

## **UC San Diego**

### **Spring 2009 - UC San Diego Health Journal of Nursing: Critical Care Nursing: Rapid Response Program, M.E.W.S, SICU/Trauma Unit, Pulmonary Endarterectomy**

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## Critical Care Nursing

Rapid Response Program

M.E.W.S.: What Is It and Why Use It?

SICU/Trauma Unit

Pulmonary Thromboendarterectomy





## Magnet Forces

1. Quality of Nursing Leadership
2. Organizational Structure
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10. Community and Hospital
11. Nurses as Teachers
12. Image of Nursing
13. Interdisciplinary Relationships
14. Professional Development

*From the Nursing Shared Governance Council*



## Message from the The Chief Nursing Officer

I am proud to present our second issue of the UCSD Journal of Nursing. Many exciting things have been happening at the Medical Center, especially in our Critical Care areas. Recently we acquired the very prestigious Burn Verification given by the American Burn Association. UCSD Medical Center is the only hospital in San Diego and Imperial counties to have this verification. I am so pleased to see how well the entire staff on the Burn Unit helped to get ready for this visit as it shows great teamwork from all multidisciplinary areas and a remarkable outcome.

This year also marks the 25th anniversary of UCSD's official designation as a Level 1 Trauma center and it is also the 20th year of the current SICU/Trauma unit. These are two great milestones.

The current issue of the UCSD Journal of Nursing focuses on our Critical Care Units with special articles from the SICU/Trauma, Thornton ICU PTE program, Burn ICU, and an article by our 2008 Nurse of the Year Peter Hall.

These articles include many touching stories and valuable information about what our nurses do every day. Our current quality indicators also show a decrease in our pressure injuries and central line bloodstream infections due to the nursing care in critical care units. These units require passionate, strong, and caring individuals to be able to provide the patient with the best care. I am proud to share the achievements of our nurses and the differences they make in the lives and experiences of our patients.

Sincerely,

**Margarita Baggett RN MSN**  
CHIEF NURSING OFFICER

Magnet committee membership is a great way to become personally involved in the Magnet journey and to help shape the future of nursing at UCSD. For more information go to our nursing website at <http://medinfo.ucsd.edu/nursing/committees/> to learn about committee membership opportunities.

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Cortimiglia, RNC/CWS at the  
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# What I Love About Nursing

By Lilia Garcia, RN, BSN, CCRN

I believe that nursing is a job that requires extreme hope. Every time a patient is admitted, the whole unit hopes the patient will get better and be transferred out of the ICU. Each time we hear “code blue,” we respond and rush to the scene, filled with hope that our efforts will result in a revived patient, giving us another chance to do all we can to restore him/her back to health. I love nursing because it gives second chances to nurses and patients.

I’ll never forget the time when my co-worker told me that there was a man waiting to see me by the entrance door. I was a little shocked to hear this, but when I saw him walking towards me, I realized that he was a previous patient of mine. He looked different, clean-shaven and neatly dressed in his own clothes—instead of a hospital gown—with a smile on his face. He explained that he just had to visit after fully recovering to thank me for allowing him to have a second chance at life.

He gave me a dozen pink roses. I was completely touched! In our profession, ultimate satisfaction comes when patients get out of the ICU and then are eventually discharged out of the hospital and back to living their lives. We hardly have any time to want to be thanked, but when it happens, it changes our lives and renews our passion for what we do. Of course, not all patients get better and go home.

Nursing is not always about healing because even my first patient—my father—passed away while I tried to take care of him...but that’s what I love about my job. Nursing allows me to appreciate the value of living and it also guides my mind and helps me handle life’s challenges with understanding, compassion and optimism. Each unfortunate ending opens a new chapter in my life, giving me the chance to learn, accept, and continue to do my best.



Lilia Garcia received her BSN from Phillippines Women’s University in Manila and came to the U.S. as a contract worker in 1980. She began her critical care career in Chicago, but came to San Diego in 1983. She has been working in CCU at UCSD since then. She obtained her CCRN in 1991. Lilia wrote this piece to describe her love of her job and her patients.

# Rapid Response Program at UCSD

By Peter Hall, BA, AANS, MPA  
UCSD Nurse of the Year 2008

What do you do when you walk into your patient's room and find that he has become dyspneic or suddenly obtunded or that his blood pressure has bottomed out. Sure, you put a page out to the doctor, but it might be a while before she calls back much less comes to your aid. And even if she does call from, say, the clinic or the OR, what do you tell her? Do you have all the information that you need to figure out what is going on? What if things start getting worse, but it's too early to call a code.... yet. Or even more anxiety provoking, what if you have a growing certainty that something is going wrong, but you just can't put your finger on what it is? What do you do?

Well, here at UCSD, the answer is simple. You call a rapid response. In the year-and-a-half since the rapid response team has existed at the medical center, I and the other team members have jumped in to support numerous nurses who have found themselves in just such a predicament.

