

The Immunology REPORT

NURSES' EDITION

Selected Reports from the 32nd Annual Meeting of the
North American Transplant Coordinators Organization
and the 16th Annual Symposium and General Assembly
of the International Transplant Nurses Society

Victoria L. Shieck, RN, BSN, CCTN
Guest Editor

Patient Education in the 21st Century

Avoiding and Managing Posttransplant Malignancy

**Reaching New Heights in Transplant Nursing:
Coordination, Management, and Advanced Practice**

New Medicare/Medicaid Rules: What Transplant Centers Need to Know

CONTINUING NURSING EDUCATION 1.5 CREDITS AVAILABLE

Guest Editor: Victoria L. Shieck, RN, BSN, CCTN

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2 **About This Continuing Nursing Education Activity**

3 **Introduction**

Victoria L. Shieck, RN, BSN, CCTN
University of Michigan Health System Transplant Center, Ann Arbor, Michigan

5 **Challenges and Strategies for Patient Education in the 21st Century**

Barbara N. Miller, BSN, RN
University of Miami/Jackson Memorial Medical Center, Miami, Florida

10 **Avoiding and Managing Posttransplant Malignancy**

Jackie L. Corbett, RN, FNP-C, MSN, CNN, CCTC
The University of Utah Renal/Pancreas Transplant Program, Salt Lake City, Utah

14 **Reaching New Heights in Transplant Nursing: Coordination, Management, and Advanced Practice**

Cynthia A. Galbraith, RN, NP-C, MSN
University of California, San Francisco, Liver Transplant Program, San Francisco, California

18 **New Medicare/Medicaid Rules: What Transplant Centers Need to Know**

Nancy A. Satmary, RN, BSN, MHCA, CCTC
St. John Hospital and Medical Center, Detroit, Michigan

23 **Post Test and Evaluation**

About This Continuing Nursing Education Activity

Rationale and Purpose

Organ-transplant surgeries save lives. However, the short- and long-term success of these complicated procedures depends upon the expertise of a tremendous number of medical professionals. This edition of *The Immunology Report* focuses upon many needs of transplant nurses and coordinators—a need for organization and networking, a need for understanding patients' cognitive abilities, a need for novel educational techniques that take advantage of technological advances, a need for appreciating the etiology and management of serious complications related to keeping transplants viable and recipients healthy, and a need for understanding the mandates handed down by federal regulatory agencies to transplant centers.

The four nurses and transplant coordinators who authored this issue describe the factors that can affect a patient's ability to follow post-transplant medical protocols, the sharing of vital information about the benefits and risks of transplant procedures, and the integration of traditional medical lessons with novel technological advances to facilitate the education of a new generation of patients. In addition, they describe how transplant nurses from around the world work with other nurses to form networks, organize their efforts, and coordinate programs to provide optimal services to their patients. Finally, this issue covers the decision made by the Centers for Medicare & Medicaid Services (CMS) in 2007 to reapprove programs involved with common solid-organ transplants every 3 years. Among the topics discussed are changes in Medicare policies and guidelines; the steps involved in transplant center reviews; and the data, documentation, and correspondence needed for CMS reapproval.

The articles in this issue are based upon selected presentations delivered at the 32nd Annual Meeting of the North American Transplant Coordinators Organization, held August 12–15, 2007, in New York City, and the 16th Annual Symposium and General Assembly of the International Transplant Nurses Society, held October 4–6, 2007, in Denver, Colorado. This continuing nursing educational (CNE) activity has been developed and approved by a planning committee of nationally recognized thought leaders to meet a perceived educational need to provide transplant nurses and coordinators with current information and strategies to help them perform their medical roles.

Learning Objectives

After reading this issue of *The Immunology Report*, participants in this educational activity should be able to:

- Understand the risk factors for skin cancer related to chronic immunosuppression and the actions transplant recipients need to take to reduce their risk.
- Recount the experiences of transplant nurses from around the world in realizing their interest in joining the profession, organizing and networking to share educational initiatives, and bonding together.
- Discuss the factors affecting patients' ability to appreciate the importance of following posttransplant medical regimens.
- Review the ways that technology may help to educate and support patients who have undergone organ or tissue grafting.
- Explain the many changes in regulations and policies for organ-transplant centers made by the CMS, the steps for facility review, and the materials that staff must create and gather to facilitate the review process.

Target Audience

Transplant nurses, coordinators, and other healthcare professionals significantly involved in the care of transplant recipients should find participating in this educational activity valuable.

Accreditation/Continuing Education Credit



The American Association of Critical-Care Nurses (AACN) and the American Board for Transplant Certification (ABTC) have approved the International Transplant Nurses Society (ITNS) as a provider of CEU/ABTC credits from their organizations. This CNE activity, sponsored by the International Transplant Nurses Society, has been approved by the ABTC for 1.5 Category 1 CEPTCs (Program Reference No. 3000-213) and by the AACN for 1.5 Contact Hours, CERRP Category A (Program Reference No. 00014182-11).

Faculty Disclosures

Any person who was in a position to control the content of this continuing educational activity was required to disclose all relevant financial relationships that created conflicts of interest. ITNS has identified and resolved all conflicts of interest prior to the publication of this educational activity. All faculty have been offered a modest honorarium for their participation in this CNE activity.

Victoria L. Shieck, RN, BSN, CCTN, Pediatric Liver Transplant Clinical Care Coordinator, University of Michigan Health System Transplant Center, Ann Arbor, Michigan, has nothing to disclose.

Barbara N. Miller, BSN, RN, Transplant Coordinator, Liver/GI Transplant Program, University of

Miami/Jackson Memorial Medical Center, Miami, Florida, has nothing to disclose.

Jacke L. Corbett, RN, FNP-C, MSN, CNN, CCTC, Nurse Practitioner, The University of Utah Renal/Pancreas Transplant Program, Salt Lake City, Utah, has nothing to disclose.

Cynthia A. Galbraith, RN, NP-C, MSN, Nurse Practitioner and Manager of the Liver Transplant Program at the University of California, San Francisco, has nothing to disclose.

Nancy A. Satmary, RN, BSN, MHCA, CCTC, Clinical Transplant Manager, St. John Hospital and Medical Center, Detroit, Michigan, has nothing to disclose.

Disclaimer

This activity is an independent educational activity under the direction of ITNS. The activity was planned and implemented in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education, the Ethical Opinions/Guidelines of the American Medical Association, the US Food and Drug Administration, the Office of Inspector General of the US Department of Health and Human Services, and the Pharmaceutical Research and Manufacturers of America Code on Interactions With Healthcare Professionals, thus assuring the highest degree of independence, fair balance, scientific rigor, and objectivity.

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Introduction

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The art of organ and tissue transplantation involves more than finding a donor for a recipient. It demands the expertise of a small army of healthcare professionals to perform screening, laboratory tests, surgery, and pre- and postoperative planning and care. This edition of *The Immunology Report* provides the transplant nursing community with a variety of interesting reports on issues ranging from changes in Medicare and Medicaid regulations for transplant centers to complications of organ transplantation to ways that transplant nurses may band together and use new technology to better educate their patients.

These reports are based upon presentations delivered during the 32nd Annual Meeting of the North American Transplant Coordinators Organization (NATCO), held August 12–15, 2007, in New York City, and the 16th Annual Symposium and General Assembly of the International Transplant Nurses Society (ITNS), held October 4–6, 2007, in Denver, Colorado.

■ WHAT'S INSIDE

Patient education is crucial to the organ and tissue transplantation process—transplant recipients must understand the importance of complying with prescribed therapies from the beginning of the transplant process and through the years that follow. Barbara N. Miller, BSN, RN, from the University of Miami/Jackson Memorial Medical Center, discusses the many variables that affect patients' abilities to participate fully and actively in their individualized therapeutic protocols. Patients' readiness to learn; their levels of knowledge and competency; individual learning styles; and physical, psychosocial, and developmental factors all contribute to the educational process. Advances in

communications and technology offer transplant nurses novel methods to help patients deal with the many challenges and issues related to this complicated medical experience.

The gift of a viable body part to replace a damaged organ brings with it the need for chronic immunosuppressant therapy and the increased long-term risk of developing cancer. In particular, skin cancers and posttransplant lymphoproliferative disorder (PTLD) most commonly develop in patients using these potent but necessary medications. Jacke L. Corbett, RN, FNP-C, MSN, CNN, CCTC, from The University of Utah Renal/Pancreas Transplant Program in Salt Lake City, outlines current information on PTLN and therapeutic modalities to treat this condition. Further, she differentiates the different types of skin cancer and explains the risk factors for developing these lesions, the treatments presently available for transplant patients with skin cancers, and the simple steps transplant patients may take to prevent skin cancer.

Transplant ability and outcomes differ from country to country, and transplant nurses around the globe continue to strive toward better educational initiatives and greater achievement in the field. Cynthia A. Galbraith, RN, NP-C, MSN, from the Liver Transplant Program at the University of California, San Francisco, recounts the experiences of transplant nurses in Australia, Finland, and the Netherlands as they organized others in their profession to expand educational experiences, support one another, and network within the healthcare field. In addition, she shares the story of one transplant nurse who found her calling after receiving a liver transplant; this experience gave her insight into the educational, emotional, and therapeutic needs of transplant patients that is afforded very few healthcare professionals.

Finally, Nancy A. Satmary, RN, BSN, MHCA, CCTC, from the Department of Transplant Surgery at St. John Hospital and Medical Center, Detroit, Michigan, reviews the Centers for Medicare & Medicaid Services' (CMS) new procedures for reapproving medical programs involved with common solid-organ transplantations every 3 years to promote successful transplants and quality care. She covers new regulations as they apply to the policies and guidelines of transplant centers, various steps of facility review, and criteria for selecting organ donors. She also discusses the considerable documentation that accompanies the transplant process, including the paperwork involved with living-donor organ donation and correspondence needed for CMS approval of an organ-transplant program.

We thank the nurses and transplant coordinators who contributed to this nurses' edition of *The Immunology Report*. These articles offer a vivid representation of the challenges faced by transplant nurses and coordinators and the many research subjects to be pursued in the years to come.

