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BMT:

Understanding Blood and
Marrow Transplantation

A Day in the Life
of a BMT Nurse

Palliative Care
and Quality of Life

The Infusion
Treatment Area

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From the Chief Nursing Officer

CINDY DAY, RN, MS, CNAA, BC, VICE PRESIDENT FOR PATIENT CARE, CHIEF NURSING OFFICER



Nurses at Stanford Hospital and Clinics constantly strive **"To Provide the Best Patient Care in the Nation"** as they serve our specialized patient populations throughout the continuum of a disease process.

This issue celebrates the care and support we give our Blood and Marrow Transplant (BMT) patients throughout the many phases of their journey. It explores a day in the life of an inpatient BMT unit nurse, the outpatient phases of treatment, as well as end-of-life support.

We continuously find ways to improve the lives and health-care experiences of our patients. We listen to the stories of our patients' lives, and seek to understand their reality and the impact their illness has, so we can learn to serve them better. We help our patients and families deal with end-of-life issues, while respecting their wishes. Our Palliative Care Department improves the quality of life for patients and their families as they face the problems associated with serious, complex, life-threatening illnesses, concentrating on reducing the severity of the disease symptoms rather than on providing a cure. This is truly compassionate work.

This compassion and caring occurs at every phase of a patient's illness and is enhanced by our strong culture of collaboration across the various practice sites and the commitment by Stanford nurses to always keep the patients' wishes and hopes at the center of their care.

I continue to be inspired by the generosity and kindness we offer to our patients as we celebrate the lives that we have touched. This year we will celebrate our 20-year reunion for our BMT patients and families. This is a celebration of hope for our patients and families, and a celebration of commitment, caring and healing for Stanford nurses.

Thank you,

A handwritten signature in black ink that reads "Cindy Day". The signature is written in a cursive, flowing style.

Cindy Day



Understanding Blood & Marrow Transplantation

CHRISTINE SCHURMAN, RN, BSN, MSNc, OCN
STAFF NURSE, BLOOD AND MARROW TRANSPLANT PROGRAM

BMT originally stood for Bone Marrow Transplant, and if you ask an E1 nurse where he or she works that's what you would most likely hear. Yet this answer does little to explain the complex process. Although the initials have remained the same, today's "BMT" stands for Blood and Marrow Transplant. This saves us from having to use a new acronym, but a more accurate title would be a hematopoietic (he-ma-toe-poetic) stem cell transplant (HSCT) unit. You might ask: A whata-ma-poetic what?!

Hematopoietic Stem Cells: A Primer

Hematopoietic or “blood-forming” stem cells are rare cells that are found in the highest concentration in bone marrow. Hematopoietic stem cells produce daughter cells that can differentiate or develop into all three blood cell lines: white cells, red cells, and platelets. White cells develop into the components of the immune system; red cells carry oxygen; and platelets prevent bleeding.

Bone marrow is the thick liquid center of the bones that can be removed safely and usually regenerates within four weeks. Stanford still transplants hematopoietic stem cells by bone marrow; however, the majority of our transplants are Peripheral Blood Stem Cell Transplants or PBSCT.

When we give large doses of growth factors, the bone marrow is stimulated to overproduce white blood cells. This causes overcrowding in the bone marrow and cells will “spill out” into the circulating blood. These “spilled” cells will include hematopoietic stem cells, which can then be collected from peripheral blood. White blood cells are collected by apheresis, a procedure in which blood is removed by IV, processed, and then returned with much of the blood components intact through a second IV in a dialysis-like fashion. This allows for collection of the stem cells by peripheral blood. Otherwise collecting hematopoietic stem cells requires harvesting bone marrow, usually from the pelvis. This is a much more invasive process that involves general anesthesia, a prone position, and multiple approaches with a large bore needle. It’s not difficult to see why peripheral stem cell collection is far more popular.

Types of Transplants

Patients can receive their own cells through a process known as autologous (self) transplant or they can receive cells from someone else, which is known as allogeneic (non-self) transplant. Stem cells can also be transplanted by cord blood using blood collected from an umbilical cord and placenta after a baby is born. There are three main reasons to receive a transplant. With an autologous transplant the goal is to rescue patients from the toxic effects of high-dose chemotherapy and/or radiation treatments necessary to treat their cancers. In allogeneic and cord blood transplants the goal is to treat a blood-line cancer by creating a new immune system or to replace malfunctioning bone marrow.



Christine Schurman, RN, BSN, MSNc, OCN and Theresa Latchford, RN, MSN, AOCN

As a Rescue

Cancer cells usually reproduce or divide at higher rates than healthy tissues. Chemotherapies and radiation work against cancer because they kill fast reproducing cells. Some cancers require very high doses of toxic therapies in order to kill the cancer cells. Unfortunately bone marrow consists of rapidly dividing cells as well, which can be destroyed by high-dose cancer treatments. By collecting stem cells before we administer the high-dose treatments, we can allow patients to receive their own cells in an autologous transplant, thereby rescuing themselves from the otherwise lethal bone marrow damage. Types of cancers that can be treated by autologous transplant include germ cell cancers, lymphomas, and multiple myelomas.

To Create a New Immune System

Leukemia is a condition in which the bone marrow overproduces defective white blood cells, reducing the production of healthy white blood cells as well as platelets and red blood cells. The type of transplant recommended to leukemia patients, either autologous or allogeneic, will depend on the specific type of leukemia, previous response to treatments, age of the patient, and if a matched donor is available. Because the defective cells were produced by the patient’s own bone marrow, often patients are treated with cells from a healthy donor via an allogeneic stem cell transplant. In addition to restoring the bone marrow’s ability to produce blood components after treatment, the new immune system may help fight any remaining cancer cells in the body. The original immune system may have had a defect



that prevented it from recognizing the cancer cell as harmful, or the cancer cells may look very similar to the body's healthy, non-harmful cells. The new immune system is more sensitive to the differences between cancer cells and healthy cells, and is better able to identify and attack any residual cancer. However, this new immune system carries the risk that it can attack normal, healthy tissue, particularly of the skin and gut known as graft (new immune system) versus host (patient receiving graft) disease (GVHD).

Allogeneic transplant patients need to be careful not to overstimulate the new immune system from minor infection or even sunburn.

As a Replacement

Hematopoietic transplants are also used in non-cancer conditions in which the bone marrow mal-produces blood cell lines, such as in aplastic anemia or myelodysplastic syndrome (MDS). In aplastic anemia the bone marrow is unable to make adequate amounts of all three of the main components of blood – red blood cells, white blood cells, and platelets. In MDS, the bone marrow makes an overabundance of unformed cells, called blasts, impairing production of healthy blood cells.