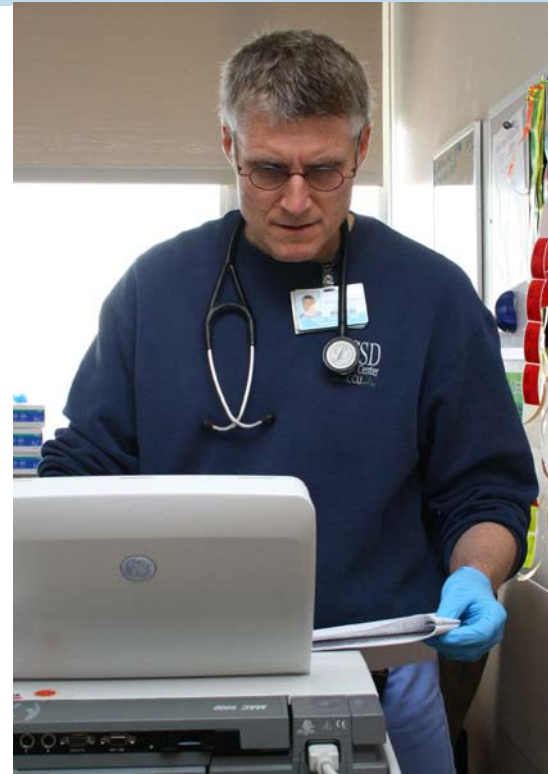
How does it work? Let me use the example of a recent activation as an illustration. This particular patient was on the telemetry unit and was going into respiratory failure; the trigger for a huge percentage of our calls. It was clear that she was in serious trouble and that, if no one intervened quickly, she was going to be intubated.

The call came a little after five p.m. With the shift change approaching, I was making the rounds on my unit, helping the nurses get caught up. As usual, it had been a busy day on the CCU. I was the code nurse; my co-worker Terri was in charge.

When the pager went off, I stopped what I was doing and headed for the double doors. I walked briskly, but didn't break into a run as I would have had a code blue been called. The idea behind a rapid response is that there is a situation that requires urgent

attention, but that there is enough time to intercede in a controlled, efficient manner. A successful rapid response is one that is called well before it's time to punch the panic button. This activation had come from the telemetry unit which was just down the hall, so it only took a minute to get there anyway. Since it was so close, Terri went with me.

We entered room 1017 to find a 54-year-old woman, (I'll call her Linda), who was comatose. In fact, the response had been called on the basis of her altered mental status. The telemetry nurses were already getting vital signs when we arrived and, as I was glad to see, had elevated her head. This was important from both a neurological and a respiratory standpoint. The patient's primary nurse gave us a quick report. Here was a woman, recovering from back surgery, who had been moving around normally and speaking coherently just a couple of hours earlier. Now, she was unresponsive to even supraorbital stimulation. I completed my neuro assessment as the respiratory therapist set up an ambu-bag in order to assist with her breathing if required. Although her oxygen saturation was 98% using a non-rebreather mask, her



**Peter Hall** started as an English major, but after receiving his BA decided to pursue a degree in Nursing. He obtained an AANS and became a psychiatric nurse and then an ICU nurse, before getting a Masters in Public Administration. He worked in administration for a number of years, coming to San Diego as Director of Case Management for a South Bay psychiatric hospital. But he couldn't forget that year in ICU nursing. He finally returned to the career he loves and has been in ICU and CCU for the last 12 years. He is an integral part of the staff in CCU at UCSD, and has been influential in bringing about a number of innovations, such as the Rapid Response Team.





effects of any narcotics in her system. If that didn't work, we'd call a stroke code and prepare for intubation. Moments later, the nalaxone was at the bedside and ready to be given, but suddenly, we were faced with a new problem: Linda's only IV was infiltrated and one look at her

areas, their downward spiral can be halted and, potentially, reversed.

Anybody can call a rapid response. Among the criteria are a number of objectively defined triggers, but there is also an allowance for the intuitive sense that 'something just isn't right'. This encourages nurses and other clinicians to not hesitate before calling for help. They use the same number that they would use to report a fire, a cardiac arrest or any other emergency. The operator then sends out a page to the code nurse on the CCU, the cardiac/medical ICU.

A CCU code nurse is designated for each shift from a team of highly trained staff nurses. These are experienced critical care RNs who benefit from an ongoing process of skills development. Although they have each been ACLS certified at some point, they are now given the Advanced Resuscitation Training (ART) which was created by Dr. Davis and which employs the most current concepts in resuscitation science. For nurses in a hospital setting, ART focuses concisely on the skills that are relevant to their role in a resuscitation effort. While on the CCU, the code nurse functions as a resource, assisting with high acuity patients, helping novice nurses learn new skills and so on. At any time though, she or he could be called to a code blue (an arrest), a rapid response or to help out with an ST elevation myocardial infarction patient who is coming into the emergency room.