■ BUILDING STRENGTH OF SPIRIT

Although immensely important to the world of organ and tissue transplantation, these subjects are but one part of the spectrum of services needed by and offered to patients given organ grafts. Feeding the spirit of transplant patients—and the imaginations of younger graft recipients—



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Pictures of happiness: young transplant recipients enjoying themselves—and learning—at Camp Michitanki



has its own healing powers. Toward that end, the University of Michigan Health System Transplant Center created Camp Michitanki (Michigan Transplant Kids), a summer camp for children 7–16 years old who have undergone organ-transplant surgery. Located in a YMCA camp on the shores of Lake Van Ettan in Oscoda, Michigan, the facility offers campers over 170 acres for experiencing medically supervised fun and exercise. Along with the swimming, sailing, canoeing, horseback riding, arts and crafts, nature walks, team-building activities, campfires, team

sports, and physical challenges posed by a rock-climbing wall, a skateboarding park, and an aerial ropes course, campers also participate in discussions on medical treatment and learn important skills, such as how to swallow tablets and capsules, while finding new ways to integrate their medical regimens into day-to-day activities. “Camp was the best week of my life,” said one camper. “I have never been with so many other kids just like me... It was great to be just like everyone else for once.”

Campers continue their medication

schedules and undergo medical examinations during their time at Camp Michitanki. The camp staff includes transplant nurses, physicians, social workers, and volunteers from the community who work shoulder to shoulder with YMCA staff to afford these young campers a “normal” and responsibly supervised camping experience. “It is hard to let my child out of my sight, and it is very comforting to know that my child’s medical needs will be taken care of during her time at camp,” a sentiment shared by the parent of a first-time camper. Most importantly, these children, who have already endured medical interventions of a magnitude that will never be experienced by most people over a lifetime, are able to enjoy the camp’s beautiful outdoor environment as they interact with others facing similar challenges.

These young transplant recipients and their spirit, enthusiasm, and energy truly are an inspiration to all of the adults who work with them. Although the first group of campers in 2003 and 2004 came only from transplant programs at the University of Michigan, the University of Pittsburgh, and the Children’s Hospital of Detroit, campers in more recent years have also hailed from Illinois and Ohio. Organizers hope that participants of the future will join them from transplant centers in Grand Rapids, Chicago, Cleveland, London (Ontario), and other surrounding areas.

The cost of a 1-week stay at the camp is approximately \$600 per camper. Families of campers already face tremendous expenses and are only asked to pay a \$50 registration fee. Scholarships are available for families who need assistance. The remainder of the fees are covered by generous donations and fund-raising efforts by families and friends of the University of Michigan Transplant Center.

People interested in supporting the program may visit <http://www.firstgiving.com/campmichitanki> or call the University of Michigan Health System Transplant Center at 734-764-4141. Your contribution can help bolster the spirits and the strength of a young transplant patient who just “wants to be a kid.”

Challenges and Strategies for Patient Education in the 21st Century

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Abstract Improved outcomes in solid-organ transplantation may be attributed to a combination of advanced surgical techniques, better-managed immunosuppressive medications, and careful monitoring to prevent complications. To maximize these outcomes, transplant centers must inform and educate their patients thoroughly during the entire transplant process. Variables such as readiness to learn; levels of knowledge and competency; individual learning styles; socioeconomic and cultural background; and physical, psychosocial, or developmental factors must be examined to individualize patient education methods and plans. This article will identify a number of the challenges and strategies for educating transplant patients, provide an overview of how advances in communication and technology affect the present medical model of teaching methods, and discuss some trends in patient education as presented at the 32nd Annual Meeting of the North American Transplant Coordinators Organization.

At the time of the learning assessment, attention should be made to see whether the patient has any underlying cognitive disability resulting from an acute or chronic illness that would prevent his or her readiness to learn.

Literacy Issues

A patient's literacy level, including the ability to read and perform basic numerical calculations, also must be assessed to determine the most effective way to deliver individualized healthcare information. Patients with adequate literacy are better able to function within the healthcare system than are those who are functionally illiterate. Illiteracy transverses all socioeconomic levels; it often remains hidden from transplant educators because of patients' shame or embarrassment. However, illiteracy is not an insurmountable obstacle—rather, it stands as an opportunity for healthcare professionals to use alternative resources (eg, video, audio presentations) and one-on-one interactions to provide thorough information on the transplant process.

It is estimated that 47% of adults in the United States have low literacy skills. Consequently, patient educational

Improved outcomes in solid-organ transplantation have many roots, including advancements in surgical techniques, better management of immunosuppressive medication, and careful monitoring to prevent complications. To maximize these improved outcomes, however, nursing staff at transplant centers must inform and educate their patients thoroughly from the beginning of the transplant process to its end.

This article will identify a number of the challenges and strategies that transplant nurses and coordinators face when educating patients. In addition, it will recognize the revolution in communications and technology and provide information on related new trends in patient education as discussed during the 32nd Annual Meeting of the North American Transplant Coordinators Organization (NATCO), held August 12–15, 2007, in New York City. The panel included Linda Ohler, MSN, RN, CCTC, FAAN; Dorothy Lockhart, RN, BSN, CCTC; Nancy Har-

ington, RN, MS, CCTC; and Catherine Garvey, FN, BA, CCTC.

THE PATH TOWARD EDUCATING TRANSPLANT PATIENTS

The educational process begins with the patient's first encounter with the transplant team. This event should include an initial assessment to identify his or her readiness to learn; individual learning styles; levels of knowledge and competency; cultural background; and physical, psychosocial, and developmental factors.

Readiness to Learn

A patient's state of mind is critically important to his or her ability to grasp and retain new information. For example, if a patient recently was diagnosed with a disease process or if the onset of organ failure was acute, he or she might be in denial and have a considerably different readiness to learn than would individuals presenting with a chronic condition.



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materials should be written at a fifth- or sixth-grade level. When possible, supply patients with both written and verbal material in their native language to avoid any language barriers that might affect the learning process adversely. Other useful tools for educating patients with learning disabilities are visual aids, such as pill stickers, pictures with medication syringes showing the correct dosage of liquid medication, and color-coding the medication bottle with the medication sheet, to name a few.

Knowledge Level

A patient's understanding of the disease process, treatment options, and other issues must be assessed before information tailored to the appropriate educational level may be offered. A balance must be achieved between using terminology that is too advanced and not readily understood and oversimplifying explanations that underestimate the individual's ability to comprehend more in-depth material. For some patients and their families, it may be necessary to do the teaching in small sessions to avoid overwhelming them with a massive amount of information all at once. Reassessment of their understanding of the information should be done often and the material reinforced as indicated. The use of a post-teaching exam is a good way of assessing the effectiveness of a patient's knowledge level, especially when working with adolescents.

Physical Factors

The physical effects of end-stage organ disease are organ-specific and may impact the patient's ability to learn. A patient with end-stage liver disease may be encephalopathic; a patient with end-stage renal disease may be uremic, have electrolyte imbalances, or be visually impaired secondary to diabetes mellitus; a patient with advanced cardiac disease may have low cardiac output; and a patient with pulmonary disease may be hypoxic or hypercapnic.

Each of these situations necessitates modified delivery of patient education. Including a caregiver or guardian in the learning process enhances the reception

of information and ultimately benefits the patient.

Psychologic Factors

Psychologic factors that might affect learning may become apparent during the psychosocial evaluation phase of the pretransplant work-up. Patients may experience depression, anxiety, anger, or resentment as they deal with their loss of organ function, the process of being added to the waiting list, their waiting time on the list, the anticipated transplant surgery, the loss of their previous way of life, and the uncertainty of how life will be after transplant. All of these emotions impact patients' ability and willingness to learn and retain information.

Patient Background and Culture

In its *2007 Statement of Requirements Related to the Provision of Culturally and Linguistically Appropriate Health Care*,¹ the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) listed culturally and linguistically appropriate healthcare as an important quality and safety issue and as a key element in individual centered care. Accordingly, the JCAHO document outlined standards that support the provision of care, services, and treatment in a manner conducive to the cultural, language, literacy, and learning needs of the individual (Table 1).¹

Cross and colleagues² described cultural and linguistic competence as "...a set of congruent behaviors, attitudes, and policies that come together in a system, agency, or among professionals that enables effective work in cross-cultural situations." In this context, *culture* refers to integrated human behavioral patterns that include the language, thoughts, communications, actions, customs, beliefs, values, and institutions of racial, ethnic, religious, or social groups. *Competence*, on the other hand, refers to the individual's ability to function effectively alone and within the context of cultural beliefs, behaviors, and needs presented by consumers and their communities.

Cultural diversity. Cultural diversity within the patient population impacts the educational process before and after

TABLE 1
Standards for Cultural, Language, Literacy, and Learning Needs of Transplant Patients

- Respect for values and beliefs
- Appropriate communication, including interpreter and translation services
- Patient involvement in care
- Informed consent
- Patient assessment
- Patient education
- Food preferences
- End-of-life care
- Compliance with law and regulation
- Planning for services to meet patient needs
- Equal standard of care provision
- Effective communication throughout organization
- Staff competence
- Provision of adequate resources
- Staffing—appropriate mix, adequate training, assessment of competence
- Staff orientation and ongoing education about needs of patient population
- Appropriateness of environment
- Collection of data, documentation of needs, and access to data
- Proactive risk assessment
- Performance improvement opportunities
- Organization ethics
- Complaint/grievance resolution
- Use of clinical practice guidelines

Source: Joint Commission on Accreditation of Healthcare Organizations¹

transplant and influences patients' compliance and survival after transplant. Therefore, healthcare professionals need to recognize, understand, and respect cultural differences to effectively educate patients. Further, issues of religion, mistrust of the medical community, and communication must be considered in patient education. Many hospitals have staff available for consultation on any cultural issue of diversity.

Religious and spiritual beliefs.

Religion and spirituality play a role in perceptions of quality of life and the willingness of patients to participate actively in caring for themselves and their well-being. Further, transplant educators must be sensitive to special dietary requirements and accommodations for

religious practice. For example, Orthodox Jews may be reluctant to travel to a clinic or hospital on the Sabbath, so the transplant educator must be flexible in scheduling medication to accommodate time for religious observance. Jehovah's Witnesses may be concerned about blood transfusions and need further information about bloodless surgery or transfusion alternatives. And, Islamic women may believe that their role in the family will be diminished if they become unable to perform all domestic duties; these women may need reassurance that they will resume normal activities post transplant.

