

In Brief

Establishing and maintaining professional competency is essential for the successful delivery of diabetes care and education. An interdisciplinary approach to education is effective for facilitating the delivery of knowledge and supporting glycemic control efforts in the hospital. Educational programs should be designed to promote and develop critical thinking skills and clinical judgment using a variety of media and resources targeted to adult learners. A competent professional staff will provide care that is evidence-based, safe, effective, and appropriate for the population served. These efforts have the potential to improve quality outcome measures and enhance patient satisfaction.

Diabetes Education in the Hospital: Establishing Professional Competency

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Between 1980 and 2003, hospital discharges coded with a diagnosis of diabetes increased from 2.2 to 5.1 million, representing a 132% increase in 23 years.¹ The economic burden of diabetes care was estimated at \$174 billion in 2007, of which \$116 billion was spent on medical expenditures, including \$58 million on hospital inpatient care.² These figures continue to increase at a time when the management of acute care diabetes and hyperglycemia has undergone intensification and rapid change.³⁻⁵ Thus, health care systems are gaining an awareness of the importance of glycemic control, the impact that provision of diabetes care has on resources, and the need to redesign systems and processes that will optimize diabetes care delivery.

How, then, can national standards for diabetes care and education be met; staff knowledge be maintained at cost-neutral levels; lengths of stay, readmission rates, and hospital-acquired complications be reduced; and cost savings be achieved?⁶⁻¹⁵ The establishment of an interdisciplinary team of clinical experts and "champions" can help achieve all of these goals and facilitate the delivery of diabetes self-management education in the acute care setting.

What Is Professional Competency?

In a 2004 article, Abbate¹⁶ stated that, "Improving diabetes care requires competent providers to be actively involved in quality improvement in order to build a system capable of

translating their knowledge into optimal outcomes for patients." To state that one is competent is to say that one has sufficient knowledge and ability and is capable of the task or position. A definition of competency that can be applied to all disciplines is, "a level of performance demonstrating the effective application of knowledge, skill, and judgment."¹⁷ In its scope of practice document, the International Council of Nurses states that, "The registered nurse attains knowledge and competency that reflects current nursing practice."¹⁸ And the American Nurses Association adds that, "Although registered nurses have the most contact with the acutely ill patient and are often the main providers of survival skills education, all health care providers need sufficient diabetes knowledge to provide safe, competent care to persons with or at risk for diabetes."¹⁹

Ensuring the professional competency of an entire clinical staff is essential to the successful delivery of evidence-based, safe, effective, respectful, and appropriate care.

Studies have reported the lack of diabetes knowledge prevalent in a variety of provider disciplines.²⁰⁻²³ This lack of knowledge includes unawareness of current practice standards, insufficient understanding of pharmacological agents including insulin and oral diabetes agents, inaccurate carbohydrate counting, and an inability to critically assess patient characteristics crucial to individualized diabetes management. Add to this the need to

carefully evaluate concomitant therapies, treat comorbidities, and provide diabetes self-management knowledge and skills to patients, and it becomes clear that providers are lacking crucial skills and knowledge essential to managing these complex tasks.

Elements of a Glycemic Management Education Program

Key elements of a successful inpatient glycemic management education program include core competencies, knowledge assessment, development of a strategic education plan, and continuing education. These must be established by an interdisciplinary team composed of individuals knowledgeable about diabetes and willing to serve as champions of efforts to improve glycemic control. The complementary knowledge and skill sets of the various disciplines represented in a diabetes care team allow the team to develop an educational program that will disseminate the wide range of requisite knowledge and training necessary to ensure professional competency throughout the health care system.

Core competencies must be established for physicians, nurses, dietitians, and pharmacists as the primary providers of patients care and education. A competency is “verification that required skills, processes, or concepts are done/understood correctly as determined by an expert.”²⁴ Competencies are used to validate and verify the scientific knowledge base and skills of staff members. Core competencies related to hospital glycemic management and diabetes care include the proper use of insulin and other diabetes medications, nutrition therapy, point-of-care testing, hypoglycemia treatment, and concomitant therapies.