(left to right) Rachel Knoepfel, RN, BSN, staff nurse, and Diana Dela Cruz, RN, BSN, staff nurse

In addition, many of the overproduced cells are destroyed in the bone marrow, which causes fibrosis in the marrow and further reduces the ability of the marrow to produce healthy cells. MDS can affect one, two, or three (white, red or platelets) blood cell lines.

Careful Preparation for a Simple Procedure

In order for the stem cells to successfully implant, the patient's existing bone marrow must be suppressed and, in most cases, completely eliminated or 'ablated'. Eliminating bone marrow can be done through the use of high-dose chemotherapy, radiation therapy, immune-suppressing drugs, or a combination of these. It can take up to two weeks of almost daily toxic therapy to adequately prepare the bone marrow space.

After all the prep that is required for a stem cell transplant, the actual transplant may seem a bit anti-climatic for the patient. The infusion of the bone marrow or peripheral blood stem cells is very similar to the transfusion of any other blood product and is done at the bedside. The nurse sets up the tubing and verifies the room has emergency equipment in case of a transfusion reaction. After multiple safety

checks including a bedside check with the physician, the nurse infuses the stem cells and, as with any blood transfusion, frequently assesses the patient's vital signs. Typically patients ask, "Is that it?" The BMT team often refers to the transplant day as "your new birthday" or "Day 0." The day pre or post transplant serves as a key indicator of where the patient is in his or her recovery, such as, "she's day minus 2 getting chemo today" (transplant scheduled in two days), "he's day 3" (risk for infection or bleeding is high), or "she's day 28" (probably producing adequate white and red blood cells).

Preparing the Stem Cells

If the patient is receiving his or her own cells back in an autologous transplant, the stem cells have been previously collected and frozen. The frozen cells are delivered to E1 from the highly specialized BMT lab via flip top cooler. Depending on how many days it took for the patient to collect sufficient stem cells and how the cells were processed in the lab, the patients may receive a tiny bag of highly processed cells or multiple bags of less-processed cells. Typically four or fewer bags are transfused but there can be over a dozen. If the patient is receiving an allogeneic

The BMT team often refers to the transplant day as "your new birthday" or "Day 0."



Checking chemotherapy with Irene Zareno, RN, BSN, OCN, staff nurse and Nimfa Fajardo, RN, OCN, assistant patient care manager

transplant, the donor's stem cells are given soon after collection. If the person donating the cells is related, often the cells are collected the morning of the transplant or in the few days prior to transplant. If the stem cells are being donated by a volunteer, the identity of the donor remains anonymous, and the stem cells may arrive from anywhere in the world. Donor cells have arrived via airplane late at night, rushed to Stanford, processed immediately by the BMT lab, and then administered to the patient in the early hours of the morning.

Care During the Waiting Game

Eventually the stem cells, whether from self or other, migrate through the peripheral blood system to the bone marrow space where they will implant and begin to grow, a process called "engraftment." It can take two to four weeks for the transplanted stem cells to start production of the three blood lines or "engraft." During this time patients have profoundly low white blood cells with counts dropping below 100.



MD PERSPECTIVE

ROBERT NEGRIN, MD
BMT MEDICAL DIRECTOR

A Tribute to Stanford Nurses

Critical to the success of any blood and marrow transplantation program is an outstanding cadre of well-trained and compassionate nurses. We are honored to have such a group here at Stanford, many of whom have been with us since the inception of the program in 1987. These nurses are distinguished by their dedication, outstanding clinical skills and, most important, their humanism that helps our patients through the most challenging times in their lives. Without them, there simply would not be a program.

In addition to their clinical care at the bedside, our nurses provide important coordination in the complex care required of the transplant patient, as well as in the conduct of research studies. A particular aspect of our program is to incorporate nurses, physicians, and staff into a collaborative, team-based approach that brings the expertise of all individuals together for the best possible care of our patients. This team concept has permeated our entire program and served us well over the last 20 years.



Staff nurses, advanced practice nurses, PAs, MDs, dietitians, social workers, and pharmacists all participate in Infusion Treatment Area's (ITA) morning rounds to discuss the plan of care for the BMT patients.

(By contrast, healthy patients have a white cell count between 4,000 and 11,000.) During this time infection is our biggest enemy. Once patients' white blood cell counts drop, they are placed in private positive pressure rooms to reduce the risk of infection.

Diets are restricted to low microbial foods, and no fresh fruits or vegetables are allowed due to the risk of fungi or bacterial contamination. Antibiotics and antivirals are started preventively and any signs of infection are aggressively worked up and treatment is initiated immediately. Patients are often isolated in their rooms for several weeks; visitors must wear gowns and masks, and plants and flowers are not allowed. Patients who receive allogeneic transplants take longer to engraft and are at higher risk for complications from infection and are therefore placed in double door rooms. One door must always be shut before the second door can be opened to reduce the influx of infection-causing microbes from the hallways. In addition, the risk of bleeding is high due to the low platelet counts, and recovery of platelets can take months. We take every nosebleed seriously and know that even minor falls can be life threatening. Any potential trauma requires imaging to rule out bleeding. Our threshold for replacing platelets is 10,000, by contrast to the normal range of 150,000-400,000. Patients often require transfusions of both platelets and red cells. During this

period, nursing care centers around symptom management, infection prevention, management/detection of organ toxicities, emotional support, and patient/family education.

Although engraftment takes two to four weeks, full recovery of the immune system takes much longer – typically several months for patients who receive their own cells and up to two years for patients who receive donor cells. During this time patients are much more susceptible to infection, so to reduce the risk we do a surgical scrub at the start of the shift, remain diligent about “gel-in/gel-out,” wear masks when dealing with any high-risk patient, change into our scrubs on the unit, and protect our clothes from contamination when off the unit. So the next time you see a nurse in the cafeteria grabbing a quick bite with the green surgical gown protecting her scrubs, you can ask: “Aren't you a hematopoietic stem cell transplant nurse?”