Mistrust of medical personnel.

Mistrust of the medical community can be overcome by developing a relationship of trust based upon honesty and credibility. Patients should receive both written and oral communication in a language with which they are comfortable; a medical translator, rather than a family member, should be available when appropriate to avoid misunderstanding or bias.³

■ WHEN AND WHAT TO TEACH

Patients are bombarded with a plethora of information covering many topics, and this flood of data quickly may become overwhelming.

Many Lessons = Better Outcomes

Patients must become knowledgeable about their individual disease processes, the current status of their health, and their possible progression to end-stage organ disease. They must be made aware of organ-specific treatment options, such as hemodialysis for patients with end-stage kidney disease or mechanical support devices for patients with advanced heart failure. They must familiarize themselves with the various members of the transplant team—including the transplant coordinator, surgeon, social worker, pharmacist, and financial coordinator—and their duties.

Patients also must understand the evaluation process and must become acquainted with the laws (eg, the National Organ Transplant Act); agencies regulating organ allocation (eg, the United

Network for Organ Sharing and the Organ Procurement and Transplantation Network); system, organ-specific criteria for listing (eg, Model for End-Stage Liver Disease/Pediatric End-Stage Liver Disease and the Lung Allocation Score); requirements for remaining on a waiting list (eg, periodic updating of laboratory values); and expected time that they may stay on the list.

In addition, patients must be fully informed about the benefits of transplant (eg, possible extension and improved quality of life), the short-term risks associated with transplantation (eg, donor-derived infection), and the long-term risks of immunosuppression (eg, renal insufficiency, cardiovascular disease, malignancies). They must be prepared to make decisions regarding transplant

Patients must be prepared to make decisions regarding transplant donor-organ options and empowered to weigh the outcomes, risks, and benefits associated with each.

donor-organ options, including receiving a transplant from a standard- or expanded-criteria donor, a living donor, a high-risk donor, or an individual whose organs are donated after cardiac death, and they must be empowered to weigh the outcomes, risks, and benefits associated with each option. Further, patients must be given a general overview of the transplant surgery itself and information on what to expect postoperatively. Subjects for discussion include intubation, indwelling catheters, surgical incisions and drains, diet, pain and pain medication, anticipated length of hospital stay, and recovery time at home.

Posttransplant education should begin

prior to transplant and reinforcement on the day after surgery, with the primary focus being medication and its purpose, dosage, and side effects. In addition, patients must learn about the importance of adhering to the medication regimen, laboratory testing schedule, and follow-up clinic visits to minimize hospital readmissions, episodes of rejection or infection, and ultimate graft loss and to maximize health, self-care, and resumption of normal activities.

Theories on Learning

Scholars have debated learning methods for centuries. More recently, the medical community has joined this debate; namely, what is the best way to present information to patients?

The learning styles theory states that individuals prefer one way or style of learning over another and suggests that designing educational experiences, curriculum, and instruction to match individuals' learning styles may improve comprehension, retention, and outcome.⁴

Cognition theory views behavior as being goal-oriented and having direction and purpose; ie, a particular type of behavior will lead to a certain goal. Thus, this theory focuses on changing thought patterns using a variety of sensory input and repetition. Learners can follow a path using tools provided to achieve a goal. They may learn from experience if they are motivated enough to turn expectations into behavior.⁴

Cultural learning theory states that an individual is a product of cultural background and upbringing. It focuses upon increasing the depth of knowledge by interaction and observation within social contexts and relies upon ongoing dialogue and open inquiry. Learning occurs as people relate with their environment, and the educator must establish communities of practice to foster conversation and participation.⁴

Behavioral learning theory focuses on changes in conduct using reinforcement and punishment. Stimuli from the external environment produce behavioral change in the desired direction; the educator, then, must arrange the external environ-

ment to elicit the desired responses.⁴

Humanistic learning theory views the learning process as a personal act to fulfill potential and become self-actualized and autonomous. In this form of self-directed learning, the educator facilitates development of the whole person.⁴ A form of humanistic learning known as “andragogy” was introduced by Knowles,⁵ who described this theory as “an emerging technology for adult learning.” It is based upon four key assumptions that differentiate adult learners from child learners. First, adults move from dependency to so-called self-directedness. Second, adults draw upon past experience for learning. Third, adults are ready to learn when they assume new roles. Fourth, and finally, adults want to solve problems and apply new knowledge immediately. Therefore, Knowles concluded, educators must depart from traditional pedagogy and assume new roles as facilitators, adapting their teaching styles, resources, materials, and strategies to the changing needs, interests, and learning styles of their adult learners.

■ TECHNOLOGY AND THE NEW EDUCATIONAL AGE

Prensky⁶ targeted the advent of digital technology in the latter part of the 20th century as the single, most important event to change the learning style of today’s students. In turn, the technologic revolution in information access and communication demands great fundamental changes in our educational system.⁶ Many of today’s patients were born in 1985 or later; these individuals are part of the first generation to grow up with computers, electronic mail, Internet access, cellular phones, text messaging, video games, and iPods as integral components of their everyday lives.

By the age of 7 years, most children having access to technology master television-on-demand, use of cellular phones, and playing of computer games. Fully 50% of individuals between the ages of 12 and 17 years own cellular phones, and 90% use the Internet. Many are “latchkey kids” who are growing up with the business model of competition and profit integrated into

government and nonprofit agencies; they are watching workaholic parents put jobs before family and are witnessing the disappearance of corporate loyalty to employees.

Further, 40% of the preteens and adolescents who hold part-time jobs feel crunched for time and continually hurried. Generally, teenagers are technically advanced and immersed in their own universe of texting, electronic mailing, and instant messaging 24 hours a day. And, although today’s average college graduates have spent less than 5,000 hours reading, they have invested over 10,000 hours playing video games, 20,000 hours talking on a cellular phone, and 20,000 hours watching TV and have exchanged more than 200,000 electronic and instant messages.

As a result of this almost-constant bombardment of digital technology, these “millennials” or, as Prensky⁶ calls them, “digital natives” think and process information in a way that is fundamentally different from that of previous generations. Patient educators, many of whom are “digital immigrants” born before the advent of digital technology, are now presented with a challenge—to understand the learning styles of youngsters accustomed to digital communication and to adapt and invent educational products that will be interesting and informative to this new patient generation. Patient educators may take certain steps to speak the “language” of this new generation of patients (Table 2).⁶

Educators must understand the learning styles of patients, adapt the methodology and content of teaching materials, and measure the effectiveness of these educational products in improving the knowledge, skills, and abilities of patients. Methodology must progress at a faster, less-stepwise pace that allows more parallel, random access to information. Content still must contain some elements of traditional curriculum (ie, reading, writing, logical thinking, and comprehension of past ideas and writings), yet movement toward a future-oriented curriculum that includes digital technology and the ethics, politics, soci-

TABLE 2
Bridging the Gap Between ‘Digital Immigrants’ and ‘Digital Natives’

- Accept that times have changed
- Take advantage of the young to learn and integrate
- Communicate in and adapt materials to the language and style of the young
- Get used to a faster, less step-by-step, more parallel, and more random pace
- Appreciate and be ready to teach two types of content:
 1. **“Legacy” content:** traditional learning (eg, reading, writing, arithmetic, logical thinking, understanding of writings and ideas of the past)
 2. **“Future” content:** digital implementation and technology (eg, software, hardware, robotics, nanotechnology, genomics) as applied to teaching traditional subjects such as ethics, politics, sociology, and languages
- Learn how to use technology to teach the young

Adapted from Prensky⁶

ology, and language that accompany this revolution is crucial.

New Teaching Technologies

New teaching technologies include the use of Web logs (“blogs”), blackboard distance learning, mobile learning, digital video recording (TiVo), and podcasts.

Blogs. Blogs are Web sites that allow readers to write comments in an interactive format and to provide commentary on particular subjects. The typical blog may combine text, images, and links to other blogs, Web sites, and alternative media related to a topic. Currently, most blogs related to organ transplantation have been created by the families of patients to share their personal experiences. (An organ-specific list of such resources may be found at <http://transplantheadquarters.blogspot.com>.) Some of these sites also discuss the processes of end-stage organ disease, provide information on specific transplant centers, and allow access to calendars of upcoming transplant events. Overall, these sites serve as a format for interactive postings similar to those found in an Internet chat room.

Blogs are patient-driven, so readers must be wary of the accuracy of the infor-

mation found on these sites. In the future, however, transplant educators will be able to use this format to disseminate accurate patient-friendly information and create discussion boards.

Blackboard distance learning.

Blackboard distance learning involves an Internet software system that is designed to enhance both teaching and learning by creating educational materials that use various Web-based tools; designing customized learning plans for individuals; and facilitating student participation, collaboration, and communication. Within this setting, transplant centers may post educational materials for patients and interactive question-and-answer dialogues between patients and transplant coordinators and physicians on a dedicated Web site.

Mobile learning. Mobile learning, also known as M-learning, represents a shift from patients sitting at a computer loaded with certain software to gain education. This mode uses course materials that may be retrieved from a distant site. Mobile learning uses wireless technology, such as iPods, personal data assistants (PDAs), laptop computers, and audio MP3 players.

Mobile learning expands the boundaries of the classroom by allowing learners to download files and listen at their convenience. For example, TiVo allows automatic capture and recording of up to 300 hours of programming to an internal hard disk for viewing at a later time. Using this technology, transplant centers in the future may produce transplant educational programs for patients to record and view as many times as desired at their leisure and in the privacy of their homes.

Podcasts. Podcasts, which are individual or series of digital media files that are available over the Internet using

syndication feeds and that may be played on MP3 players and personal computers, represent a shifting paradigm on how educational programs may be delivered. Podcasting may be used to provide distance learning and continuing education, update competencies, and listen to guest speakers from remote locations. Its ability to provide remediation for slower learners or extra content for advanced or highly motivated learners facilitates self-paced learning.