Rapid response pages do not set off a stampede. Instead, the code nurse proceeds quickly to the patient's location, makes an assessment of the situation and determines what other resources may be needed. The supervising respiratory therapist also responds to the call. This limited use of personnel both promotes efficiency and prevents the kind of mass reaction that could make someone think twice about calling for assistance. Armed with the emergency standing orders, the code nurse is well equipped to intervene. For instance, he or she could give D50 to a hypoglycemic patient or

respiratory rate was only ten breaths per minute and her air movement sounded partially obstructed. She was not protecting her airway and, from the look of things, her ability to do so was only going to decline. While the unit secretary paged the primary intern, we checked a blood glucose level, which was normal, drew an arterial blood gas, a chemistry panel and a hemoglobin/hematocrit. Terri started doing an EKG.

Linda's vital signs were not an issue fortunately, but her mental status was as puzzling as it was alarming. She was not hooked up to a patient controlled analgesia pump (a frequent culprit in situations like this), but she had received Oxycontin seven hours previously. "Could that be causing symptoms of an overdose this far out, even if it is a time-released medication?" I asked myself. "Wouldn't the problem have manifested itself earlier?" Her cheek was hanging to one side of her face and a couple of people voiced the concern that she was exhibiting a facial droop, a sign of a stroke. I wasn't so sure. One thing was certain, though, time was not on our side.

Terri and I quickly formulated a plan. We would invoke our hospital's emergency standing orders and give Linda a 1 mg of nalaxone to reverse the

arms told us that starting another one was going to be a challenge.

As one of the telemetry nurses searched for a new IV site, it occurred to me that nalaxone could be given intramuscularly. Luckily, the primary physician arrived at that point and authorized this departure from the standing orders. We gave the drug via the IM route. Nothing happened. However, after two attempts, the tele nurse was finally successful in starting an IV. Now we gave a second dose intravenously and then watched for the effect. Within seconds, Linda began to stir, still stuporous, but with all extremities moving. Then her eyes popped open and she looked at us. "What's going on here?" she said.

If you were to narrow the objectives of the UCSD rapid response initiative down to one, it would be to prevent resuscitation codes. According to the "Advanced Resuscitation Training Manual," the source book for responders written by Dan Davis, MD, director of UCSD's Center for Resuscitative Science and the chief architect of the program, patients who end up in cardiac or pulmonary arrest typically start showing signs of a problem hours before they crash. By bringing ICU level resources to at risk patients in non-critical care

## RAPID RESPONSE: CALL 6111

### Acute Criteria for Calling:

Intuitive sense that something is wrong

Acute change in mental status

ABG requested for respiratory concern

New onset of agitation or restlessness

Acute change in temperature <35 or > 39.5

Sudden blood loss

New onset of chest pain

SBP < 90mmHg or > 170 mmHg

HR < 55 or > 120 beats per minute

Increased effort of breathing

RR < 12 or > 32 breaths per minute

Stridor or noisy airway

start external pacing on someone in a third degree heart block. Frequently, the respiratory therapist will set a patient up with a bipap machine. In addition to these initial steps, the nurse gets the ball rolling by issuing STAT orders for such things as lab work, chest x-rays and EKGs. By the time a physician arrives, the diagnostic work-up has already been started.

In no way could it be said, however, that an activation is anything less than a team effort. To begin with, the primary nurse usually makes the call on the basis of some astute observations, plays a key role in guiding the code nurse's assessment and then assists with any interventions that are deemed necessary. The importance of the primary nurse's continued involvement cannot be overstated. Of course, if the patient's treating physicians have not been notified by the time the code nurse arrives, they generally will be immediately thereafter. Much of the time, they are able to resolve the situation. Often, the patient's deterioration has occurred relatively swiftly or was unanticipated and the treating MD is relieved to find that actions have already been taken by the time they can get to the bed side. Occasionally, a physician who is reluctant to address a problem may be prompted to act by the initiation of a rapid response. It is valid for a nurse to make the call if she or he feels that

a patient is in jeopardy for any reason. There are also times when a change in condition can take a patient beyond the purview of the primary physician's expertise or clinical jurisdiction. In this event, the code nurse can request back-up support from the critical care medicine resident on call. Maybe a second opinion is all that is needed or, maybe, the patient requires an ICU bed and the critical care resident actually assumes the person's care. Whatever a rapid response entails, the house supervisor is obviously involved from the beginning as well. He or she gets the page and goes to the patient's

call of this sort that I consider to be one of the most smoothly functioning rapid responses that I've been a part of. It came from a medical/surgical floor at 8:30 am. When I got to the room I found that the nurse practitioner, Rhonda, was already in attendance. The patient was a 61-year-old Asian man (I'll call him Sam) who had undergone a transarterial chemoembolization for a liver tumor the previous day. He had done well afterwards, was eating and getting out of bed, but early in the morning of this day, he had started to complain of increasing abdominal pain. Other than the pain, there was



location in order to determine what needs to be done from a systems perspective. This could mean making arrangements for an in-house transfer or calling in additional resources.

