. This collaboration serves as a model for making guidelines and best practices become more of a practical reality for a variety of important clinical problems. Hospitalists can partner with and learn from a variety of other disciplines, while they assist these disciplines on effective improvement and implementation efforts. On a more personal note, this work has fostered mutual respect, friendship, and career long collaborative opportunities. The potential for these same opportunities with nursing, pharmacy, and all medical and surgical fields seems compelling and exciting.

THERE'S MORE!

By the time this is published, these articles will be integrated into the third iteration of the SHM Glycemic Control Resource Room. This online resource has already undergone 2 major revisions since its inception just a few years ago, reflecting SHM's dedication to the continuous improvement of the products and services that it offers. The

Glycemic Control Implementation Guide and Resource Room will continue to be a work in progress. We highly encourage and welcome constructive criticism and feedback via E-mail to glycemiccontrol@hospitalmedicine.org. The resource room contains a wealth of tools, slide shows, literature reviews, and links, in addition to the core articles published in this Supplement.

NEXT STEPS

More research and demonstration projects are obviously needed in this field. Local collaborative activities have sprung up in several cities and regions, as well as "Glycemic Control Champions" courses. A longitudinal mentoring program (similar to the SHM Venous Thromboembolism Prevention collaborative) would undoubtedly be beneficial, and may become available within the next year or so. These items and more will be promoted and posted in the resource room whenever possible.

Finally, the next step is up to you and the institutions in which you work—you have to decide, as individuals and institutions, if you believe the status quo is "good enough." We believe that if you look, you'll find the care of our inpatients with diabetes and hyperglycemia disturbingly suboptimal, and hope that the work of the SHM Glycemic Control Task Force can help you rapidly improve on this state of affairs.

APPENDIX: GLYCEMIC CONTROL TASK FORCE

The Society of Hospital Medicine thanks all the members of the Glycemic Control Task Force, who encompass a distinguished panel of experts with representation from the AACE, ADA, ACP, and other organizations whose expertise was essential to the construction of the Glycemic Control Resource Room and the Implementation Guide for Glycemic Control and Prevention of Hypoglycemia.

Hospitalists

Representing the Society of Hospital Medicine

Gregory Maynard, MD. Lead Author and Editor of Glycemic Control Implementation Guide (web product); Glycemic Control Initiative Project Director; Clinical Professor of Medicine and Chief, Division of Hospital Medicine. University of California, San Diego (UCSD) Medical Center, San Diego, California.

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Mitchell J. Wilson, MD. Associate Professor of Medicine, University of North Carolina, Chapel Hill, North Carolina.

Representing the American College of Physicians

Doren Schneider, MD. Associate Program Director, Internal Medicine Residency Director, Ambulatory Service Unit, Abington Adult Medical Associates; Assistant Professor of Medicine, Temple University School of Medicine, Abington, Pennsylvania.

Endocrinologists

Representing the American Diabetes Association

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Representing the American Association of Clinical Endocrinologists

Richard Hellman, MD, FACP, FACE. Clinical Professor of Medicine, University of Missouri–Kansas City, North Kansas City, Missouri.

Endocringology Expert Panel

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Mary Ann Emanuele, MD, FACP. Professor of Medicine, Endocrinology, Cell Biology, Neurobiology, and Anatomy Biochemistry, Loyola University Medical Center, Maywood, Illinois.

Irl B. Hirsch, MD. Professor of Medicine, University of Washington, Seattle, Washington.

Robert Rushakoff, MD. Clinical Professor of Medicine, Director, Diabetes Program, University of California, San Francisco (UCSF)/Mt. Zion, San Francisco, California.

Silvio E. Inzucchi, MD. Professor of Medicine, Clinical Director, Section of Endocrinology, Yale University School of Medicine, New Haven, Connecticut.

Education

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Pharmacists

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Representing the American Society of Consultant Pharmacists

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Case Management

Representing the Case Management Society of America

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Dietetics

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SHM Staff Members

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Glycemic Control Resource Room Project Team

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