To date, over 100 million iPods have been sold. Further, over 20,000 podcasts currently are available online; all are free, and many are multilingual. For example, Grayson Wheatley, MD, of the Arizona Heart Institute (<http://www.cvmd.org>) has set up a podcasting network to educate his patients. Before their discharge from the hospital, patients borrow iPods that are loaded with videos about diet, exercise, and other information regarding their cardiac surgery. In a similar way, transplant centers may adapt this format in the future for culturally and linguistically specific patient education on transplant evaluation, preoperative teaching, medication instruction, and a review of signs and symptoms of infection and graft rejection for patients and their caregivers.

CONCLUSION

Education of the transplant patient is an ongoing, dynamic process that begins with the first pretransplant encounter and continues throughout the posttransplant phase. Assessing learning styles based upon learning history allows the transplant educator to customize learning plans and to adapt and invent educational materials that will improve the knowledge, skills, and abilities of their patients.

Currently, there is no standard measurement of the effectiveness of patient education; however, many centers have developed their own pathways, which include pretransplant orientation classes, testing prior to discharge, patient demonstration, and planned reinforcement at postoperative clinic visits. In response to this need, NATCO recently initiated the Patient Education Resource Project. To improve quality of care and patient outcomes, this program will develop and maintain a user-friendly resource list of educational materials and supply an educational tool to assess and document transplant patient education.

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Avoiding and Managing Posttransplant Malignancy

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Abstract Recipients of solid-organ transplants need chronic immunosuppression to keep their newly obtained grafts viable—but the powerful drugs they take greatly increase their long-term risk of malignancy. Among the most common malignancies diagnosed in this patient population are skin cancers and post-transplant lymphoproliferative disorders. During the 16th Annual Symposium and General Assembly of the International Transplant Nurses Society, the incidence, characteristics, and treatment of these serious complications of solid-organ transplantation were discussed. This article summarizes this important information and offers simple, yet effective, measures for nurses to share with high-risk patients to help them avoid the ravages of skin cancer.

Recipients of solid-organ transplants have a greater long-term risk of malignancy than does the general population because of their chronic use of immunosuppressive medications to prevent graft rejection. It is estimated that about 20% of transplant recipients using immunosuppression for 10 years will develop a malignancy.¹ Buell et al further projected that cancer mortality in transplant recipients over the next 20 years may exceed cardiovascular mortality.¹

The incidence of skin cancers; lymphoproliferative disorders; in situ carcinomas of the uterus and cervix; anogenital cancers; renal cell carcinoma; hepatocellular carcinoma; and cancers of the pharynx, larynx, and oral cavity is significantly higher in solid-organ transplant recipients than in the general population.¹ However, the incidence of malignancies most commonly seen among the general population—lung, breast, prostate, colorectal, and invasive uterine carcinomas—is only slightly increased after transplant.

This article will focus on the two most common malignancies diagnosed in recipients of solid-organ transplants: skin cancers and posttransplant lym-

phoproliferative disorder (PTLD). It is based upon a presentation by Bonnie Potter, RN, CCTC, of the Mayo Clinic, Rochester, Minnesota, delivered during the 16th Annual Symposium and General Assembly of the International Transplant Nurses Society, held October 4–6, 2007, in Denver, Colorado.

■ POSTTRANSPLANT SKIN CANCERS

Skin cancer is the most common malignancy occurring in patients receiving a solid-organ transplant. Basal cell carcinoma is the most common skin cancer reported among the general population, but squamous cell carcinoma is the most common skin malignancy found among transplant patients; in addition, transplant recipients have a higher risk of developing malignant melanoma than does the general population.

Skin cancers that occur in transplant patients tend to be more aggressive and strike at a younger age than the skin cancers that develop in non-transplant recipients.² Up to 70% of long-term transplant patients may develop skin cancer, which may significantly impact their quality of life. Repeated surgeries to remove lesions and possible resultant scarring may affect

a patient's appearance and cause great consternation.³

Patients at Greater Risk

Although all individuals who receive a solid-organ transplant have a higher risk of developing skin cancer because of their need for immunosuppressive medication, some patients have an even higher risk because of certain personal characteristics. For example, older transplant patients and men are at higher risk, as are patients with fair, easily burned, or freckled skin; blue, green, or hazel eyes; or naturally red or blond hair. In addition, people who work outdoors or have extensive exposure to ultraviolet (UV) radiation or who have a family or personal history of skin cancer also have a higher risk of developing skin cancer.³

Lesion Characteristics

Actinic keratoses, the lesions associated with the first stage of squamous cell carcinoma, are rough, scaly spots that usually appear on a red, irritated base (Figure 1).⁴ These lesions often are felt more easily than they are seen. Their early treatment can prevent their transition to more serious forms of skin cancer.³

Basal cell carcinomas are detected in about 1 million patients each year in the United States. This type of lesion usually



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FIGURE 1 Actinic keratosis, characterized by pink or red spot with a rough surface. Reproduced, with permission, from AT-RISC Alliance.⁴



FIGURE 2 Superficial basal cell carcinoma. Reproduced, with permission, from AT-RISC Alliance.⁴



FIGURE 3 Squamous cell carcinoma, characterized by a pink-red or white scaly papule or eroded red nodule. Reproduced, with permission, from AT-RISC Alliance.⁴

presents as a small, pink bump or patch on the neck or head, although it may develop on any body area.³ There are three different clinical types of basal cell carcinomas: nodular, superficial (Figure 2),⁴ and morpheaform.

The risk of developing a basal cell carcinoma doubles every 25 years. If left untreated, the affected area ulcerates, bleeds, or crusts repeatedly. This type of cancer grows slowly and metastasizes only rarely; however, a basal cell carcinoma may damage an area extensively if it is not managed.

Squamous cell carcinoma, the most common type of skin cancer found among organ-transplant patients, occurs in approximately 300,000 patients per year in the United States and results in about 2,000 deaths annually.

When compared with basal cell carcinomas, these lesions are more scaly and rough and protrude more prominently from the surface of the skin (Figure 3).⁴ They often are found on the head and neck, but they may grow on the lips, ears, and the backs of the hands and arms.³

Transplant patients have a 7% incidence of metastasis associated with this malignancy. In all, 90% of squamous cell carcinomas are found on areas exposed to UV radiation from the sun or artificial tanning methods.⁴ Table 1 defines the classification of “high-risk” squamous cell carcinomas.

Malignant melanoma is diagnosed

TABLE 1
Characteristics of High-Risk Squamous Cell Carcinomas

- Multiple, rapid recurrences
- High-risk location (forehead, temple, ears, lips)
- Large size
- Aggressive growth
- Poor differentiation
- Deep invasion (greater than 4–6 mm)
- Perineural invasion

Source: AT-RISC Alliance⁴

in approximately 58,000 individuals in the United States each year; it carries a mortality risk of 15%. The “ABCDs” of melanoma are⁴:

Asymmetry: the shape of one half does not match the other (Figure 4).

Border: edges are ragged or irregular.

Color: uneven, may include shades of black, brown, red, or tan.

Diameter: change in size, usually an increase.

Hollenbeak et al⁵ reported that the age-adjusted, standardized risk of melanoma among 90,000 kidney-transplant recipients was almost 3.6 times that of the general population.

Merkel cell carcinoma is a neuroendocrine skin cancer that typically presents as an asymptomatic lesion on the head, neck, or arms (Figure 5).⁶ It is more frequently seen, and tends to occur at an earlier age, in transplant recipients than among the general population.



FIGURE 4 Melanoma. Reproduced, with permission, from AT-RISC Alliance.⁴



FIGURE 5 Merkel cell cancer on the leg. Reproduced, with permission, from Merkel Cell Carcinoma.⁶

Preventative Strategies

Most fair-skinned organ-transplant patients eventually develop skin cancer within 3–7 years following receipt of a graft; about 40% of these individuals living in temperate climates, and as many as 70% of those living in warmer climates, develop skin cancer within 20 years of

receiving a transplant.³

The time lapse between transplant surgery and development of these lesions depends upon individual risk factors and the length of time that a patient uses immunosuppressants. Patients should be reminded regularly that the best strategy to prevent skin cancer is protection from exposure to UV irradiation, either directly from the sun or from artificial tanning methods that involve UV exposure.

Treatment

Skin cancers that are detected early almost always can be cured. Treatment of these malignancies depends upon individual characteristics. For basal cell and squamous cell carcinomas, early lesions may be excised by scraping or freezing; for more advanced lesions, surgical removal is indicated. Melanoma must be surgically removed; a method known as Mohs micrographic surgery ensures that the skin cancer is removed completely and that healthy skin is spared.³ Other treatment options also may be offered.

Education and Self-Help

Patients should be educated about the risk of skin cancers before and after they receive an organ transplant. Berg and

Patients should be reminded regularly that the best strategy to prevent skin cancer is protection from exposure to UV irradiation.

Otley⁷ found that just 54% of transplant recipients remember receiving skin cancer education. Further, only 40% of transplant patients regularly use a sunscreen, and, of these patients, 90% use a sunscreen with a sun protection factor (SPF) of less than 10.

The steps organ-transplant recipients should take to avoid skin cancer and pro-

TABLE 2
Recommended Frequency of Skin Examinations After Transplant

History	Exam frequency
No history of skin cancer	Every year
Actinic keratosis	Every 6 months
Nonmelanoma skin cancer	Every 6 months
Multiple nonmelanoma skin cancers	Every 6 months
High-risk squamous cell carcinoma	Every 3 months
Metastatic squamous cell carcinoma	Every 3 months

Source: AT-RISC Alliance⁴

mote skin health are simple. Importantly, they should apply a broad-spectrum sunscreen (SPF of at least 30) regularly, using the product as part of their normal morning routine. Many cosmetics contain sunscreens. Appropriate products should be applied to all exposed skin areas, including the face, ears, dry parts of the lips, neck, and the backs of the hands. Men with thinning hair also should apply sunscreen to their scalps.³

Organ-transplant patients should be sure to wear long-sleeved shirts and long pants whenever possible; regular use of a wide-brimmed hat and sunglasses offering UV protection also is recommended. In addition, they should limit their outdoor activity, if possible, to before 10 AM and after 4 PM.³

On the first day of every month, patients should examine their own skin using a mirror or with the help of a partner; they should report any suspicious or changing lesions immediately to a dermatologist, their family physician, or a transplant nurse or coordinator.