In a sense, when a rapid response is activated, all necessary hospital services converge upon the needs of that patient. There are instances in which the principal benefit of calling for an activation is that it gets all the gears turning in the same direction at the same time. There was a particular

no outward sign that anything was wrong, but the primary nurse, Myrna, felt uncomfortable with the rapid change in Sam's pain level and with his increasing anxiety. She called Rhonda and she called a rapid response. By the time I arrived Sam's face was ashen. He was responsive but extremely weak. His abdomen, which was distended due to ascites at baseline, appeared to be growing bigger by the minute. His

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# M.E.W.S: What is It and Why Use It?

By Jennifer Ballard, RN, CNRN

## WHAT IS M.E.W.S?

From the moment when I began my nursing career as a new grad on a neuro/med surg unit, and later when I worked in an Intermediate Care Unit as a traveler, and even today, I have observed that there are times when nurses feel uneasy about a patient, but are hesitant to trigger a rapid response. It may be difficult to know for sure how to tell that a patient's condition warrants such a call. I have also observed that there are many times when a rapid response is called too early and have seen other times when the call has been too late to prevent significant patient events. There are also those times when the rapid response call is appropriate, but is based solely on a physician decision. When I was a new graduate I met a wonderful nurse, Bonita, who was the ANP/CNS for our floor. We have been longtime friends and I consider her my mentor. Last year she shared some information about M.E.W.S. – Modified Early Warning Score – a tool which was designed to assist a practitioner, whether nurse or physician, in predicting which patients merited a rapid response call. I started to read about the program. It was primarily being used in Europe at that time, but it seemed to me that the M.E.W.S. tool could make the rapid response more efficient here, as well, and could empower our nurses to make decisions before the patient becomes critical enough to require intensive care. I enjoy sharing ideas and presenting at conferences so I submitted an abstract and was able to present the M.E.W.S. concept at the AANN (American Association of Neuroscience Nurses) conference in 2009.

## MY ABSTRACT

Currently, assessments made prior to transport are subjective, may vary according to the accompanying personnel, and cater to that of the physician. Modified early warning score (M.E.W.S.) is a simple quantitative physiological scoring system suitable for bedside application that does not require complex or expensive equipment. The score gives a reproducible measure of how “at risk” a patient truly is, and is calculated using five variables: systolic blood pressure, pulse rate, respiratory rate, temperature and AVPU score (alert, verbal stimuli reaction, pain reaction, and unresponsiveness, Lee, et al 2007). The M.E.W.S. has been validated for use in both surgical and medical wards.



**Jennifer Ballard, BSN, CNRN**, received her BSN from the University of Cincinnati. She worked in Neurosurgery/neurology for a year and then transferred to the Neuro ICU for 18 months, before coming to UCSD as a traveler. She worked as a traveler in 5 IMU for a year before signing on as staff in the Burn ICU, where she works today.

The idea is that any small changes in these five parameters will be seen earlier using M.E.W.S., rather than waiting for obvious changes in individual parameters, such as marked drop in systolic blood pressure which is often a pre-terminal event. Of all the parameters, respiratory rate is the most important, but often the least recorded. It is the most important parameter because respiratory rate is thought to be the most sensitive indicator of a patient's physiological well being, which is logical because respiratory rate not only reflects respiratory function, as in hypoxia or hypercapnia, but cardiovascular status, as in pulmonary edema, and metabolic imbalance such as that seen in DKA (Rees, 2003).

## WHY NOT RAPID RESPONSE ALONE?

Currently, most Rapid Response Teams in the USA are triggered by one parameter at a time, or a general gut-feeling from the nurse. That parameter often represents a significant change in a particular vital sign. For example a significant change in blood pressure might trigger a call to the RRT. Even though a single parameter approach has been effective, what if institutions could identify at-risk patients even BEFORE a significant vital sign change? What if a system were created that could respond to multiple parameters at the same time and identify at risk patients at the first sign of a subtle change in vital signs? When used in conjunction with Rapid Response, the M.E.W.S. allows the nurse to make the call to

RRT in a timely manner and allow for early intervention.

**WHY use M.E.W.S?**

M.E.W.S. scoring can be used at any time during a patients hospital stay. We know that a patient who is being transported, has great potential for instability and that the transport can be risky, whether unit to unit or inter-facility. Inter-facility transport has increased dramatically as patients are moved to where they can receive the highest levels of care, making this a time of potential problems. Assessments made prior to transport have been subjective, and often vary with personnel. The M.E.W.S. system gives an assessment with **great inter-rater reliability**. The M.E.W.S. was developed because not all patients can be monitored in ICU units. It allows worsening patients to be identified before physiological deterioration has become too profound. Once an ill patient has been identified through a M.E.W.S. score of 3 or more, this should then stimulate a call to a rapid response team or physician. The result of this review should be alteration in plan of care to ensure no further decline. When used properly, M.E.W.S. can help reduce morbidity and mortality

as well as lessen emergency ICU admissions. M.E.W.S. can be used in all non ICU units to ensure that patients receive early intervention and transfer to an appropriate level of care. A research study to trial M.E.W.S. and determine the efficacy at UCSD will be starting in 5IMU and Burn Special Care.

