In Brief

Recent concern about the optimum management of hyperglycemia for hospital patients has heightened awareness of necessary standards of care. Publications have confirmed that diabetes is not diagnosed or treated when detected in acute care settings, and opportunities for education are missed. Hospitalization presents an opportunity to address patients' unique urgent learning needs. In centers where quality diabetes management is a priority, education is readily available, roles are clear, and quality is monitored, evidence supports the notion that inpatient education is related to earlier discharge and improved outcomes following discharge.

Patient Education in the Hospital

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From the 1950s (and even earlier) to the 1970s, patients with newly diagnosed type 2 diabetes and certainly those with type 1 diabetes were admitted to the hospital for initiation of medication and nutrition therapy, as well as comprehensive patient education. Given a long stay, nurses and sometimes nurse specialists, along with inpatient dietitians, provided one-to-one instruction with multiple opportunities for patient practice. Group classes were rare in this setting, and outpatient programs were not usually available. Patients were expected to be able to provide "return demonstrations" of concepts and psychomotor skills before discharge. Pre- and post-instruction knowledge tests were the norm. The curriculum was long and detailed, and information was provided through discussions, videotapes, or booklets written for patients.[1] Yet incidences of last-minute medication instruction occurred then just as they do today.[2]

Much of the literature on inpatient diabetes education then focused on the knowledge deficiencies of hospital staff and what to teach newly diagnosed patients.[3–7] Continuing education for nurses in the hospital was important. Nurses agreed, and some believed patients were more knowledgeable than they were themselves.[8]

Interested diabetes nurses began their diabetes specialization in the hospital. Clinical nurse specialists served the diabetic populations in larger teaching hospitals, providing quality improvement, staff education, and direct patient consultation. Soon efforts were made to develop national educational standards.[9]

There has always been a sizable inpatient population with diabetes, including people with long-standing diabetes-related complications and co-morbidities requiring inpatient expertise. Today, that population seems to be increasing.[10] Acute cardiovascular events, renal and peripheral vascular diseases, as well as infections, foot ulcers, and glucose extremes were the usual admitting problems, much like today. In tertiary

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care hospitals, transplantation and vascular surgeries were offered to people with diabetes, and complex patient care required ever-expanding skills by inpatient caregivers.[11–14]

"Survival Skill" Education

Many clinicians have used the term "survival skills" when referring to inpatient education. Etzweiler[3] described what he called "phases of patient education" as early as the 1960s, using the terms "acute or survival education," "in depth education," and "continuing education." His assumption was that multiple opportunities would exist for educational intervention following diagnosis. In the hospital, "survival skills" implied that nurses should teach the topics essential in the short term for safe patient discharge. If individuals had no or little previous education, it generally meant that they needed to have:

- A general understanding of the key components of the disease and its treatment
- The ability to take medications and injections accurately
- A basic ability to eat consistently with needs
- The ability to self-test and understand the results at a basic level
- The ability to recognize and treat hypoglycemia when applicable
- Sometimes the ability to perform foot self-exams and other screenings for complications
- Key follow-up contact information and appointments for follow-up education or acute illness.

One educator[15] proposed the term "pre-survival skills" to emphasize that hospitalized patients, or any patients with compromised learning or self-care abilities, need even more basic learning objectives for discharge. Her list included:

- When and how to take medications
- Consistent eating patterns
- Some resource for limited home blood glucose testing
- Knowledge of symptoms and foods for hypoglycemia
- Understanding of who and when to call for help.

More Recent Practice

Since the initiation of diagnosis-related group billing codes, case management,[16] and other cost-containment strategies, newly diagnosed patients with diabetes, when hospitalized, have shorter lengths of stay with limited time for instruction. Referral to home health agencies for continued instruction has become more common.[17,18] Patient learning centers have also developed to meet the needs of inpatient and outpatient education.[19,20] Both kinds of resources employ nurse generalists who may themselves require training to be current in the health-related information they provide.