Early diagnosis of skin cancer may reduce morbidity and mortality. Table 2 shows the International Transplant Skin Cancer Collaborative (ITSCC) recommendations for dermatology examinations.⁴

■ POSTTRANSPLANT LYMPHOPROLIFERATIVE DISORDERS

Posttransplant lymphoproliferative disorders (PTLD) are the most common malignancies detected during the first year after transplant surgery. Further, they are the most serious medical con-

ditions faced by transplant recipients and carry the greatest potential for mortality.

PTLDs are different from the lymphoproliferative disorders that occur in the nontransplant population. Non-Hodgkin's lymphoma (NHL) accounts for 65% of lymphomas in the general population and 93% of lymphomas diagnosed in transplant recipients.⁸ The pathogenesis of posttransplant NHL in most patients may be related to B-cell proliferation caused by infection with Epstein-Barr virus (EBV) in the setting of immunosuppression,⁹ although EBV-negative disease may occur.¹⁰

Characteristics of PTLD

The World Health Organization classifies PTLD into three categories: early lesions, polymorphic PTLD, and monomorphic PTLD (Table 3).¹¹ The incidence of PTLD varies according to the type of organ transplanted; it is significantly higher in the pediatric transplant population.

The risk for PTLD is highest in those solid-organ transplant patients who require the greatest degree of immunosuppression, namely, patients receiving multiorgan transplants or an intestinal transplant.¹² A higher incidence of PTLD also is seen in patients given induction therapy. In a large study of renal-transplant patients, Opelz et al¹³ showed that patients given muromonab-CD3, lymphocyte immune globulin, and thymoglobulin had the highest incidence of PTLD when compared with those using antithymocyte globulin or interleukin-2 receptor antagonists.

EBV-negative recipients also are at higher risk of being infected with the virus because they may acquire the infection from the donor post transplant. The posttransplant population that is most at risk for this type of PTLD is the pediatric recipient.¹⁴⁻¹⁶ Many pediatric transplant centers routinely obtain EBV titers, as well as cytomegalovirus (CMV) titers, of donors prior to transplantation. If the pediatric recipient is EBV negative and receives an EBV-positive donor organ, the same precaution (preventive treatment with ganciclovir or valganciclovir) is

TABLE 3
World Health Organization Classification of PTLD

Category	Subtype
Early lesions	Reactive plasmacytic hyperplasia
Polymorphic PTLD	Polyclonal
	Monoclonal
Monomorphic PTLD	B-cell lymphomas
	■ Diffuse large B-cell lymphoma
	■ Burkitt's/Burkitt's-like lymphoma
	■ Plasma cell myeloma
	T-cell lymphomas
	■ Peripheral T-cell lymphoma
	■ Rare types (γ/δ , T/natural killer cell)
Other subtypes	
■ Hodgkin's lymphoma-like	
■ Plasmacytoma-like	

PTLD = posttransplant lymphoproliferative disorder
Adapted, with permission, from LaCasce¹¹

indicated.^{14,16} In addition, long-term post-transplant monitoring of peripheral blood for EBV by polymerase chain reaction (PCR) is recommended.^{14,15} If the EBV PCR level rises, additional testing should be done to evaluate the transplant recipient for the possible development of PTLD. Such testing may involve re-measurement of the EBV-PCR titer to verify the elevated level, physical examination of the patient for lymphadenopathy, and full-body computed tomographic imaging.

Extranodal tumor involvement is seen in more than two thirds of PTLD cases. Involved organs include the lungs, liver, central nervous system (CNS), gastrointestinal tract, and the allograft itself. The most common presenting features of PTLD are fever and lymphadenopathy. Allograft involvement may lead to organ dysfunction.

Treatment

The management of PTLD is based primarily on the reported experience of retrospective case series. Unfortunately, there is no clear consensus on its treatment.¹¹

The initial management of PTLD involves reduction of immunosuppression. Approximately 25%–50% of patients will respond to a reduction in immunosup-

pression alone.¹¹ Patients who do not respond to reduced immunosuppression or who have advanced disease may benefit from therapy with the anti-B-lymphocyte monoclonal antibody rituximab and anthracycline-based chemotherapy. Currently, the combination of rituximab with cyclophosphamide, doxorubicin, vincristine, and prednisone (R-CHOP) is the most widely used regimen in these patients.¹¹ In

cases that involve the CNS or in those related to isolated lesions, radiation therapy may be used. Depending on the extent of the disease, estimated survival rates range from 25% to 60%.¹¹

CONCLUSION

Transplant recipients must be educated about the increased risks of skin cancer and other malignancies that they face as a result of chronic immunosuppression and what they can do to lessen their risk. Importantly, they need to understand that their risk increases with time and not to become complacent about skin cancer prevention. To this end, the informative booklet *Skin Cancer Risks in Transplant Recipients: Know the Facts*, available from the International Transplant Nurses Society,³ can be very effective in teaching patients what to look for and what steps they need to take to stay healthy.

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Reaching New Heights in Transplant Nursing: Coordination, Management, and Advanced Practice

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Abstract A higher level of practice has been achieved by nurses caring for patients who have received organ or tissue transplants. To a great extent, this success has been the result of hard work, education, and networking within the specialty. Professional organizations have been formed to help this process along and to supply transplant nurses with the resources they desperately need to provide optimal services to their patients. At a session held during the 16th Annual Symposium and General Assembly of the International Transplant Nurses Society, transplant nurses and coordinators discussed challenges they have faced in their field, methods they used to deal with obstacles, and ways that organ transplantation changed their lives. Further, transplant nurses and coordinators who formed professional groups discussed the importance of empowerment and working together to gain education, resources, and the ability to share vital information with other healthcare professionals.

Over the past decade, transplant nursing has evolved to a higher level of practice. The growing availability and variety of effective immunosuppressive medications have increased patient and graft survival and, correspondingly, the responsibilities of transplant nurses. Greater levels of achievement can develop as nurses bond together in professional groups to discuss important issues and to share educational initiatives. Unfortunately, this task is easier in some parts of the world than in others.

During a session entitled “Reaching New Heights in Transplant Nursing,” offered during the 16th Annual Symposium and General Assembly of the International Transplant Nurses Society, held October 4–6, 2007, in Denver, Colorado, an international group of speakers explored how nurses must continue to reach out to, and network with, each other to advance their

skills and to adapt to their ever-changing role in healthcare.

■ TAKING PATIENT CARE FORWARD IN A LARGE, SPARSELY POPULATED COUNTRY

Adapted from a presentation by Fiona Burrell, RN, Nurse Unit Manager, Transplant Ward, Royal Prince Alfred Hospital, Australia.

Australia consists of six states and two territories and has a population of over 20 million people. The large area of this country demands that Australian nurses network together regarding organ donation. Any increase in organ donation, however, leads to an increase in the number of transplant patients needing nursing care after discharge and a greater demand for nursing staff.

Australian Organ Donation

Medicare Australia, which administers

the Australian Organ Donor Register to inform people about organ donation, provides an online consent process.¹ Potential organ donors simply apply online; they then are sent a letter to sign and return to validate the process. If the letter is not returned, the potential donor is not considered to be a registered organ donor but, rather, an “intent registrant.”¹

Australia has one of the lowest organ and tissue donation rates globally. Last year, in fact, there were only 202 Australian organ and tissue donors, although almost 2,000 people are on the transplant waiting list (Table 1).²

In 2004, the David Hookes Foundation,² named after a well-known cricket player whose organs and tissue were donated after he died suddenly, was founded to try to raise donor awareness. Today, the foundation continues to address organ and tissue donation to increase awareness of the practice in Australia.

Nurses’ Role in Improving Donation

Clinical nurses in Australia try to identify donors, improve organ donation



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within local communities, and educate large groups of people about organ and tissue donation. In 2006–2007, nurses held 96 educational sessions on this subject for over 3,000 participants. In particular, nurses primarily targeted schools with their message; this practice resulted in students becoming educators about, and advocates for, organ donation.

Transplant Nursing in Australia

In 1990, a group of transplant nurses and allied health professionals formed the Transplant Nurses Association (TNA). This organization now has grown to over 250 members and publishes a journal three times a year. The goal of the TNA is to provide support, communication, and networking to nurses and allied professionals who care for the transplant population. This association and others, such as the International Transplant Nurses Society (ITNS), offer transplant nurses the opportunity for education and continual networking.

Summary

Although Australia does not have a large organ donation rate, its nurses continue to reach out and support each other with educational groups and meetings. These healthcare professionals are on the forefront of expanding organ and tissue donation in their country as more of Australia's population is educated about the importance of organ and tissue dona-

tion. As donations increase, so will the number of transplants—and these nurses will be ready to care for transplant patients and to urge others to make organ and tissue donations.

■ MY PRECEPTORSHIP: FROM TRANSPLANT PATIENT TO TRANSPLANT NURSE

Adapted from a presentation by Erin M. Fisher, BSN, RN.

The impact of a life-threatening situation may change a person's course in life. The need for a liver transplant is no different—it is a life-changing experience for affected patients and donors.

Transplant Nursing

Transplant patients often have time to learn about transplantation because they spend many years on the transplant waiting list. However, some patients may experience a sudden life-threatening event that places them at the top of the transplant list with no warning and no insight. These patients suddenly wake up and are told that they received a new liver.

Transplant nurses provide the care and education needed for these and other transplant recipients. However, these nurses are not unique. As Virginia Henderson, the American nurse, researcher, author, and theorist, said, nursing “assists individuals to gain independence in relation to the performance of activities contributing to health.”³

As the nursing shortage reaches its peak, nurses must maintain their compassionate and caring attitude. They must continue to respect patients and not assume that patients know who they are, why they are there, and what they can do for them. One basic fact usually holds true—nurses are the patients' advocates. They must empower the patients, teach them independence, and above all, care for them as individuals. Transplant patients must be taught when to take all their medications after transplant, why they are taking them, what happens if they miss a dose, and which side effects may occur. All of these lessons often take place just a few short days before patients are discharged and as nurses are caring for more than just one patient. At this point, nurses must

empower patients to become their own advocates and to become independent. Without this empowerment, serious adverse events may result, such as medication interactions or unreported changes in their health status.