Methods that can be used to successfully evaluate competencies include case scenarios that require critical thinking and problem-solving skills with a focus on assessment, prioritization, and accurate clinical decision making, as well as simulation exercises that entail observation of skills (process audits) and can incorporate written exercises. Internet-based competency tests can also be created, allowing individuals to take a competency test at any time. Table 1 identifies key elements to be included in a core competencies test for insulin; Table 2 provides an example of an insulin competency checklist and

questions designed to promote critical thinking and clinical judgment skills. It is important to consider the Joint Commission's requirements for age-related competencies and incorporate these into core competency tests developed for specific populations and staff members.²⁵

Before developing a strategic plan for diabetes staff education, a thorough assessment of each professional discipline's current knowledge and skills must be conducted. Valid tools are available or can be developed to test the basic knowledge necessary for safe care delivery and effective problem solving, prioritization, and assessment. It is extremely helpful to have an awareness of the educational preparation and training of the staff; recognizing the composition of the staff will help the team tailor educational offerings for specific groups or individuals using appropriate teaching methodologies.²⁶

A review and inventory of available tools, reference materials, and Internet-based resources must be completed. Determining the actual availability of these resources to staff is important. If the resources exist but staff members are unable to access them easily and in a timely manner, the benefit is lost. Additionally, an education budget must be discussed with administration so that it is clear how many non-patient-care hours can be used for learning.

Providing education to all staff members who deal with diabetic patients anywhere along the health care continuum presents significant challenges. Factors that can affect the success of educational initiatives include the varying work schedules of staff, paid versus unpaid time for training, inclusion of “nice to know” versus “need to know” information, and the linking of performance to clinical excellence and peer review.²⁷ Another major challenge is “information acquisition fatigue,” the constant introduction of new information, new equipment and technology, and new processes and changes that can lead to an inability to process, integrate, and internalize newly acquired knowledge. An educational plan should be multifaceted, realistic, and flexible and should have established measurable learning outcomes for staff.

Some components of a successful plan for acute care include employee orientation, tests of medication knowledge, preceptor clinical guidelines and

curriculum, annual competency testing for each discipline (e.g., physicians, nurses, dietitians, and pharmacists), professional development and continuing education, and resource support. Facilities that are associated with an academic health center must also plan to review curriculum and provide orientation to faculty and students. Strong collaborative partnerships with schools can be established to provide graduate student preceptorships in diabetes care and education.

New employee orientation is an excellent opportunity to establish the standard of practice and impart necessary knowledge and understanding of glycemic management. This can include a review of the classifications of diabetes, the rationale for tight glycemic control, acute care glycemic targets, and the treatment modalities used in the hospital (e.g., basal-bolus insulin therapy). This is also a good time to stress the importance of educating patients to perform diabetes self-care sooner rather than later.

Incorporating relevant diabetes scenarios on a new employee test allows for assessment of their level of knowledge before they finish formal orientation. Preceptors of the new employees, who have had their knowledge validated before they model diabetes care for new staff, can then be aware of the new employees' strengths and identify appropriate learning opportunities.

Administration can be supportive by allowing time for new employees to be trained to competency rather than to a specific duration of time.²⁸ This is especially important when training new graduates. A study conducted by Forneris and Peden-McAlpine²⁹ with novice nurses identified the emergence of the intentional critical thinker at 4–6 months, with intentional coaching and narrative reflective journaling as part of the process. This confirms that critical-thinking skills are developed and nurtured by the professionals and experiences encountered over time.

Professional development or continuing education can be targeted at a basic or an advanced level. Special population needs and research can be incorporated into these offerings. Methods to facilitate learning include the development and use of case studies and case scenarios, Grand Rounds presentations, Internet-based learning modules, journal clubs, resource toolkits, and medication charts.