*The BMT management team is led by Patient Care Manager Patricia Jenkins, RN, MPA, Lynn Ellison, RN, OCN and Nimfa Fajardo, RN, OCN are the two Assistant Patient Care Managers. Kate Tierney, RN, PhD and Theresa Latchford, RN, MS, AOCN are the Clinical Nurse Specialists. Anne Jacobs, RN and Sara Betters, RN are the two Unit Educators. Kathy Chang, RN has filled in for Sara over the last few months. **SN***



A View into the Infusion Treatment Area

DONNA HEALY, RN, MSN, CLINIC NURSE MANAGER INFUSION TREATMENT AREA/APHERESIS
TOREY BENOIT, RN, ASSISTANT CLINIC NURSE MANAGER INFUSION TREATMENT AREA/APHERESIS

We recently celebrated 20 years in our Blood and Marrow Transplant unit. During this time we have performed more than 3,400 transplants. From a small 6-bed inpatient unit within the Compromised Host Unit (CHU) we have expanded to a 22-bed inpatient unit along with a 56-bed/ chair outpatient infusion area.

Over the years, such medical advancements as the development of growth factors, better antiemetics, and antiviral and fungal medication mean that patients who once spent 45 days in the hospital now can be routinely discharged within two weeks or even receive their entire transplant as an outpatient in the Infusion Treatment Area (ITA).

From Inpatient to Outpatient Care

With the migration towards outpatient care, the ITA, once just a 4-chair unit where one nurse provided care specifically for post-transplant patients, now occupies an entire floor of the Cancer Center in the Advanced Medical Building. On average twenty-two nurses care for 130 oncology and hematology patients a day, 30-35 of whom are Blood and Marrow Transplant patients. Many of the nonmyeloablative transplant patients, where

bone marrow is suppressed instead of eliminated can actually receive their entire transplant protocol as outpatients.

Skilled and Specialized Staff

It takes a very special, dedicated person to become an oncology nurse. The ITA nursing staff is no exception, and comprises a diverse group both culturally and in work experience. Oncology Certified nurses, Advanced Oncology Certified nurses, and Chemotherapy Certified nurses represent the majority of our nursing

Adelle Ulmer, RN, BSN, HP, in the apheresis area of the ITA unit.



staff. Several of the nurses also boast certification in alternative therapies such as imagery, art and imagery, healing touch, and massage therapy, which they routinely offer to our patients. A multidisciplinary approach distinguishes care in the ITA. Each day, the BMT team, consisting of physicians, nurses, nurse practitioners, physician's assistants, dietitians, social workers, and pharmacists collaborate to review and establish a plan of care for the BMT patients scheduled that day. The nurse presents the patient to the team. The patient's status, current treatments, acute and chronic issues are all addressed. A mutual respect characterizes relationships between the physicians and the nurses, and physicians

are often heard commenting on the dedication and importance of nurses in the BMT program.

ITA nurses first meet the patients at a "Teaching for Transplant" class that is taught every Tuesday by one of the BMT nursing staff. The nurse provides an overview for the patients and their caregivers about the process of the transplant journey. When the patient returns for a precatheter visit, more one-on-one teaching is provided as the patient begins to build lasting relationships with the nursing and support staff. After discharge, allogeneic patients are seen in the ITA daily for nearly 100 days. As a result, the ITA becomes their home away from home. Powerful bonds

are built between the ITA nurses, their patients and caregiver, as the dedicated BMT nurses provide not only complex clinical care but also ongoing emotional support during the weeks and months of their recovery.

ITA nurses are often asked how they work in such an emotionally difficult area. Yet nurses typically stress how humbling and rewarding it is to participate in a complex nursing role that makes a difference in the lives of these patients. They add that the Annual BMT patient reunion picnic (see page 16) is a day that is both regenerating and invigorating for the entire team as it reminds us all how precious life truly is. **SN**

A Day in the Life of a BMT Nurse

ANNE K. JACOBS, RN, UNIT EDUCATOR AND STAFF NURSE,
BLOOD AND MARROW TRANSPLANT PROGRAM

I arrive at work at 6:30 am and change into my scrubs – just one of the many precautions we take to protect our immunocompromised patients. I get my three patient assignments and carefully review their computerized charts, paying special attention to the patient summaries, where the RNs identify each pressing patient problem and explain what is being done about it along with any recommendations.

I notice the pictures of her young children and family; these serve as a constant reminder of who this person in the bed truly is. I quickly scan the room: ambubag...check, oxygen...check, suction...check. Although she is stable for now, I know she could deteriorate at any moment, likely from sepsis or respiratory problems.

I head out to morning report with mixed feelings. Although I already feel behind, giving report to the BMT team is a great opportunity. It is a chance for everyone in the room to discuss the patient's problems together as a team. Most attendings also use this time to educate the team as well, making morning report an invaluable tool.

I make sure the patient has his gigantic BMT binder, which covers everything the patient needs to know, along with our unit phone number and the Infusion Treatment Area's (ITA) phone number on every page. I review all discharge care thoroughly with my patient. He is anxious to leave the hospital, yet needs to participate in the lengthy discharge process.

6:30 7:00 7:30 8:00 8:30 9:00 9:30 10:00 10:30

After getting the report from the night shift, I "scrub in" and see my sickest patient first. I stand there in my surgical mask waiting for the first door to close before I enter the second door of the hepa-filtered positive pressure room. I know that this patient is sick. She's a typical day +6 status post allogeneic transplant for acute myelogenous leukemia. Her WBC is <0.1, her platelets were below 10k (but replaced), she has a fever, is tachypneic and tachycardic. As I enter the room, I do a double take. Even though she's exactly as she should be at this stage, the bald woman with the swollen, bloody mouth, lethargic from chemotherapy, antiemetics, is not the fun, cute, vivacious mom she was a week ago. Now she is simply trying to stay alive until her white count and body recover.

Judging from her severe mucositis with resulted swelling in her mouth, I'm actually surprised she is maintaining her airway right now. Despite this she is able to answer a few of my questions and tell me about her night. Meanwhile I am organizing her sea of tubing, including her IV hydration, D5W line for compatible meds, TPN, lipids, immunosuppression drip (to prevent graft-vs-host disease), PCA, and back-up hydration as I pop up two of her morning IV antibiotics. I do a quick yet careful assessment to get a clear picture of her current status.

Back on E-1, I see my other patients, a discharge and a chemo. My discharge, a 24-year-old day +1 s/p autologous (his own cells) transplant for Hodgkin's Disease, is going home for the first time after transplant. Fortunately, several members of the BMT team, including physical therapy and nutrition, come to meet with the patient and his mother, the 24-hour/day caregiver to review all aspects of care.