Diabetes education has now been expanded to incorporate comorbidities and complications. Many diabetes educators and clinicians consider it essential for people to know how these new problems affect their diabetes "survival-level" self-care. For example, individuals with diabetes-related kidney disease might need their diabetes education to incorporate the specific dietary modifications, medications, and symptoms of their kidney disease. For those with vision loss, learning needs may include modification of medication-taking and glucose monitoring, low-vision reference materials, and injury prevention strategies. Patients undergoing major surgery have additional learning needs, including wound care, infection detection, adjustments to glucose-lowering medications after discharge, and surgical follow-up. Although little has been written about these additional learning needs, some of the larger institutions have nursing care paths, teaching guidelines, and other tools related to the education of diabetes patients with comorbidities.[21]

To Educate or Not?

Physicians, administrators, nurse managers, and diabetes educators in the inpatient setting sometimes have differing positions regarding the value of inpatient diabetes education. This debate was publicized as early as 20 years ago.[22]

Some take the position that education in the hospital is inappropriate because:

- Hospitalized patients are too ill to learn or retain information or skills.
- Abundant resources for outpatient education exist.
- Staff nurses are inadequately knowledgeable.
- Diabetes educators are not available.
- Diabetes education is a lengthy, complex, and elective process.
- Inpatient education is not cost-effective.

Others hold that education in the hospital is essential because:

- Unique learning needs are present that cannot be postponed.
- Outpatient programs are not equipped to address complex issues.
- Efficient systems for education can be created.
- Management support is critical.
- Patient self-advocacy is needed.
- Hospitalization is a unique opportunity to diagnose the undiagnosed and initiate care.
- Medicare pays little for "re-education," limiting outpatient access.
- Staff nurses can contribute to meeting basic needs with support.

This controversy must be acknowledged because it can be an ongoing reason for inadequate inpatient diabetes resources and confusion about caregiver roles. Reliable, consistent expertise with supporting materials is needed to ensure that education predictably occurs.

Specialized outpatient clinics and education centers have proliferated, with some being recognized for excellence through the American Diabetes Association (ADA) Education Program Recognition process.[23] Some health care professionals assume now that access to these programs has eliminated the need for other educational support services in the hospital or in primary care settings. But the required curriculum for the ADA process is now primarily focused on ambulatory care needs and does not address some of the previously mentioned issues most pertinent to inpatients. Changes in hospital care are making this outpatient model "inapplicable to today's inpatient environment."[24] And problems with universal access remain an issue.

Data from the Centers for Disease Control and Prevention's Behavioral Risk Factor Surveillance System continue to indicate that people with diagnosed diabetes in the United States receive limited diabetes education, if any.[25] Additional studies have shown that both previously undiagnosed and previously diagnosed patients with diabetes can be hospitalized and remain uneducated, even at the most basic level, at discharge.[26,27]

Good discharge planning mandated by the Joint Commission on Accreditation of Healthcare Organizations makes inpatient education essential. Inpatient staff are accountable for demonstrating that they have planned for patients' ongoing needs.

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For people with diabetes (and those with diagnostic levels of hyperglycemia), the following key questions can be asked and addressed early in the hospital stay:

- Does the patient require outpatient diabetes self-management education (DSME)?
- Can the patient prepare his or her own meals?
- Can the patient perform self-monitoring of blood glucose at the prescribed frequency?
- Can the patient take his or her diabetes medications or insulin accurately?
- Is there a family member who can assist with tasks that the patient cannot perform?
- Is a visiting nurse needed to facilitate transition to the home?[10]

Many nurses combine discharge planning and patient education. One model that formalized this function for people with diabetes demonstrated decreased lengths of stay, costs, and readmissions.[24]

Recent Recommendations

Inpatient education

The authors of a recent ADA technical review on diabetes care in the hospital[10] proposed teaching-related assessment and goals for inpatient DSME. They suggested that patient assessment should include:

- Knowledge, psychomotor skills, and affective domains
- Current level of self-care
- Preferred learning styles
- Psychological status
- Stress factors that impair learning
- Social/cultural/religious beliefs
- Abilities, age, mobility, visual acuity, hearing loss, and dexterity
- Readiness to learn
- Literacy skills.