From Patient to Nurse

According to the medical literature, the quality of life of patients with chronic liver disease improves following liver transplantation. Living with transplanted organs may cause many challenges for patients, including a search for new meaning in life.⁴

As Virginia Henderson wrote, one's environment can be either positive or negative, and the nurse can change this environment to support the individual.⁵ In fact, the support or lack of support from nurses may change the course of a

The support or lack of support from nurses may change the course of a patient's life.

patient's life. In the case of this speaker, the experience of being a transplant patient led her to become a nurse and to share her experiences, show compassion, and empower transplant patients.

Summary

Nurses may impact transplant patients in either a negative or positive way. Patient education, compassion, and caring may impact a transplant patient's environment and help the individual to achieve independence.

■ THE IMPACT OF ITNS ON NURSING PRACTICE

Adapted from a presentation by Lara Elshove, RN, CCRN, MA, Liver Transplant Coordinator, Department of Hepatology and Gastroenterology, Erasmus Medical Center, Rotterdam, the Netherlands.

Networking is important to nurses, who must take it upon themselves to keep

TABLE 1
Australian Organ Transplant Statistics*

Population	Number
Total potential donors registered	5,671,555
Patients awaiting organ transplants	1,780
Kidney	1,394
Heart	77
Liver	151
Lung	121
Pancreas	37
People donating organs	46
Patients donating eyes	169
Patients receiving transplants	120
People donating other tissue	353
Patients receiving tissue implants	217

* As of February 2007

Source: David Hookes Foundation²

TABLE 2
Goals of the International Transplant Nurses Society

- Provide a network for communication among professional nurses with a focus and commitment to transplantation
- Provide a means of continuing education for professional nurses with a focus in transplant nursing
- Examine new trends in transplantation that affect patient care and the role of the transplant nurse
- Promote and support research in transplant nursing
- Distribute the results of scientific investigations among professionals interested in transplantation
- Foster an awareness of ongoing ethical considerations in procurement, donation, and recipient awareness
- Ensure the accomplishment of the proper and lawful purposes and objectives of the Society

Source: International Transplant Nurses Society⁶

TABLE 3
Membership of the International Transplant Nurses Society

Characteristic	Percent
Location:	
United States	77
Canada	12
Europe	10
Classification:	
Transplant coordinator	26
Clinical nurse specialists	23
Charge nurse/team leader	5
Pharmaceutical company employee/ interested in organ procurement	< 5
Involvement with:	
Abdominal transplantation (eg, transplants of the liver, kidney, pancreas, small bowel)	65
Thoracic transplantation (eg, heart, lungs)	35

Source: International Transplant Nurses Society⁶

current about the cutting-edge advances occurring today in transplant medicine.

Getting Started

Nurses meet many challenges in today’s healthcare environment, and those involved in treating transplant patients are not unique to this situation. Transplant nurses, coordinators, and specialists must recognize and use all available resources, but they often don’t know which means

are more useful.

The ITNS is one valuable resource that promotes professional growth and development of transplant nurses and coordinators (Table 2).⁶ This international organization, which reaches across the entire spectrum of transplant nursing (Table 3), is committed to interdisciplinary networking and collaborative activities that include transplant nursing research.⁷

Self-Empowerment

Importantly, a realization of empowerment is a valuable resource for nurses working with organizations.⁷ To be efficient and effective, nurses must understand how goals are achieved through their own capacity of power. In other words, they must understand how to achieve goals within the current healthcare environment and in groups of the future.⁷

Summary

Clearly, nursing organizations are vital to networking within the field of organ and tissue transplantation. The ITNS and other transplant nursing organizations provide the opportunity for nurses to network, share their knowledge with one another, and achieve their common goals. These healthcare professionals must obtain their colleagues’ help and empower themselves to continue to move the field of transplant nursing forward.

■ FINLAND’S ORGANIZATION OF A TRANSPLANT NURSING GROUP

Adapted from a presentation by Laura Simani, RN, Assistant Head Nurse, Surgical Intensive Care Unit, Helsinki, Finland.

Finland’s methods for supplying and accomplishing organ and tissue transplants represent a challenge for its nurses. Professionals within this small specialty feel a great need for better communication. They often are frustrated by the weeks or months that they must wait to obtain training and the rarity of nursing research in their country. These issues led a group of nurses to recognize the need for a network to which transplant nurses could turn to for support, education, and shared information.

TABLE 4
Organizing a Transplant Nursing Network Within a Healthcare Community

- Identify a leader who can facilitate others’ actions in determining and achieving goals, recognize the power to achieve goals, and influence the group to use the power
- Collaborate with other groups to reach a collective goal and to allow other groups to recognize the new group’s expertise
- Work with group members to define and refine aims and goals
- Share information among members of the group (eg, via an internal Web site)

Adapted from Sieloff⁸

Leadership

In Finland, the ELSI transplant nursing group was formed to fulfill the dream of a collaborative transplant nursing network. This group identified needs to assume power within the healthcare milieu and took action to organize and realize its goals (Table 4).

As with any collection of people, a nursing group needs a leader. Nursing leadership is defined “as the process whereby a person, who is a nurse, facilitates the actions of others in goal determination and achievement.”⁸ The leader affects the nursing group’s ability to use available resources. Importantly, the capacity to achieve goals is power. The nursing group leader must recognize this power and influence the group to use it as it achieves its goals.⁸

Group Power

A particular group must collaborate with other nursing groups, both to reach a collective goal and to have other groups recognize the newly formed group’s nursing expertise.⁸

Before forming the new ELSI nursing group in Finland, the group’s leader first attended an ITNS symposium in Rotterdam; information from this meeting encouraged her to return to Finland and enlist others to fulfill this dream. Nurses who joined in the project defined the aims of ELSI, set up an internal Web site, and now share information. This new network has led to improved quality of transplant

patient care, enhanced visibility of nurses, and better education and communication via group power, leadership, and defined goals.

Summary

Empowerment of nurses led to formation of ELSI, a new organ and tissue transplant group. Group power was achieved through good leadership; this new resource is valuable to individuals both in Finland and throughout the transplant community.

■ CONCLUSION

The direction of transplant nursing has evolved over the past several years. For

transplant nurses to continue to achieve new heights in their profession, they must continue to network and share their knowledge. The future of transplant nursing will advance as transplant nurses reach and surpass their goals through education, coordination, and networking.

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New Medicare/Medicaid Rules: What Transplant Centers Need to Know

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Abstract On September 28, 2007, the Centers for Medicare & Medicaid Services' new methodology to reapprove programs involved with common solid-organ transplantations at 3-year intervals went into effect. This new methodology will seek to ensure that teams perform successful transplants and deliver quality care, as evidenced by good outcomes for patient and graft survival. During the 32nd Annual Meeting of the North American Transplant Coordinators Organization, speakers discussed the new regulations as they apply to transplant centers' policies/guidelines, the steps involved as a transplant center are reviewed, data needed on organ donors and potential recipients, documentation that must accompany living-donor organ donation, and correspondence mandated for reapproval of organ-transplant programs.

A new methodology to reapprove adult and pediatric transplant programs every 3 years by the Centers for Medicare & Medicaid Services (CMS) became effective on September 28, 2007; these new regulations involve transplants of the kidney and/or pancreas, heart and/or lung, and liver and intestinal/multivisceral grafts (programs to transplant islet cells are not included).

The new Medicare Hospital Conditions of Participation (COP) represent the first major overhaul of Medicare regulations for transplant centers in 40 years. CMS claims that under these new rules, Medicare-covered transplant programs will be "moved toward an outcome-focused system that reflects the clinical experience, resources, and commitment of the transplant program."¹ The COP strive to consolidate all the requirements of a transplant center, regardless of the type of organ transplant handled by the center. (For a list of important reference documents provided by CMS, see Table 1.²)

Transplant programs that currently participate in the Medicare program had

to have applied for initial approval by December 26, 2007. There is no official application form; instead, all programs prepared a letter to CMS requesting approval under the new COP; CMS then will schedule an on-site visit. Any organ-transplant program that fails to file such a letter will face possible revocation of its CMS certification; such a revocation would affect only the transplant program, not the hospital with which it is affiliated.

During the 32nd Annual Meeting of the North American Transplant Coordinators Organization, speakers discussed the new regulations as they apply to transplant centers' policies/guidelines, the steps involved as a transplant center were reviewed, selection criteria for organ donors, documentation that must accompany living-donor organ donation, and correspondence mandated for approval of organ-transplant programs.

■ WHY ARE REVIEWS NEEDED?

Every transplant center must demonstrate its ability to perform successful transplants and deliver quality care, as

evidenced by good outcomes for patient and graft survival. Toward this goal, before the unannounced on-site visit, CMS auditors will review organ-specific 1-year data from each center as submitted by the Organ Procurement and Transplantation Network (OPTN). (Few pediatric transplants are performed; therefore, CMS will not evaluate the organ-specific reports for pediatric programs.) Transplant centers having a ratio of observed-to-expected results of 1.5 or a one-sided *P* value < 0.05 will be considered to be noncompliant; a transplant center not in compliance with the expected outcomes based upon national experience should have a corrective action plan in place before the CMS visit.

Every transplant center's program-specific reports may be found on the Scientific Registry of Transplant Recipients (SRTR) Web site (<http://www.ustransplant.org/csr/current/csrDefault.aspx>). The SRTR reports 1-month, 1-year, and 3-year risk-adjusted patient and graft survivals that are expected for each transplant center. (For statistics on the University of Michigan, for example, see Table 2.³) These results are compared with expected survival based upon national experience. The information is published by SRTR



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every 6 months. Transplant centers and organ procurement organizations (OPOs) may review and comment upon the results before the data are published online.

CMS also will review the centers' policies and guidelines to ensure that they are current with state-of-the-art transplant practices and to enhance the safety of transplant recipients and living donors. All transplant centers should follow policies and guidelines that demonstrate fair and safe patient selection criteria for transplantation. For example, CMS will review policies for the listing of potential recipients and the management of waiting lists; in renal-transplant patients, this includes methods of monitoring the glomerular filtration rate of preemptive transplant candidates and policies for placing potential recipients on, and removing them from, "hold" status. CMS also will require centers to demonstrate how they keep up with records on the panel reactive antibody status of potential recipients, telephone numbers of recipients, and physician evaluations as they relate to waiting lists. Additionally, auditors will review acceptance criteria for deceased donor transplants to ensure that the criteria filed with the United Network for Organ Sharing (UNOS) are based upon written protocols.