I ensure they have all of their supplies and medications; teach the mom and have her demonstrate a central line dressing change and a sub-q injection on her son; confirm he has his filter mask and knows to wear it at all times while out of the house initially; check that his mom has visited their temporary local housing, as they are from Sacramento and need to be within the designated "safe zone" so they can return to the hospital quickly if needed; review all discharge teaching including the low microbial diet, importance of adequate hydration (we require 3 liters a day); thrombocytopenia; neutropenia; anemia; and emphasize signs and symptoms of infection – stressing the importance of calling ASAP if one of those symptoms develop.

But then he starts complaining of feeling a little chilled and asks for a warm blanket. As his mom reaches for a blanket, I reach for the thermometer...38.7.

Meanwhile I have only seen my patient who needs chemo once this morning, and I have continually been hanging antibiotics and other antimicrobials on my sick day +6 allo patient, in addition to providing as many comfort measures as I can including setting up humidified air, applying lotion to her dry skin, and just spending some time encouraging her during this very difficult period.

The physicians decide to give her a one-time dose of IV steroids to bring down her high fevers. This will allow us to get the next bag of platelets in and hopefully they will take, in addition to making her slightly more comfortable by bringing down her fever. She's had blood cultures done yesterday and is on full coverage with antimicrobial therapy.

She is tachycardic in the 120s-130s, which is also expected with her fevers and potential infection. She has had an EKG to confirm that this is sinus tachycardia. She is edematous, yet still receiving IV fluid at 200mL/hr. With all of the chemotherapy and medications our patients receive, we need to keep them vigorously hydrated to help them clear the drugs and to protect their kidneys, even so, the medications and TPN she needs add up to this rate regardless. Because of this, we carefully monitor I&Os and weight every 12 hours and the physicians order diuretics as needed. Even when her I&Os are balanced, she still has edema as her albumin is 1.7 from her lack of nutrition, though she is receiving TPN and lipids.

11:00 11:30 12:00 12:30 1:00 1:30 2:00 2:30 3:00

This is his first fever so I notify the physician and get my expected orders: blood cultures, vancomycin, and cefepime within the first hour, as well as a chest x-ray, UA, and urine culture. I also inform the patient and his mom that he isn't going home as anticipated, as he needs treatment for his potential infection. He is disappointed and frustrated. His mom and I try to console him, yet I am also drawing blood cultures and alerting our satellite pharmacy to the need for the antibiotics STAT. They are amazing and have the antibiotics in my hand within minutes. I alert the resource nurse that my discharge is not actually leaving, so she can try to find another room on the unit for the admission who is coming in.

I get a page from the nursing assistant that my sick allo patient is febrile at 39.9 and rigoring, and the NA also is diligent about finding me to tell me in person—she knows a fever is a serious thing on E-1. I give demerol for the rigors, but my patient is unable to swallow Tylenol because of her swollen mouth, and is unable to get a Tylenol suppository because of her thrombocytopenia and high risk for infection. In addition, her labs showed that she didn't bump from her nighttime platelet replacement and now her platelet count is 6k.

As I manage her care I am evaluating all organ systems continually. Neurologically she is drowsy, which is expected at this stage, but the staff and I monitor her carefully to ensure she is still easily arousable. Despite her sedation, I give her a small dose of IV ativan (our drug of choice for quick relief of nausea). For her to have emesis right now would be painful and could increase her risk of bleeding.

Respirations are shallow at 34/minute, breath sounds are diminished bilaterally, and she has a cough, however she is just coughing up excessive saliva and secretions. I set up suction at her bedside and teach her how to suction herself carefully to help manage all of the thick saliva that her body is making to deal with the excoriated and ulcerated mucosal lining of the mouth, throat, and the entire GI tract, as a result of high dose chemotherapy. This also causes her to have diarrhea, and I ensure she is using the proper products to protect her bottom from getting excoriated and assist with peri care as needed.



Anne K. Jacobs, RN

Although she is very sick, she is still quite independent, as most of our patients are. We have a bedside commode set up for her, but she knows to call for help prior to getting up. Being tethered to all of the IV tubing and pulse oximeter, with the addition of narcotics and antiemetics on board, make it important that someone be in the room while she transfers from bed to commode, that her call light be within reach and answered promptly.

When the chemo arrives on the unit, the resource nurse and I independently calculate the correct dose of the drug, check the patient's labs, ensure there are two MD signatures on the pre-printed physician orders (including at least one attending) and that a consent is signed by the patient, and check our handwritten chemo MARs to verify that all of the premeds have been given and that we have everything charted correctly.

My day continues in this manner. At the end of my day my chemo is done; my sick patient is still sick, yet stable for the moment; and my discharge is staying but now understands why.

On E-1, our twelve-hour shifts consist of giving high dose chemotherapy and managing the multitude of side effects resulting from it. This can be anything from managing nausea with antiemetics and comfort measures, to managing a septic patient. Upon admission, most would not even know our patients are sick, as most patients appear healthy and are physically fit. It's very challenging for the family and the patient to watch all of that change in a matter of days as a result of the high-dose chemotherapy.

Our goal on E-1 is to keep BMT patients on our unit, sick as they may be. Nuances of their complex specialty care can be lost when transferring off E-1. So, short of intubation, our patients will typically remain with us rather than go to the intensive care unit. In addition, we develop close relationships with the patients and families that evolve over their stay.

By coming to E-1, our patients and their families are putting their trust in us to provide the best possible care and to get them safely through the intimidating transplant process. I am fortunate enough to work with an incredible group of nurses and team that makes that happen to the best of our abilities, every day. **SN**

3:30 4:00 4:30 5:00 5:30 6:00 6:30

I go to visit my patient scheduled for chemotherapy today. She is anxious about getting the chemo as she has been told it's ten times the regular dosing of traditional chemotherapy, as our goal is to ablate her bone marrow prior to infusing her new stem cells. I refer her to her BMT binder, print out information on the chemotherapy, and sit with the patient to discuss the side effects she will most likely experience during the actual infusion and after.

Though our charting is done primarily on computers, BMT admission orders are still paper copies that are entered by the pharmacist, USA, and RN into Electronic Multidisciplinary Documentation (EMD), with a second RN as a double check. We also check all chemotherapy against original MD orders. Only after this entire process is complete do the resource nurse and I enter the room with the chemo. Again at the bedside we check the chemo with two RNs, verifying the five rights. I have my protective chemo gown and gloves on, verify good blood return through the central line, and set the chemo to run at the ordered rate, with the second RN there to double check.

I also explain how we check our BMT chemotherapy at Stanford. Two physicians, pharmacists, and two nurses spend time calculating the dosing and ensuring that the dose written is correct.