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Score	3	2	1	0	1	2	3
PULSE		<40	41-50	51-100	101-110	111-129	>130
RR		<8		9-14	15-20	21-29	>30
TEMP		<35.0		35.1-37.2	37.3-37.9	>38	
CNS		confused		Alert	Responds to voice	Responds to pain	unresponsive
SBP	<70	71-80	81-100	101-199		>200	



# Making a difference: A Look into the Surgical Intensive Care/ Trauma Unit at UCSD

Lori Williams, BSN, RN, CCRN and  
Jennifer Allyn, BA, ADN, RN, CCRN

The trauma phone rings and nurses and trauma technicians stand on alert. Trauma surgeons are paged and at the ready. That call signals the pending arrival of someone who has been critically injured and is in need of immediate and potentially life-saving care. The sickest patients come by air or ground ambulance, while some walk in or are dropped off by friends, family or the police.

The Surgical Intensive Care/Trauma Unit at the University of California San Diego Medical Center is a dynamic, fast-paced and high-acuity unit, providing state of the art care to San Diego County's sickest patients. It is here that we treat complex, life-threatening trauma, multiple organ transplant recipients, and severe, complicated surgical illnesses. We are here and ready 24 hours a day, 365 days a year and are prepared for whatever and whomever comes through our doors.

The trauma bay at the University of California, San Diego Medical Center, is adjacent to the Surgical Intensive Care Unit, unlike those typically housed within Emergency Departments. It is staffed by specially trained SICU nurses, and is just steps away from the operating rooms. This allows for faster and more efficient treatment with unparalleled access to lifesaving personnel and

resources. The most common causes of traumatic injury are motor vehicle crashes, falls, and assaults. The trauma team is composed of an attending surgeon, two surgical or emergency medicine residents, two trauma nurses, a trauma technician, respiratory therapist, x-ray technician and medical students. The team's goal is to evaluate, diagnose and stabilize the patient as quickly as possible.

When the San Diego Trauma System began in 1984, UCSD saw 40-50 trauma patients per month. Over the last 25 years this service has grown 500% and now sees more than 200 trauma patients per month. Despite the huge increase in patient volume, mortality rates for these patients have fallen from 8% to 2.4%. These tremendously improved outcomes are the result of the ongoing research and dedication of UCSDMC staff.

## SICU Then and Now

This year marks the 25th anniversary of UCSD's official designation as a Level I trauma center and is the 20th year of the current SICU/Trauma unit. At its inception, trauma was housed in a small corner unit on the 5th floor. We are fortunate to have some of the original trauma nurses still working in the SICU today. When asked about the early years in the old unit, Claire Egan, RN, stated, "It was small and specialized, fun, and a great crew to work with." Regarding the change to the new unit, and changes over the years, Egan continued, "The change was difficult. But you deal with it, you may grumble a little, but you make a success out of it."

At that time, small ICUs of various other surgical specialties were on other floors throughout the hospital. In April, 1989, those specialties came together and formed what we now know as 2W SICU/Trauma. The current SICU is a 20-bed, fast-paced unit in which nurses provide specialized care to some of San Diego County's sickest patients.





As stated by Dr. Jay Doucet, Medical Director of the SICU, “I view the intensive care units as being at the core of the Medical Center’s mission. This is where care is given to the most severely ill patients, where excellent care, innovation, education and technology really come together to save our patients’ lives and health. The care given in the ICUs provides a leading example of the quality care values of the entire Medical Center. The Surgical ICU is the largest of the ICUs and integrates the Trauma Center as well. It deals with the severely injured as well as those with serious illnesses undergoing major surgery. The SICU uses a truly multidisciplinary approach with dedicated nurses, physicians, pharmacists, social workers, technicians and therapists. Among the members of a large, highly specialized SICU team, the largest part of the care

is provided by the Critical Care Nurses. The SICU CCNs are highly skilled and very experienced. I believe they are the heart of the unit and I remain impressed by their dedication, skill and caring attitude. Their attitude and communication abilities are the glue that binds the SICU team together. It doesn’t take anyone new to the SICU very long to realize they are the ones keeping these patients alive and safe from moment to moment. No surgeon can take credit for any success in a critical case without acknowledging our irreplaceable Critical Care Nurses.”