■ WHAT ARE THE AREAS OF CONCERN TO CMS?

The regulations cover many different facets of the transplant process. For example, centers must demonstrate and document whether renal-transplant recipients and their respective dialysis centers are notified about being added to or removed from the waiting list within 10 working days. In addition, any refusal to wait list a potential organ recipient must be documented, and reasons for refusal should correlate with the transplant contraindications listed in the protocol for that transplant center. Any referrals of a potential recipient to a nutritionist must be documented, and the stratification process for these referrals must be demonstrated. Transplant centers also must map the procedure for verifying blood type both before potential recipients are placed on the waiting list and when the potential recipient presents to the operating room

TABLE 1
Important Reference Documents on the CMS Web Site

Current list of Medicare-approved transplant centers: http://www.cms.hhs.gov/CertificationandCompliance/Downloads/ApprovedTransplantPrograms.zip
Hospital conditions of participation: requirements for approval and reapproval of transplant centers to perform organ transplants: http://www.cms.hhs.gov/CertificationandCompliance/Downloads/Transplantfinal.pdf
Requirements for transplant programs to notify CMS immediately of significant changes: http://www.cms.hhs.gov/CertificationandCompliance/Downloads/NotificationstoCMS.pdf
Transplant programs covered by the regulation: http://www.cms.hhs.gov/CertificationandCompliance/Downloads/Transplantprograms.pdf
Information required on all applications for approval: http://www.cms.hhs.gov/CertificationandCompliance/Downloads/Transplantappinfo.pdf
Clarification regarding application and approval process for transplant programs serving primarily pediatric or adult patients: http://www.cms.hhs.gov/CertificationandCompliance/Downloads/Programsservingadultsandpeds.pdf
Organ transplant application update: http://www.cms.hhs.gov/CertificationandCompliance/Downloads/OrganTransplantApplicationUpdate.pdf
Where to submit applications: http://www.cms.hhs.gov/CertificationandCompliance/Downloads/Transplantcontact.pdf

Source: Centers for Medicare & Medicaid Services (CMS)²

before receiving the organ transplant.

CMS also will review processes that transplant centers have for closing charts. Early during the work-up process, centers should communicate to potential candidates time thresholds for listings. For example, the routine patient evaluation and listing process entails a threshold of 8 weeks; for patients with comorbid complications, the threshold stretches to 16 weeks. If patients do not complete their work-up within the allotted time, their charts may be closed by centers. Thus, the responsibility for successful listing lies with patients, not with transplant center staff. This single demand allows the staffs of transplant centers to focus on compliant patients and holds noncompliant patients accountable for their actions.

■ HOW DOES THE REVIEW WORK?

Administrators will receive a specific list of patient charts to be reviewed by CMS approximately 6–8 weeks before the unannounced on-site visit. Auditors will determine whether a psychosocial evaluation was performed on every potential recipient by a social worker having a master's degree and a license in the state of practice; in addition, the potential recipients' charts should show two verifications of blood type, notification of potential recipients and their dialysis centers of placement on the waiting list, and receipt

of the UNOS hotline number (888-894-6361) from the transplant center.

Charts of potential recipients also must have a signed informed consent form that thoroughly describes the evaluation process, surgical procedure, alternative treatment options, patient rights, and potential surgical risks. The informed consent form should include transplant outcomes from the listing center as well as from two other centers around the nation. Transplant centers may use their informed consent methods to document any educational classes that patients attended or any brochures/videos that they received. The centers also must document that potential recipients were notified of the opportunities for multiple listing and waiting-time transfers. (A brochure available from UNOS that includes an area for the potential recipient to sign addresses these issues; later, the signature may be removed and placed on the patient chart for documentation purposes.) The charts for potential recipients with living donors must document the suitability of those donors.

■ WHAT ISSUES ARE RELATED TO DONORS?

Clearly, one of the greatest obstacles to any transplant program is the scarcity of organ and tissue donations. As shown in Table 3, which provides current information concerning renal transplants in

TABLE 2
Renal Graft Survival at the University of Michigan Transplant Center Compared with the National Average

Parameter	University of Michigan			United States		
	1 Month	1 Year	3 Years	1 Month	1 Year	3 Years
Adult (at least 18 years of age)						
Transplants, n	547	547	438	38,570	38,570	35,113
Percentage of grafts surviving at end of period:						
Observed at this center*	97.62	93.47	83.79	97.21	92.44	82.71
Expected, based on national experience†	97.56	93.44	84.11			
Percentage of graft failures during follow-up period:						
Observed at this center	13	34	71	1,078	2,746	6,070
Expected, based on national experience‡	13.40	33.70	69.44	1,078	2,746	6,070
Ratio: observed to expected	0.97	1.01	1.02	1.00	1.00	1.00
(95% confidence interval)§	(0.52–1.66)	(0.70–1.41)	(0.80–1.29)			
P value (two-sided), observed vs expected¶	0.999	0.999	0.883			
How does this center's survival compare with what is expected for similar patients?	Not significantly different	Not significantly different	Not significantly different			
Follow-up days reported by center, %**	100.0	95.6	97.7	100.0	96.5	94.5
Maximum days of follow-up, n	30	365	1,095	30	365	1,095
Pediatric (less than 18 years of age)						
Transplants, n	37	37	40	2,165	2,165	1,901
Percentage of grafts surviving at end of period:						
Observed at this center*	94.59	91.89	85.00	97.14	93.57	84.06
Expected, based on national experience†	97.60	94.52	85.27			
Percentage of graft failures during follow-up period:						
Observed at this center	2	3	6	62	131	303
Expected, based on national experience‡	0.89	1.89	5.65	62	131	303
Ratio: observed to expected	2.25	1.59	1.06	1.00	1.00	1.00
(95% confidence interval)§	(0.27–8.12)	(0.33–4.65)	(0.39–2.31)			
P value (two-sided), observed vs expected¶	0.447	0.585	0.994			
How does this center's survival compare with what is expected for similar patients?	Not significantly different	Not significantly different	Not significantly different			
Follow-up days reported by center, %**	100.0	95.6	97.7	100.0	96.5	94.5
Maximum days of follow-up, n	30	365	1,095	30	365	1,095
Transplant time period	7/1/04– 12/31/06	7/1/04– 12/31/06	1/1/02– 6/30/04	7/1/04– 12/31/06	7/1/04– 12/31/06	1/1/02– 6/30/04

The data reported here were prepared by the Scientific Registry of Transplant Recipients (SRTR) under contract with the Health Resources and Services Administration (HRSA).

* Observed graft survival rates use the Kaplan-Meier method to estimate outcomes for patients for whom complete follow-up is not expected. This statistic represents graft failure rates among patients still being followed by the facility. If the follow-up percentage is low, this statistic may not be representative of outcomes for all patients at this center. Because different cohorts are followed for each time period, it is possible for reported 3-year survival to exceed 1-year survival.

† The graft survival rate that would be expected for the patients served by this center, given the characteristic mix of the recipient and donor (age, disease, blood type, etc) and the experience of similar patients in the entire country

‡ The number of graft failures that would be expected during the follow-up period, as described in the preceding footnote. Unlike the expected graft survival rate, the expected count of failures does not make use of Kaplan-Meier methods to extend estimates beyond the last follow-up.

§ The 95% confidence interval gives a range of values for the true ratio of failures at the facility to those expected based on the national experience. The true ratio will be between this lower and upper bound 95% of the time.

¶ A P value less than or equal to 0.05 indicates that the difference between the actual and expected graft survival is probably real and is not due to random chance, whereas a P value greater than 0.05 indicates that the difference could possibly be due to random chance.

|| This difference could plausibly be just a chance occurrence.

** Of days expected to be included in the follow-up period, the percentage of days covered by follow-up reporting by this center for these transplants. This statistic measures the possibility that events such as failure have occurred without being reported, and it is not a measure of compliance.

Based on data available as of October 31, 2007; release at www.ustransplant.org on January 11, 2008³

the United States,⁴ the need for donated organs far exceeds the supply.

Living Donors

CMS will review the transplant center's selection policies for accepting living do-

ners, which must clearly state inclusion and exclusion criteria. If the transplant center declines to accept an organ from a potential living donor, then the donor's chart must reflect documentation of the reason; the reason for declining such a do-

nation should be based upon the center's donor exclusion criteria.

All transplant programs that provide living-donor transplants must have a living-donor advocate; this position must be supported by a written job description,

which would include protection and promotion of donors' rights and the steps taken to educate donors about the evaluation process; alternative available treatments for transplant recipients; national and transplant center-specific outcomes; and the potential medical, surgical, and psychological risks related to donating an organ. This advocate may be a member of the transplant team (eg, a coordinator or social worker); however, this person must not have any responsibility for potential recipients (eg, he or she may not take a call for a deceased-donor transplant or work up any potential recipients). Donors must understand that their advocates are responsible for maintaining confidentiality; they also should appreciate that they may opt out of the donation at any time during the donation process without fear of repercussion.

In reviewing donor charts, CMS will expect to find a signed informed consent form that details the donor evaluation process, surgical procedure, potential medical/surgical risks, and alternative treatment options available to the recipient. In addition, this consent form must identify any future health problems related to organ donation and any organ-specific risk factors. Living donors must be informed of their rights and must be given their advocate's name and telephone number. Finally, the living-donor informed consent form must include data on living-donor transplant outcomes at the center in which the transplant will take place, as well as national outcomes.

Before surgery to remove an organ occurs, the ABO blood type of the living donor must be verified and documented with the date, time, and signature of the surgeon removing the organ. When the organ is transferred to the recipient's operating room, the transplant surgeon must verify and document the blood type of the donor, the date, and the time and provide a signature.