Collaboration for Continuity

THERESA LATCHFORD, RN, MSN, AOCN
ONCOLOGY CLINICAL NURSE SPECIALIST, BLOOD AND MARROW TRANSPLANT PROGRAM

The Blood and Marrow Transplant Program performs over 200 transplants a year. Blood and Marrow Transplant recipients can become acutely sick during their inpatient stay with a host of problems from nausea, vomiting, infection, and bleeding, to nutritional and psychological issues and organ toxicity. Although nephrotoxicity and hepatotoxicity are common organ toxicities of transplant, cardiac toxicity is increasing. As the average age of the population increases and patients with cancer are living longer, cardiac toxicities are growing in number and are becoming an important side effect of cancer and its' treatments.

A Team Approach

In April 2000 the BMT program recognized this growing problem and successfully converted two patient rooms on E1 to cardiac telemetry. This conversion was incredibly important because it allowed blood and marrow transplant recipients to continue their inpatient stay on E1 while being cardiac monitored. With the support of D1's monitoring capabilities, the BMT nurses can continue to care for these patients and their highly specialized problems while the D1 Cardiac Surveillance Unit (CSU) nurses are able to monitor and care for the BMT recipients' cardiac needs. Patients placed in the cardiac telemetry rooms on E1 are hemodynamically stable, do not require invasive monitoring, and exhibit a cardiac rhythm of atrial fibrillation, atrial flutter, tachycardia, multiple premature ventricular contractions, or are receiving bolus or maintenance intravenous administration of digoxin, diltizem, procainamide, lidocaine, amiodarone or adenosine. Patients receiving high dose Interleukin II, which can cause severe capillary leak syndrome as well as patients with amyloidosis – a rare and potentially fatal disease in which amyloid proteins build up in organs including the heart – are treated on the cardiac telemetry unit as well.

If you search the Wikidpedia definition of collaboration, you will find the teamwork between E1 BMT and D1 CSU described perfectly. Collaboration is defined as a structured recursive process in which two or more people work together toward a common goal – typically an intellectual endeavor that is creative in nature – by sharing knowledge, learning and building consensus. Irene Zareno, RN, E1, reflects that the system works well because it gives us a lot of resources. If something unusual happens, the D1 nurses are there to help right away.

As the D1 CSU nurse and the E1 BMT nurse jointly start their shift, they discuss each patient's plan of care. The D1 CSU nurse's responsibilities includes assessing the patient's cardiac status, posting strips, conferring with the E1 RN and physician about changes in cardiac status or rhythm, administering or monitoring any antiarrhythmic medication, and assisting with emergency care related to a change in hemodynamic or cardiac rhythm status. The benefit of the cardiac-monitored beds on E1 is that through this collaborative practice each group of nurses can continue to provide the specialized care for which they are trained. Another benefit of the collaborative practice of the cardiac-monitored beds on E1 is that

If you search the Wikidpedia definition of collaboration, you will find the teamwork between E1 BMT and D1 CSU described perfectly.

the patient gets consistent care – patients are not transferred to an unfamiliar unit with unfamiliar staff. As Bob Critz, RN, D1 CSU, says, "It's a mix that works well."

For a unit where the average length of stay is between 18 to 21 days, that benefit has incredible rewards. For over seven years the E1 and D1 nurses have worked collaboratively, providing care to numerous patients by sharing their specialties, which in turn has reinforced Stanford Hospital and Clinics' vision that Stanford nursing "provides the best patient care in the nation." **SN**

Appropriate ICU Utilization for BMT Patients

TRISHA JENKINS, RN, MPA, NURSE MANAGER,
BLOOD AND MARROW TRANSPLANT PROGRAM

Purpose

The purpose of the project was to develop criteria to help determine appropriate admission of blood and marrow transplant (BMT) patients to the intensive care unit (ICU). In order to avoid inappropriate utilization of ICU beds, guidelines were developed for BMT patients based on current literature and prognosis. In addition, a process was outlined to improve communication between the BMT and ICU teams, and the teams and the family.

Background

Given rising healthcare costs and the scarcity of ICU beds, guidelines were needed for the appropriate admission of BMT patients to the ICU to ensure appropriate resource utilization.

Communication can facilitate or create barriers in determining individualized and beneficial patient goals of care. Communication between medical teams was often fragmented. Family members often received mixed messages and conflicting recommendations from the healthcare team. Unclear communication makes it difficult for patients and families to make educated decisions regarding care options. The end result for BMT patients was an over-utilization of the ICU for non-beneficial care.

Methods/Procedure

Prior to instituting a rapid-cycle process improvement project, our BMT program had seen an increase in ICU utilization. Our ICU days increased from 3.3% of total days in FY05 to 5.1% in FY06 and our average BMT ICU length of stay (LOS) increased from 4.8 days to 11.7 days in FY06.

A multidisciplinary team was created to discuss current issues, brainstorm ideas and create guidelines based on current literature. The following guidelines were developed:

- 1) Guidelines for appropriate admission of BMT patients to the ICU were created based on review of recent literature and probability of survival.
- 2) Daily rounds between BMT and ICU Team were established to discuss BMT patients in the ICU and enhance communication.
- 3) Protocol implemented specifying that the BMT and ICU team would meet with the patient or family every 48 hours during ICU stay to clarify goals of care.
- 4) A BMT advanced healthcare planning addendum was developed to help educate patients and families and create a forum for discussion and goal planning with their MD.
- 5) All BMT patients sent to the ICU would be entered in the BMT monitoring tool and would be reviewed at the monthly BMT review meeting.

Results/Outcome

In the past year, all but one of the 23 BMT patients transferred to the ICU met the criteria and all have been entered in our BMT ICU monitoring tool. The BMT and ICU teams have rounded daily and discussed the plan for all BMT patients in the ICU. In addition the teams have met with families every 3-4 days. As a result, we have decreased BMT ICU days to 3.4% and the ICU average LOS down to 7.65 days. This has resulted in an annualized savings of 100 ICU days for this year.

The project has resulted in evidence-based guidelines and tools for appropriate admissions of BMT patients to the ICU. Appropriate utilization of ICU beds for BMT patients results in better resource utilization and avoiding futile care that can result in unnecessary and painful treatments. The daily team rounds and family meetings with the BMT and ICU team resulted in clarity of information and communication to patients and family. This enables families to make educated decisions regarding care options. **SN**

Intangible Results

Quality-of-Life Issues Following Hematopoietic Cell Transplantation

D. KATHRYN (KATE) TIERNEY, RN, PHD, ONCOLOGY CLINICAL NURSE
SPECIALIST, BLOOD AND MARROW TRANSPLANT PROGRAM

Hematopoietic cell transplantation (HCT) has changed dramatically over the past twenty-five years and continues to evolve at a rapid pace as scientific discoveries are translated into the clinical setting.