### Surgical Specialties

Surgical specialties found within the SICU include trauma, transplant, neurosurgery, vascular surgery, general surgery, cardiothoracic surgery, otolaryngology, orthopedics, ortho-

spine and plastic surgery. SICU nurses are exceptionally trained and specialized in the care of the critically ill surgical patient and take great pride in the wide range of skills and knowledge they possess. The staff also find it very rewarding to be involved in the care of a critically ill patient and to see them progress and heal as a result of tireless hours of unwavering care. A particularly challenging patient is the transplant recipient who requires vigilant and finely tuned care.

### Transplant

Liver transplant patients, with their multiple co-morbidities, critical conditions and tenuous immune systems pose a special challenge to the SICU staff. Liver transplantation began at UCSDMC in 1993 and the program continues to grow, with over 450 liver transplant surgeries since that time. Nurses in the SICU have become very specialized in the care of these patients, often the most sick and requiring the most complex care. Candidates for liver transplantation are those with end-stage disease resulting from viral hepatitis, liver cancer, biliary, alcoholic or cryptogenic cirrhosis, acute liver failure or auto-immune disorders. Liver transplantation typically requires 6-10 hours in the operating room and an average ICU stay of 3-4 days. These times may vary depending on the severity of the patient’s pre-transplant illness as well as any postoperative complications. Care of a transplant patient involves balancing the fine line between infection and rejection and giving specialized and detail-oriented care to the very precious gift of life a new organ provides. A liver transplant recipient recently visited the SICU and shared that the nurses so inspired her that she chose to get an education in social work and leave behind her former life of substance abuse.

Receiving the call that an organ is available is undoubtedly exciting for the individual and family who sometimes have waited years for the opportunity of a transplant. However, the organ comes at a price and the moment can be bittersweet; for often,



## A Trauma Patient's Story



**Marvil Alfaro, 27,** was in his last semester at UCSD when he became a trauma patient at UCSD Medical Center. He was involved in a rollover motor vehicle

accident which brought him to the trauma resuscitation room and later the SICU.

"I don't remember too much initially, just glimpses of faces, friends and family," Alfaro said. "I was told that I was on medicines and sedatives."

His workup revealed a spinal compression fracture, a broken rib, a closed head injury and lacerations to his face and head. The patient commented on the good care he received from the nursing staff.

"They did a great job considering my injuries," mentioned Alfaro. "Whatever I needed, they were there."

After a seven-day stay at UCSD Medical Center, Alfaro was discharged. He wore a neck brace during the rest of his six-week recovery, after which he was able to return to his classes.

When asked about where the hospital could have improved, Alfaro stated, "Nothing could have been done better."

Alfaro is a mechanical engineering major and will graduate in June, despite a setback in classes as a result of the accident. After graduation, he plans to relax for a couple of months before applying for a job.

in order for one person to receive an organ, another's life was lost. In a unit where traumatic brain injury is all too common, the nurses of the SICU have become very familiar with this end of the organ donation spectrum as well. Nurses play an integral role in caring for the patient and supporting the family during this time of crisis.

### Lifesharing

Based upon very specific assessment criteria, when a patient has suffered a life-threatening injury and is comatose, the bedside nurse is responsible for alerting Lifesharing, a non-profit organization dedicated to the lifesaving and life-enhancing benefits of organ and tissue donation. The Lifesharing Procurement Coordinator reviews the patient's information to determine if they are an appropriate candidate for donation, and works closely with the staff to determine when and if the time is right to approach the family. Once brain death has been confirmed and the family has given consent for the donation of their loved one's organs, the nurse, under the guidance of the Procurement Coordinator, begins to ready the patient for donation. Tests are completed, vital signs are meticulously maintained and the donor's specific information is entered into a national database in order to locate matching recipients. Often one individual's donation saves many lives. In 2008, UCSD nurses cared for 16 donors with both organs and tissues donated.

### Nurses Moving Forward

Nurses are drawn to UCSD, and more specifically to the SICU, for various reasons. While some use their experience in the SICU as a solid foundation to further their careers, others are drawn by the adrenaline of working in such a fast-paced environment. Most will tell you they chose UCSD for the opportunity working in a teaching facility provides, both for personal growth and the high standard of patient care. All will agree that UCSD's commitment to nursing excellence makes them proud to be a part of our unit and organization.

Sara Couch, RN, a SICU and trauma nurse, shared her reason for joining the unit, "As a nursing student at SDSU I did a clinical rotation at UCSD and absolutely loved it. I loved the hospital, the people and especially the diverse patient population and the high level of care they required. In addition to challenging patient care, I loved the SICU for its nurses. They were so friendly and helpful and I was so impressed with their skill and expertise. I could only hope that one day I could be that nurse too. I was thrilled to be hired on as a new-graduate nurse in the SICU's critical care intern program and have loved the 5 years I've worked here. The experiences, skills and knowledge I've gained are just what I was looking for when I became a nurse and I continue to learn and grow every day that I spend in the SICU."