High-Risk Donors or Recipients

Centers that offer transplants to high-risk recipients or that use organs from high-risk living donors must document

TABLE 3
Current Status of Renal Transplants in the US

Parameter	Value
Organ/patient pool (January 1–December 31, 2007)	
Deceased donor transplants, n	10,659
Living donor transplants, n	6,434
On waiting list at start, n	65,199
On waiting list at end, n	70,778
New patient registrations, n	32,854
Waiting-list outcomes (January 1–December 31, 2007)	
Transplant rate among waiting-list patients	0.23
Transplant rate (from deceased donors) among waiting-list patients	0.16
Mortality rate while on waiting list	0.07
Posttransplant outcomes	
Adult graft survival (based on 38,073 transplants, %)	92.14
Adult patient survival (based on 33,362 transplants, %)	96.08
Pediatric graft survival (based on 2,105 transplants, %)	93.63
Pediatric patient survival (based on 1,902 transplants, %)	98.53

Source: Scientific Registry of Transplant Recipients⁴

the program's selection criteria for these procedures. In such cases, an educational process should be available for both recipients and donors, and delivery of such education should be documented in the charts of both parties.

Deceased Donors

Transplant programs using organs from deceased persons who are not considered standard-criteria donors or who are considered to be high-risk donors by the US Centers for Disease Control and Prevention must document that the intended recipient was informed about this status and gave consent to receive such a graft before surgery. For example, charts of potential recipients who are eligible to receive an organ from an expanded-criteria donor or from an individual testing positive for hepatitis C must contain a signed consent to accept an organ from such a donor before such transplants occur.

■ WHAT OTHER DOCUMENTATION IS NEEDED?

In reviewing job descriptions for transplant department personnel, CMS auditors will expect to find job-specific, current summaries. A transplant program must have a documented resource commitment from the blood bank; clinical laboratory; pharmacy; histocompatibility services; and departments of pathology,

radiology, nuclear medicine, infectious disease, and physical therapy. In addition, it must contract with an OPO that provides services to the hospital. Any contracts that provide services related to the transplant program must list the responsibilities of each party, must be current, must be signed by appropriate staff, and must have 24-hour availability.

A transplant program must have a written immunosuppression protocol and an active multidisciplinary care team that is coordinated by a physician during the pretransplant, transplant, discharge, and follow-up phases. To comply with CMS guidelines, centers that perform kidney, liver, heart, lung, and intestinal transplants must perform at least 10 procedures annually; however, no minimum annual requirements for pancreas, heart/lung, or pediatric transplants are stipulated. To remain a member in good standing with the OPTN/UNOS Membership and Professional Standards Committee (MPSC), centers that offer pancreas and heart/lung transplants must have one of each of these procedures performed annually.

CMS auditors will review how the transplant data for organ recipients are collected and entered into UNOS. Reviewers also will examine UNOS compliance reports to ensure that data are being submitted in a correct, timely manner. To comply with OPTN

guidelines, centers must submit 95% of required data no later than 90 days after the due date. Although UNOS has threshold requirements related to data submission and outcomes, “a currently certified transplant center that seeks initial approval under the new rules would *not* be denied approval automatically for failure to meet the threshold requirements.”

Transplant centers must participate regularly in quality assessment and performance improvement reviews to monitor, evaluate, and document all transplantation services provided. Centers should have a process to identify, report, analyze, and prevent adverse events;

Transplant centers must participate regularly in quality assessment and performance improvement reviews to monitor, evaluate, and document all services provided.

importantly, there should be pathways to effect changes in centers’ policies based upon such analyses.

■ WHO SHOULD BE PRESENT?

When CMS performs an on-site visit, select members of the transplant team—the primary surgeon, physician, administrator, and hospital representative—should be present. At the beginning of the visit, CMS will meet with team members for a question-and-answer session. Next, officials from CMS will review the requested patient charts; a member of the transplant team who is familiar with the charts should be available to help the auditor locate specific items. The auditor also has the option to interview any or all of the

transplant program staff and hospital administration.

After the on-site visit is completed, the CMS auditor will supply a brief overview of the visit and will inform the center’s team about information that is lacking. The transplant team then may question the auditor on what areas of the program are deficient, how the deficiencies may be corrected, and what corrective action plan should be implemented.

Following a CMS visit, a formal letter will be sent to the transplant center to document any deficiencies. The transplant center then will have 1 month to submit a corrective action plan.

■ HOW TO ASK FOR REAPPROVAL

Before submitting a request for Medicare reapproval, the transplant team should review and update transplant guidelines/policies, informed consent procedures, and job descriptions. In addition, knowledge of 1-year organ-specific results will be helpful to present a process improvement plan, if needed, to the CMS auditor at the time of the visit.

The letter to CMS asking for reapproval should include the National Provider Identifier (NPI) number of the hospital and the NPI number of each transplant program (if different from that of the hospital); the four-character UNOS identification number; and the names, addresses, telephone numbers, fax numbers, and e-mail addresses of the primary surgeon, primary physician, and the hospital representative. For kidney-transplant programs, the date the program initially was approved for Medicare coverage must be included. The letter should be addressed to The Centers for Medicare & Medicaid Services, Mail Stop-S2-12-25, attention Sherry Clark, 7500 Security Boulevard, Baltimore, MD 21244. If preferred, the letter can be faxed to 410-786-0194, to the attention of Sherry Clark.

■ CONCLUSION

Reviews by regulatory bodies often are considered to be disruptive to medical facilities and their staff members. The specter of running into documentation

difficulties or inconsistencies remains a nightmare for administrators of transplant programs around the country. Meticulous documentation of every step of the organ-transplant process and careful planning and tracking of mandated materials expected by CMS auditors before reviewers walk through the door will showcase the outstanding accomplishments realized by organ-transplant teams.

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ADDITIONAL RESOURCES

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Post Test

Using this page as a worksheet, select the best answer to each question based on your reading of the articles in this issue of *The Immunology Report*, then complete the evaluation on page 24 and see the instructions below it to obtain continuing nursing education credit/contact hours for completing this activity.

1. Educational materials for transplant recipients should be written at the reading level of what school grade?
 - a. Third to fourth grade
 - b. Fifth to sixth grade
 - c. Seventh to eighth grade
 - d. Ninth to tenth grade

2. A learning theory that views behavior as being goal-oriented, having direction and purpose, and focusing on changing thought patterns using a variety of sensory input and repetition is:
 - a. Cognition theory
 - b. Learning styles theory
 - c. Cultural learning theory
 - d. Behavioral learning theory

3. Prensky refers to individuals who think and process information in a way that is fundamentally different from that of previous generations as:
 - a. Digital immigrants
 - b. Digital natives
 - c. Digital emigrants
 - d. Digital explorers

4. Transplant recipients who have a higher risk of skin cancer include women and patients with fair, easily burned, or freckled skin; blue, green, or hazel eyes; or naturally blond or red hair.
 - a. True
 - b. False

5. A neuroendocrine skin cancer that typically presents as an asymptomatic lesion on the head, neck, or arms is:
 - a. Malignant melanoma
 - b. Basal-cell carcinoma
 - c. Squamous cell carcinoma
 - d. Merkel cell carcinoma

6. Transplant patients who receive which of the following treatments to fight rejection have the highest incidence of posttransplant lymphoproliferative disorder (PTLD)?
 - a. Interleukin-2 receptor antagonists
 - b. Antithymocyte globulin
 - c. Lymphocyte immune globulin
 - d. None of the above

7. Currently, rituximab plus which of the following chemotherapy regimens is most widely used to treat PTLTLD?
 - a. Cyclophosphamide, epirubicin, and fluorouracil (CEF)
 - b. Cyclophosphamide, doxorubicin, vincristine, and prednisone (CHOP)
 - c. Cyclophosphamide, methotrexate, and 5-fluorouracil (CMF)
 - d. Doxorubicin and cyclophosphamide (AC)

8. In Australia, which has one of the lowest organ and tissue donation rates in the world, the ratio of organ/tissue donors to the number of people on transplant waiting lists is approximately:
 - a. 1:100
 - b. 1:500
 - c. 1:1,000
 - d. 1:5,000

9. To begin their 3-year reviews of transplant centers, the Centers for Medicare & Medicaid Service (CMS) auditors will:
 - a. Review organ-specific 1-year data from each transplant center as submitted by the Organ Procurement and Transplantation Network before the on-site visit
 - b. Review the transplant centers' policies and guidelines to ensure that they are current with state-of-the-art transplant practices and to enhance the safety of transplant recipients and living donors
 - c. Review policies for listing potential organ recipients and managing waiting lists
 - d. All of the above

10. According to CMS, all transplant programs that involve living-donor transplants must have a living-donor advocate, who must not have any responsibility for potential recipients and may not take calls for deceased-donor transplants or work up any potential recipients.
 - a. True
 - b. False

Evaluation

	Strongly agree	Agree	Disagree
1. As a result of this continuing educational activity ...			
a. I have a greater understanding of the risk factors for skin cancer related to chronic immunosuppression and the actions transplant recipients need to take to reduce their risk.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. I am more familiar with the experiences of transplant nurses in realizing their interest in joining the profession, organizing and networking to share educational initiatives, and bonding together.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. I am able to discuss the factors affecting patients' ability to appreciate the importance of following posttransplant medical regimens.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. I have a better appreciation of the ways that technology may help to educate and support patients who have undergone organ or tissue grafting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. I am more knowledgeable about the 2007 changes in regulations and policies for organ-transplant centers made by the Centers for Medicare & Medicaid Services, the steps for facility review, and the materials that staff must create and gather to facilitate the review process.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Strongly agree	Agree	Disagree
2. I found the content of this educational activity ...			
a. Clearly written and well organized.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Accurate and timely.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Related to its overall objectives.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Free from commercial bias.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Relevant to my own nursing practice.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Yes	No	Don't know
3. Did the information you received from this educational activity:			
a. Confirm the way you currently manage your patients?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Suggest new options for managing your patients that you might apply in the future?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Instructions for Obtaining Credit for Completing This Continuing Educational Activity

To receive credit and a certificate for completing this free continuing nursing education activity:

- Study the educational material presented in this issue of *The Immunology Report*.
- Using page 23 as a worksheet, answer all of the post-test questions based on the content of the articles.
- Visit **www.ImmunologyReport.com** on the Web by March 7, 2009, select this issue of *The Immunology Report*, and click the button labeled "Nurses' Post Test."
- Click the CONTINUE button to download and print the answer sheet/evaluation form.
- Complete the answer sheet/evaluation form and fax it to **516-364-4217**.
- If you answer correctly at least 8 (80%) of the 10 post-test questions, a certificate will be mailed to you.
- The full text of each article may be accessed at www.ImmunologyReport.com, should you need to refer to it again.