An aggressive therapeutic approach for a variety of malignant and non-malignant disorders, HCT is associated with numerous short- and long-term toxicities. In order to reflect the overall value of any therapy it is important to measure not only the traditional outcome variables such as overall survival, disease-free survival, morbidity, mortality and cost, but also quality of life (QOL). Nursing consistently focuses on the adaptation of individuals to changes associated with the diagnosis and treatment of illness. As such QOL is an important outcome measure for nursing.

Overwhelmingly, QOL studies report that the majority of HCT recipients enjoy a good quality of life, however they stress that most patients do not return to their pre-illness level of health. The long-term problems identified from QOL investigations include anxiety, depression, fear of relapse, fatigue, chronic graft-versus-host disease, infections, sleep disturbances, premature menopause, and alterations in sexual health. Efforts to improve physical well-being by reducing graft-versus-host disease, minimizing fatigue, reducing infections and decreasing sleep problems will raise the QOL of transplant recipients.

“Every smile and kind word helped more than you can imagine . . . This has been the hardest situation in our lives and you all have helped us through this.”

At the same time, QOL studies have also identified aspects of QOL that are positively affected by HCT. Individuals have reported a heightened appreciation for life, a renewed embracing of valued relationships and spiritual growth. As is evident in all individuals diagnosed with life-threatening diseases, variability in attitude, resilience, world view, cultural background, religious beliefs, family support and general health have much to

do with responses to treatment. Clearly more work is needed to identify background and personal factors that influence the degree of QOL benefits for HCT recipients. Although transplantation may not restore patients to their pre-illness state of health, the majority of transplant recipients report a satisfying QOL. Nurses are in a key position to develop and test interventions to improve the QOL of transplant recipients and their families.

SN

Palliative Care Consult Service

JUDY PASSAGLIA, RN, MS, AOCN, PALLIATIVE CARE PROGRAM MANAGER

On August 1, 2007 Stanford Hospital launched a palliative care consult service under the Division of General Internal Medicine. The team has been pleased to receive consults from a cross section of services including Medicine, BMT, GYN Oncology, Cardiology, and Critical Care, averaging 45 palliative care consults per month.

Each morning the Palliative Care Consult Service team convenes to round on current patients and new referrals. Taking a multidisciplinary approach, medicine, nursing, and social work are all represented on the team. Upon receiving a new consult, the patient's history is reviewed, and the reason for the consult is discussed with the primary team. They may be looking to the palliative care team to assist with pain or symptom management, psychosocial support, patient/family education, transition to hospice and/or comfort care, or most commonly, to help establish the goals of care. It is important to assure that the goals of the patient, family, and physician are identified before a plan of care can be determined. Given the level of complexity found in the patient population at Stanford, this can be a challenging process. One of the members of the Palliative Care (PC) team will regularly participate in family meetings in which the patient and the primary team try to sort out difficult issues and to facilitate decision-making. In the palliative care model, the patient and

the family together form the unit of care; therefore the team strives to develop a rapport with the family members and maintain contact throughout the patient's hospitalization.

The Palliative Care team works with the multidisciplinary team to care for each patient, serving as a resource to the patient/family, medical team, and nursing staff. Sometimes the team is called to meet with a family in need of information or support. If a patient is considered near the end-of-life, oftentimes the family will have questions about what to expect; the palliative care team can assist with education

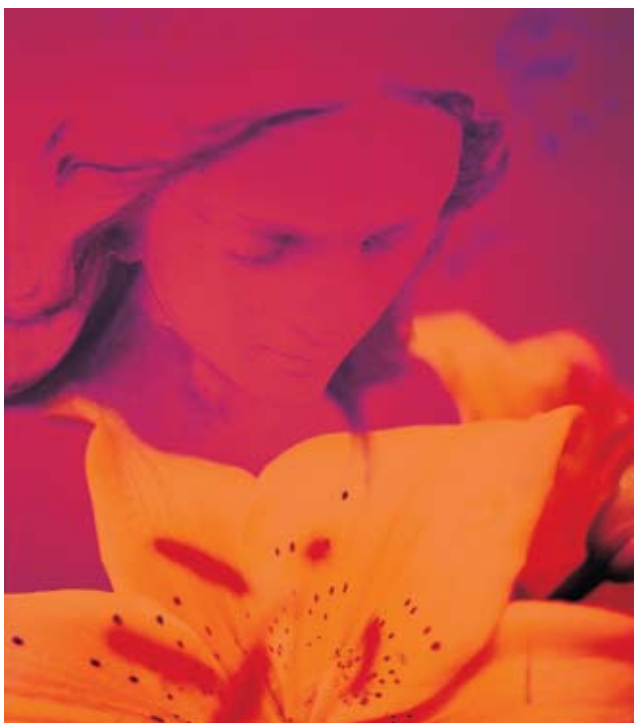
around the dying process. The team will assess the patient's level of comfort and will make recommendations for treatment based on his or her symptoms as well.

A palliative care consult requires a physician order. If a registered nurse identifies a patient who would benefit from a palliative care consult, it is best to discuss the patient with the primary team.

At this time, the service is offered to our inpatient population, but there is a plan underway to eventually expand to the outpatient arena, beginning with a clinic in the Cancer Center. In addition, the Palliative Care team has

responded to the need for education on many levels; recently the team presented at Nursing Grand Rounds.

Palliative Care team members include Judy Passaglia, Palliative Care Program Manager, Stephanie Harman, Medical Director, and Sandy Chan, Licensed Clinical Social Worker. **SN**





Twenty Years of Making a Difference

LYNN ELLISON, RN, OCN, ASSISTANT PATIENT CARE MANAGER,
BLOOD AND MARROW TRANSPLANT PROGRAM

In the summer of 1987 Stanford Hospital and Clinics offered its first bone marrow transplant to David Occhipinti, a patient with leukemia who was given just two to three weeks to live. Recently we marked our 20th anniversary along with David's own "re-birth" day at a wonderful celebration.

During the past twenty years, the program has transplanted more than 3,400 patients with a variety of malignant and non-malignant diseases. We currently provide transplants to over 200 patients a year. We are now a nationally recognized program funded by the National Cancer Institute to conduct clinical research designed to improve patient outcomes. The program is fully accredited by the Foundation for the Accreditation of Cellular Therapy.