### Fulfilling Our Mission

This is an exciting time for UCSD, as we continue on our journey toward Magnet designation. As an organization, we strive daily for excellence in the areas of People, Service, Quality, Finance, Growth and Innovation and as a unit we continue to meet and exceed those goals. The nurses of the SICU are dedicated to providing and continually improving quality care for our patients.





# FASTHUGS Care Model

## Ensuring better patient outcomes

**m**outh care - to prevent VAP

**F**eeding - are nutrition needs met?

**A**nalgesia - is pain controlled?

**S**edation - is sedation adequate?

**T**hromboembolic prophylaxis - does the patient have Lovenox ordered and SCDs on?  
**r**estraints - is the patient safe?

**H**ead of bed  $\geq 30$  degrees - to prevent aspiration

**U**lcer (stress) prophylaxis - is a PPI ordered?

**G**lucose - is blood glucose under control and within target range?

**g**ut - is gut being fed? Is patient having regular bowel movements

**S**kin care - does the patient have skin breakdown? Is he at risk?

### People

The experience and education of UCSD's SICU nurses is both vast and varied. Of the nearly 100 nurses on staff, 49 hold CCRN certification. Thirty six are trained as trauma nurses with 42% of SICU nurses holding TNCC certification. Twenty three nurses have a degree in another field; some are master's-prepared. Several of our staff are currently enrolled in programs to advance their degrees, at both the bachelor's and master's degree levels.

### Service

Patient satisfaction scores are continually on the rise as we incorporate new methods, practices and procedures into the care of our patients. We strive to be not only compassionate and caring but to provide holistic and culturally-sensitive care to our diverse patient population.

### Finance

Our nurse managers are committed to meeting the constraints of the annual budget while striving to provide the SICU and trauma unit with the state-of-the art equipment and resources we need to provide the most up-to-date care to our patients. All staff members are invited to provide input



when it is time to order new equipment and make improvements to the unit.

### Growth

Plans are in place to expand the trauma bay in coming years. This will allow the trauma service to accept and care for more patients, giving San Diego County's patients better access to life-saving treatments.

### Innovation

As a university-based facility, UCSD Medical Center takes pride in providing state-of-the art, research-driven care. Our methods and practices are evidence-based and continually under review. Our protocols are proven by research and implemented in the care of every patient. An example of the evidence-based care we deliver our patients is the use of the FASTHUGS acronym, modified to mFASTrHUGGS for our purposes and goals in the SICU (see Box 1). By following this care model for all patients, we ensure that all basic needs are met, in areas that are often overlooked. This ensures better patient outcomes overall.

As part of our ongoing commitment to excellence in the SICU, we have formed several committees dedicated to advancing our practice, educating our

peers and ensuring overall improvement in patient care standards. Committees address such issues as safety, safe patient handling, evidence-based practice, quality control and improvement, peer education, and end of life care.

The SICU/Trauma unit at UCSD exemplifies the mission and core values shared by the greater Medical Center community. The nurses and staff of SICU/trauma are committed to providing the highest quality of care to patients with a broad range of traumatic injuries and surgical needs. They are proud to be a part of the fast-paced, high-acuity unit and know that their hard work and dedication really matter. As best stated by Egan, "It's great to make a difference in someone's life every day you go to work."

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# Pulmonary Thromboendarterectomy: A Nursing Challenge

By Tove King, RN, BSN, CCRN

The ICU doors swing open to the rhythmic beeping of an ECG monitor and the postop PTE patient rolls in with an entourage of surgeons, anesthesiologists, OR nurses, techs and a respiratory therapist. Within minutes of arrival the jumble of wires, tubes, and IV lines has been transferred to the ICU room hookups and the entire OR team gathers its equipment and exits, leaving the patient in the capable hands of a PTE nurse. The Thornton ICU nurse assuming that responsibility is thoroughly knowledgeable, highly skilled, and proficient in postoperative care of the PTE patient. PTE is Thornton Hospital's specialty, and the cardiothoracic surgery nurses in Thornton's ICU are trained to manage the specific acute care needs of this unique patient population.

PTE stands for pulmonary thromboendarterectomy, the precise surgical dissection of chronic thromboembolic material that has become integrated into the pulmonary artery walls, obstructing blood flow and causing pulmonary hypertension which results in right heart failure. Surgical removal of the thromboembolic material accomplishes three major goals: first, it restores blood flow to ventilated but previously non-perfused areas of the lung, converting that physiologic dead space back to normal pulmonary function. Second, it alleviates the excessive pulmonary pressures that cause right heart enlargement and failure. Third, it prevents disease progression, including extension of the clot material as well as secondary changes in unobstructed vessels. Early symptoms of chronic thromboembolic pulmonary hypertension (CTEPH) are so nonspecific that misdiagnoses such as asthma or lack of fitness are common, so CTEPH may not be accurately diagnosed until individuals decline in functional status to New York Heart Association Class III or IV; they experience dyspnea, palpitations and fatigue with activity, and as the disease progresses they develop complete

exercise intolerance and become symptomatic at rest. Once CTEPH is confirmed through clinical assessment and diagnostic testing, most notably pulmonary angiography and a lung ventilation/perfusion (V/Q) scan, PTE surgery is the treatment of choice. It can reverse or significantly ameliorate this debilitating condition that severely limits quality and length of life.