Their suggestions for goals for inpatient DSME were:

- Assess current knowledge and practices of diabetes self-management and how they impact the patients' health status and reason for hospitalization.
- Initiate diabetes education for patients newly diagnosed with diabetes.
- Provide information on basic self-management skills to help ensure safe post-discharge care.
- Use a team approach with other health professionals (e.g., physicians, nurses, dietitians, case managers, and social workers) to coordinate care in the hospital and post-discharge.
- Provide information on community resources and diabetes education programs for continuing education.

The diabetes educator should serve as a resource for nursing staff and other health care providers.

These proposed educational elements are essentially part of the curriculum of the ADA Education Program Recognition process, and they match the American Association of Diabetes Educators (AADE) National Diabetes Education Outcome System's self-care behavior domains.[28] It is interesting that the new recommendations are still so similar to the old "curriculum" recommended by Etzweiler and his contemporaries 30 years ago. However, self-care skill recommendations have been improved over the years, with a focus on time limits and crucial knowledge.

Inpatient self-management

Patient self-management and patient education are intertwined. A 1988 study of self-management[29] showed that the majority of patients generally wish to retain self-care responsibilities in the hospital and are confident of their abilities to do so. Studies are still needed on the actual competencies of inpatients with diabetes to carry out self-management in the hospital.

The recent ADA technical review[10] also speaks to inpatient self-management of diabetes. To implement the recommendations proposed therein, patients would have to be well informed before admission and not in need of basic education. The technical review's recommended components for safe inpatient self-management include:

- Simultaneous performance of laboratory-measured capillary or venous blood test and patient-performed capillary blood glucose test, with results showing that the capillary blood glucose test is within ± 15% of the laboratory test.
- Demonstration that the patient can accurately self-administer insulin
- Confirmation that the patient is alert and able to make appropriate decisions about insulin doses
- Recording in the medical record of all insulin administered by both the patient and nurses
- Physician-written order that the patient may perform insulin self-management while hospitalized.[10]

Unclear Hospital Staff Responsibilities

It is paradoxical that although we now have a better understanding of effective diabetes management and education strategies, there remains unclear articulation of exactly which responsible acute caregivers are to meet these educational needs of patients in the hospital. Authors writing on inpatient diabetes care tend to make assumptions based on their particular institutional structures or regions of the country.[10,30] Yet management philosophies differ greatly regarding which inpatient education resources are essential to deliver and who should do the educating.

Diabetes nursing and diabetes dietetics positions may not exist in some institutions. More attention must be given to the question of whether nursing and dietetics expertise is even available for inpatients with learning needs, given current nursing workforce shortages, turnover rates, and increases in hospital nonprofessional staff.

Generalist staff nurses have traditionally shied from assuming such education roles, perhaps because they know that there are certified diabetes educators in the community who have expertise in the specialty, and they feel inadequately prepared to handle such responsibilities themselves. Staff nurse knowledge deficiencies related to diabetes patient education continue to be reported.[31–35] At a 2004 Minnesota meeting focused on inpatient diabetes care, attendees identified staff nurse involvement in diabetes care and education as the single most serious issue. In roundtable discussions, participants described lack of financing, lack of administrative support, inadequate staffing, hard-to-access references, and attitudinal barriers (A.T.N., unpublished observations).

At a minimum, inpatient nurses should receive procedural and institution-specific diabetes care educational updates supported by their institutions.[36] Dozens of tools and methods have been developed for keeping staff nurses informed. However, it seems we might consider the lessons from our diabetes patient education experience. It has not been sufficient to ensure that patients (or nurses) are knowledgeable. Additional strategies

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are needed if behavior change is expected. Hospital care systems need revamping to deliver better diabetes care.[10,27,37]

Abbate[37] asked the question: "Why hasn't the competency of . . . professionals translated into excellent clinical care?" He suggested that there is a lack of system capability to support providers in doing what they know they should do, and he reminded us that "every system is perfectly designed to produce its current results." Expertise must be available or borrowed to establish quality care guidelines and resources.