Transplant patients are now treated in our inpatient unit located on E1 in the main hospital, where 50 highly trained nurses and 10 dedicated ancillary staff members provide "excellent, holistic care to cancer patients throughout their journey." They are also treated in the Infusion Treatment Area (formerly known as the BMT Day Hospital) housed in the new Cancer Center at Stanford. Several nurses in both areas have been with the program since its inception.

In the last 20 years, there have also been many changes in the education programs for new BMT nurses. Upon hire, each nurse attends a three-day Oncology Series and two-day ONS Chemo/Biotherapy Course. Our Unit Education Committee helps to provide in-service training for nurses and NAs, and develops education materials for staff, families, and patients.

One of the committee's greatest accomplishments was the development of the Nursing Reference and Guide Book or "Heme/Onc/BMT" – a 108-page pocket guide filled with information on every aspect of caring for our patients. Education in this specialty has always been a top priority and has continued to grow as new research and procedures change our everyday practice.



Lynn Ellison, RN, OCN

Our 20th anniversary celebration featured a breakfast for our very first patient. This special celebration included, in addition to David, about 20 nurses, David's mother, brother (who was his donor), sister and nieces, along with members of the press. Torey Benoit, Donna Healy, Donna Clem, and Jan Petree are four nurses who attended and were with the program when David was transplanted. Torey spoke about how newer medications, such as anti-emetic, growth factors and new treatments for bacterial and fungal infections have been much more effective in allowing patients to recuperate sooner. David reflected, "Years later what I remember most gratefully is the help from all the nurses. The doctors come and go, but the nurses are right there in the trenches with the patients." The breakfast ended with the nurses singing "Happy Birthday" to David in celebration of the anniversary of his second chance at life, his "re-birth" day. **SN**

Advancing Nursing

ED Call Back Nurses Take Home the Gold

KAREN STUART, RN, BSN, CEN
ASSISTANT NURSE MANAGER, EMERGENCY DEPARTMENT

Each year, the ADVANCE for Nurses Best Nursing Team Contest generates hundreds of entries from units and facilities all over the 10 regions ADVANCE currently serves. A panel of prestigious judges from each region evaluates the entries, and the top five winners from each region are recognized.

The judges evaluate the entries by awarding a score from 0-5 based on each of the following categories:

- Promotes the profession of nursing
- Takes measures to control costs
- Improves relationships with members of the medical team
- Institutes innovative programs
- Adjusts to change
- Supports other team members
- Implements the team concept in meeting productivity outcomes
- Receives commendations from clients
- Is proactive in pursuing education, certification, etc.
- Plays a part in promoting health to the community
- Works well as a team in difficult times
- Celebrates its employees

This year, the Stanford Emergency Department Call Back Nurses have received this award. They consist of six experienced Emergency Department Nurses all with over five years of experience within the Stanford Emergency Department.

The Call Back Nurse position started with 8-hour shifts and grew to 12-hour shifts seven days a week very quickly. The nurses follow up with patients regarding the results of their



culture reports along with helping patients get into the area clinics. Once the word was out in the community, the program became very popular with outside clinics and patients themselves. Our clients now have someone to call in the Emergency Department who has the time to listen, follow-up on issues, and answer their important questions.

It takes a team to achieve excellence. This team of Emergency Department Nurses has done just that. They have improved customer service in the Emergency Department, shown amazing teamwork, and taken the initiative to help its patients in anyway they can.

The Call Back Nurses are Pat Pipp, Mary Durando, Kelly Johnson, Ana Nelson, Gennette Olalia, and Divina Masaquel-Santiago. [SN](#)

Nurse Week 2007





A Balance of Work and Play



MARK CORBET, RN

Archery

Mark is a staff nurse in the Ambulatory Treatment and Procedures Unit. Mark developed his interest in archery as a teenager while watching his father shoot his long bow. He has been shooting for over 15 years. One of his favorite places to practice is at the Kings Mountain Archery Range which is a 1½ mile course that winds through the redwood trees in Woodside. He enjoys the sport for the concentration it requires and it gets him outside and into nature.



PAT GAMBERG, RN

Arts & Crafts

Pat began working at Stanford in 1964 as the Head Nurse of the Clinical Research Unit where they took care of the world's very first heart transplant patient. She became a Transplant Nurse Coordinator in 1973 and has been with the team ever since. She began her hobby making baby clothes and quilts for friends and has now turned that into actively showing and selling her works at a variety of arts and crafts fairs. She added quilts to her repertoire 8 years ago.



SHERRY KRITZER, RN

AKC Agility

Sherry is an experienced nurse on D3 who began agility training with Spot, a 3 ½ year old Border Collie, in August 2005. She and Spot compete in American Kennel Club (AKC) agility trials all year round and are hoping to advance to the Excellent Division this spring, where the best caliber athletes compete. Spot is an incredibly swift course runner and Sherry's main challenge is keeping ahead of him so she can provide the cues he needs to run the course! Sherry will begin training her puppy Jake to do agility competition this spring as well.



GILLIAN MCFARLANE, RN

KAREN PENDLEY, RN

Sculling

Karen and Gillian got together a year ago when they were released from their positions in Surgical Oncology and Radiation Oncology to start working on the Epic project as part of the Beacon Team and Orders and Results Team. They were looking for a sport that provided a great total body workout and got them outside and on the water. Since the Bay was just down the road from the North Campus, they became members of the Blair Island Aquatic Club and began sculling lessons. They now try to row single scull at least three days a week.

In Recognition of...

CERTIFICATIONS/ RECERTIFICATIONS

ACCC – Accredited Case Manager/
Certified Case Manger
Wendy Spurgeon-Kong – October 07

APRN-BC – Advanced Practice RN
– Board Certified
Susanne Cox – November 07
Cynthia Singh – October 07

CCRN – Critical Care Registered Nurse
Irene Sayson – January 08

CEN – Certified Emergency Nurse
Dorothea Harvey – September 07

CFRN – Certified Flight Registered
Nurse
Allan Norfolk – October 07

CGRN – Certified Gastroenterological
Registered Nurse
Birgit Massion – November 07

CMSRN – Certified Medical-Surgical
Nurse
Aimee Cortez – October 07
Cindy DePorte – May 07
Erleen Fernandez – November 07
Kieungan Fiore – May 07
Shirley Harvey – May 07
Myra Legaspi – November 07

CNN – Certified Nephrology Nurse
Jung Park – October 07

CNOR – Certified Nurse Operating
Room
Stella Marinos – September 07
Carrie Wilson – January 08