Table 1. Core Competency Content for Insulin

- Type, action, peak, and duration of insulin formulations
- Intravenous insulin
- Basal-bolus subcutaneous insulin management
- Insulin storage and administration
- Skills: use of pen devices, vials, and syringes
- Carbohydrate counting to determine prandial bolus doses
- Correction insulin doses
- Hypoglycemia prevention

Table 2. Example of a Competency Question for Insulin

J.P. is a 58-year-old man with type 2 diabetes S/P a right knee replacement. He is one day post-op and has experienced some nausea through the night. He did not receive his glargine insulin last evening because he had been NPO. This morning, his blood glucose before breakfast is 378 mg/dl. J.P.'s orders include:

- Clear liquid diet
- Low consistent carbohydrate diet (1,200–1,500 calories, 3 carbohydrate units per meal)
- Glargine, 22 units daily at 8:00 p.m.
- Aspart insulin prandial bolus-fixed; 3 units subcutaneously per meal
- Aspart insulin correction bolus with each meal based on pre-meal blood glucose:
 - Blood glucose 120–149 mg/dl: give 2 units aspart subcutaneously
 - Blood glucose 150–199 mg/dl: give 3 units aspart subcutaneously
 - Blood glucose 200–249 mg/dl: give 4 units aspart subcutaneously
 - Blood glucose 250–299 mg/dl: give 7 units aspart subcutaneously
 - Blood glucose 300–349 mg/dl: give 10 units aspart subcutaneously
 - Blood glucose > 350 mg/dl: give 12 units aspart subcutaneously

Questions:

1. Plan a three-carbohydrate clear liquid breakfast tray for J.P.
2. How much aspart insulin will J.P. receive this morning?
3. When will the aspart be administered?
4. Should J.P. have received his glargine insulin last evening? What is the rationale?

Clinical rounding, clinical coaching, observation and shadowing, and cross-discipline training should be considered an integral part of the staff development plan.^{27, 30–34} A creative and innovative approach to education has resulted in sustained knowledge and professional growth.³⁵

Institutional Culture

In addition to the interdisciplinary team and education plan, the culture of the institution will have a significant impact on staff behaviors and clinical outcomes. Studies in the intensive care units of the Johns Hopkins Quality and Safety Research Group have shown that a “culture of safety, particularly a teamwork climate, is a predictor for many clinically important outcomes.”³⁶ Professionals must believe they are functioning in a safe environment where mutual trust and respect exist, collaboration is fostered,

and a common goal for care delivery is shared.³⁷

Resources

Educational materials and curriculum content should be developed using the national standards^{30,38} of the professional organizations such as the American Diabetes Association, the American College of Endocrinology, the American Association of Clinical Endocrinologists, the American Association of Diabetes Educators, and the Joint Commission. Reviewing teaching and learning principles, curriculum development materials and guidelines, and tools created for testing will help facilitate new knowledge and promote the design of a hospital-based professional education program.

Organizations specific to staff development, education, and health education have abundant resources available. As technology continues to advance, information system techni-

cians can assist in the development and implementation of Internet-based programs that appeal to younger professionals and fulfill a need for education in real-time, which is at the time the information is actually needed by the staff member. Workshops and written materials on coaching, mentoring, and modeling can provide the foundation for a well-rounded, diverse educational program to meet the diverse needs of adult learners.

Summary

Ensuring professional competency is an important strategy for improving diabetes care and education in acute care settings. As the prevalence of diabetes continues to rise and health care costs soar, professionals are called on to provide quality clinical care and education to achieve optimal clinical and behavioral outcomes. Staff members are being asked to do this concurrently with a multitude of other tasks, while facing competing demands, budget restrictions, and time constraints. Investing in the development of a strategic diabetes education plan by a dedicated interdisciplinary team not only will improve outcomes, but also will improve staff satisfaction with their work, enhance retention of dedicated staff members, increase employee engagement, and promote patient satisfaction.

The time is now for diabetes care providers to work in concert with administrators of institutions and health care systems to redesign inpatient health care delivery for diabetic patients. This can start with a redesign of professional education as we have known it in the past, moving away from didactic presentations toward thought-provoking case simulations, from classroom learning to hands-on clinical rounding, from self-learning packets to Internet-based learning modules and from standard testing to simulation experiences.^{27,39} With this, the realization of the importance of glycemic management will become the norm, and the integration of clinical protocols, policies, and patient education for diabetes care and glycemic management will be the standard of practice.

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