Nurse managers and prescribers must explicitly support the patient-teaching role of the inpatient nurses upon their employment, by providing the resources they need and rewarding their efforts.[8] Continuing education for nurses during new employee orientation and periodically thereafter can include information applicable to ambulatory care, as well. This will allow hospital nurses to convey accurate information to patients regarding their care after discharge. Continuing education offerings afford an opportunity to address the additional barriers for nurses who want to improve outcomes for their patients with diabetes.[38]

Various types of additional support are also needed to ensure that quality care is ongoing. Medication delivery systems, nutrition services, and other hospital functions must become more technically supportive to nurses at the bedside to allow efficient use of their time. Today, most hospitals use a combination of inpatient and outpatient educational services, especially if there is a formal outpatient educational system in place locally. Some home health agencies recognizing discharge trends have developed ADA nationally recognized educational programs to fill this need.

Inpatient Diabetes Teams

Patients with diabetes comorbidities and complications should have access to teams of multidisciplinary experts in diabetes.[39,40] In the real world, however, teams are rare. An individual nurse or outpatient nurse is often the only resource, and the contribution of the inpatient diabetes nurse to patient management and quality assurance has not been universally appreciated.[24,41]

A good system of care, including education, can be maintained through multidisciplinary cooperation, inpatient diabetes resources, and common goals.[30] Tools and supporting education can be and have been the responsibility of dedicated inpatient diabetes nurse and dietitian specialists. Care pathways, standardized assessment tools, and readily available teaching materials can solve many problems.[42,43]

Refining the Practice of DSME

In recent years, both the ADA and the AADE have scrutinized the literature, promulgated better research, and modified their recommendations regarding the components of general diabetes education. There has been an important shift from helping patients acquire knowledge for its own sake to providing them with the knowledge, skills, and beliefs needed to achieve self-care behaviors that are thought to result in positive outcomes, both clinical and psychosocial. As a result, educational goals are becoming more specific and are expanding to include more counseling activities that facilitate implementation of, or at least informed choices about, self-care recommendations.

Prediabetes and the metabolic syndrome may manifest with stress during a hospitalization. This situation presents an additional opportunity to intervene with nutrition, physical activity, and preventive self-care education and behavior-change counseling. But this opportunity may tax an already weak system for delivery of quality inpatient education.

Summary

Hospital nurses today need their own sources of support to effectively do their work. The inpatient environment is stressful and can be hazardous to professionals within it. National initiatives are underway to improve the hospital work environment; we are beginning to acknowledge that we need to take better care of our inpatient caregivers.

An Institute of Medicine report on this issue linked the safety of patients to the safety of nurses. Long hours, fatigue, poor processes for instituting changes within the setting, a breakdown in trust between nurses and administrators, and perpetual cost-cutting efforts have created a work environment with "serious threats to patient safety."[44,45] Efforts to blame nurses, increase expectations of them, or "re-educate" them are likely to fail without concurrent efforts to make their work lives better.

Each hospital is a world of its own, in which the culture and philosophy reflect the region, the training of the staff, community influences, and local medical and nursing practice norms. In large hospitals, it is not unusual for diabetes nurse educators to feel isolated and impossibly busy. They have little time for networking, keeping current with the literature, or carrying out research. Members of the greater community often are unaware of the workings of hospital care because they rarely come into contact with the hospital setting.

Advocacy for better inpatient care for people with diabetes is in its infancy. Fortunately, medical and surgical subspecialties, such as dialysis, cardiovascular surgery, and wound healing centers, have become better informed and highly concerned with the impact of poor patient self-care, education, and hyperglycemia on the clinical outcomes they address.[46–48] Concerns about medication errors have once again focused attention on the needs of inpatients with diabetes and the absence of diabetes expertise in the hospital setting. Wide gaps have been reported between target parameters of diabetes control and the status quo.[49]

Fortunately, some inpatient diabetes education programs are comprehensive and have sought ADA recognition. These centers exemplify a major commitment to the concept that inpatient education is a viable and important aspect of care in their facilities. Some have demonstrated improved clinical and economic outcomes, as well. We may be able to look to these "best practices" for guidance as we revise hospital systems to provide better education for inpatients with diabetes. Further studies are needed to address system changes for hospitals that facilitate assessment, specific instruction appropriate for inpatients, discharge planning for people with diabetes, and outcomes of quality improvement activities. Models must be developed for varied settings and levels of sophistication of services.

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