CNRN – Certified Neuroscience
Registered Nurse
Natalie Hall – October 07

NP-C – Certified Nurse Practitioner
Michael Sheehan – November 07

DEGREES

MASTER/GRADUATE DEGREE
Rhonda Bodlak, RN, FNP, MSN, Mas-
ters Science Nursing, San Francisco
State University – December 07

BACHELOR/UNIVERSITY DEGREE
Jeanny Morejon, RN, BSN, Bachelor of
Science Degree in Nursing, University
of Phoenix, December 07

CONFERENCE PRESENTATIONS

Carol Bell: "Protocol to Manage
Vasomotor Symptoms (Poster)", ONS
Advanced Practice Nursing Confer-
ence, Chicago, IL, November 07

Mary Ann Champagne: "Integrating
Multiple Guidelines – Dyslipidemia",
PCNA Regional Education Program,
San Francisco, CA; Durham, NC;
Sacramento, CA September 07

Garrett Chan: "Ethics at the End-of-
Life in Critical Care", ELNEC – Critical
Care, Pasadena, CA, November 07

Cynthia Day: "Magnet Journey: CNO
Role", Nevada Organization of Nurse
Leaders, Lake Tahoe, CA, October 07

Kerry Farthing: "A Unique Approach
to the Charge Nurse Role", Medical
Surgical Conference, Las Vegas, NV,
October 07

Margaretha Fledderus: "Cultural and
Language Barriers in Healthcare",
Creighton University Panel Discus-
sion, Omaha, NE, October 07

Joan Forte: "Traveling Nurse on the
Magnet Journey", National Magnet
Conference, Atlanta, GA, October 07

Elizabeth Greenlee: "Disease Specific
Certification Workshop" Joint Com-
mission Resources, San Diego, CA
September 07

Debra Johnson: "Infection Control in
the Perioperative Area", PeriAnesthe-
sia Nurses of California Education,
Sacramento, CA October 07

Juliana Liu: "IV and SQ Remodulin
Challenges and Solutions", PHRN
Symposium, Arlington, VA October 07

Sheryl Michelson: "Developing
Competencies and Evaluation" AORN
Leadership and Education Confer-
ence, San Antonio, TX, September 07

Nadine Nakazawa: "Credentialing and
Competency in Vascular Access" Pre-
Conference: Association for Vascular
Access, Phoenix, AZ, September 07

Janet Neff: "The Case of the Knitting
Needle", TEC by the SEA Trauma Con-
ference, Monterey, CA, October 07

Linda Ottoboni: "Device Case Study
Presentations" Electrophysiology in
the West, Carmel, CA, November 07

Judy Passaglia: "Palliative Care" Can-
cer Survivorship Conference, Mission
Bay Conference Center, San Francisco,
CA, December 07

Julie Racioppi: "Crossroads of Evi-
dence-based Practice", UHC Meeting
for ISCC, Seattle, WA, September 07

Denise Robinson: "Hypothermia: The
Human Impact from Cold" Trauma
Education Consortium, TEC by the
SEA, Monterey CA, October 07

Nancy Szaflarski and Jim Stotts. "The
effect of problem-based learning
on the critical thinking skills of new
graduate nurses in the early detection
and response to hospital complica-
tions." Abstract presented at the
3rd (07) International Conference
on "Rapid Response Systems: Team
Systems for Safety." Pittsburgh, PA.

Debra Thaler-Demers: "Psychosocial
Issues for Young Adult Survivors"
CURE Patient Forum, Chicago, IL,
September 07

Debra Thaler-Demers: "Teaching Pa-
tients About Sexuality and Intimacy",
Sacramento ONS Chapter Annual
Forum, Sacramento, CA October 07

Debra Thaler-Demers: "Expert Panel
on Outreach to Minority Popula-
tions", ASTRO Conference, Los Ange-
les, CA, October 07

Rosemary Welde: "Care of Cleft Lip
and Cleft Palate Patients" Alliance
for Smiles Mission, Huangshi, China,
October 07

Michelle Woodfall: "Vascular Access
and Medication Administration"
Emergency Management Research In-
stitute, Hyderabad, India, October 07

Michelle Woodfall: "Intercepting
Sepsis" Society of Oncology Nurses,
South San Francisco, CA, October 07

Laura Zitella: "Prevention of Infection
and Management of Febrile Neutro-
penia" 07 Oncology Update, Lincoln,
NE, September 07

ARTICLES AND PUBLICATIONS

Bell, Carol, Schurman, Christine and
Bryce, Jane. Protocol to Manage
Vasomotor Symptoms of Women with
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Nursing Forum* 6, (07), 1243.

Emmons, Patricia. "Location, Loca-
tion, Location!" *Healthy Skin* 4 (07):
13-14.

Gautier, Hollice. *Everyone's Guide to
Cancer Survivorship: A Roadmap for
Better Health* (07), ISBN-13:978-0-
7407-6870-5, 2349.

Hartley, Christine. ITNS Core Curricu-
lum, *Heart Transplantation*, 07

Martin, Eva. "Retrospective reports of
dream characteristics and preferences
for organic vs. junk foods." *Psycho-
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Insertions." *Journal of the Association
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Sheehan, Michael. "The aortopathy of
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and usually involves the transverse
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901-907.

Springer, Mary. "Alterations in lateral
left ventricular wall transmural strains
during acute circumflex and anterior
descending coronary occlusion." *Annals of Thoracic Surgery* 84 (07):
51-60.

Springer, Mary. "Tenting volume:
three-dimensional assessment of
geometric perturbations in functional
mitral regurgitation and implications
for surgical repair." *Journal of Heart
Valve Disease* 16(1 07):1-7.

Thaler-Demers, Debra. "Oncology
nursing secrets." *Survivorship*, 3rd
edition, 07.

Tierney, Debra. "Altered sexual health
and quality of life in women prior to
hematopoietic cell transplantation." *European Journal of Oncology Nurs-
ing* 11 (07): 298-308.

Tierney, Debra. "Response Shift: A
theoretical exploration of quality
of life following hematopoietic cell
transplantation." *Cancer Nursing* 30
(07): 125-1389.

IMAGINE A CAREER THAT EXCEEDS EXPECTATIONS, EVEN AFTER YOU RAISED THEM.



I stand for *making a difference*
Mary, RN

It takes a different kind of person to become a nurse. Because it's not just about medicine. It's about treating patients like people, and changing lives in the way we care for them. At Stanford, this is not a job we take lightly. We're looking for nurses who are as passionate about improving healthcare as we are.

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