UCSD is unquestionably the world leader in PTE surgery and UCSD Medical Center La Jolla attracts patients from across the country and around the world. Dr. Nina Braunwald performed UCSD's first endarterectomy nearly forty years ago in 1970 with a successful outcome for the patient, who returned home and resumed normal activity. Since 1989, major revisions to the surgical procedure coupled with subsequent refinements in perioperative management have achieved a surgical mortality rate of approximately 5%, with over 2300 surgeries completed to date. The program's success is attributable to the multidisciplinary PTE team of expert surgical and medical practitioners that care for the patient from preoperative evaluation through postoperative management and discharge.

PTE surgery requires a completely bloodless field that allows the surgeon to visualize the artery wall and create a plane of dissection between the intima and the media to separate and remove the fibrotic thromboembolic material. This is achieved through deep hypothermic circulatory arrest. The patient is gradually cooled to a core temperature of 20°C with cardiopulmonary bypass and cooling blankets, including a special cooling jacket around the head. Deep hypothermia and barbiturate administration suppress the EEG to an isoelectric line. A 20-minute period of circulatory arrest allows the expert surgeon to perform a right-sided endarterectomy, followed by restoration of circulation and then a second 20-minute circulatory arrest period for the left-sided endarterectomy. Once cardiopulmonary bypass is re-established the patient is warmed to normothermia over a period of several hours, hemodynamically stabilized, and transported to the ICU. Thornton ICU nurse Maureen Parsons, who has nearly completed her PTE orientation, marvels at the OR to ICU turnover. "An entire OR team cares for this patient, who is basically brought back to life after being blue and cold with no brainwaves, and then we get to take over their baby," she observes. It is a responsibility the PTE nurse is well prepared to handle.

The special circumstances of this surgery - hypothermia, EEG suppression, full circulatory arrest, and removal of pulmonary blood flow obstruction - dictate PTE-specific postoperative considerations above and beyond the nursing care



**Tove King** received her BSN from San Diego State University in 2001. She began working at Thornton ICU as a new grad and has never left, in her words, “because I love it so much!” Tove was Thornton ICU Nurse of the Year in 2008.

for more common cardiothoracic procedures such as bypass surgery or valve replacement, so Thornton critical care nurses orient to these patients at the bedside under the tutelage of experienced nurses who are experts in PTE patient assessment and care. “PTE nurses are thoroughly knowledgeable about the disease pathology and the surgery, so they know exactly what complications to expect and how to handle them,” says RN Laura Lubomirsky. “It is the PTE nurse whose eyes are on the patient 24/7, and it is the quality and expertise of the PTE nurses that allows them to predict instability.” Mary Hellyar agrees: “The PTE nurse has to be knowledgeable to be able to recognize changes in the patient’s condition early and intervene right away.”

Long before the patient arrives in the ICU, the nurse reads through the history and physical, reviews all diagnostic test results, formulates a patient-specific plan of care, and prepares the room. The patient arrives from the OR on a portable ventilator with a pulmonary artery catheter, femoral and radial arterial catheters,

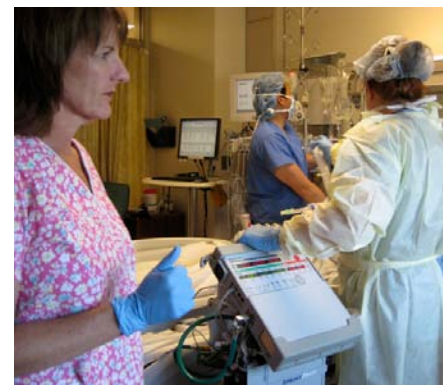
atrial and ventricular pacing wires, and multiple chest tubes in place. Nurses place ECG leads and a pulse oximetry sensor, connect and calibrate the systemic, central venous and pulmonary artery pressure lines, verify all continuous medication infusions, initiate chest tube suction, check the pacemaker settings, draw a full set of labs, and perform a 12-lead ECG. A chest X-ray is done, and physicians verify all tube and line placements. In the ensuing postoperative period the focus is on establishing and maintaining optimal ventilation and perfusion.

### Ventilation

Following endarterectomy, blood flow is redirected through previously obstructed arteries and flow is reduced to lung areas that were well perfused before surgery. This blood redistribution phenomenon, known as pulmonary artery steal, presents some challenges to establishing optimal oxygenation. Blood flow through endarterectomized vessels can cause capillary leak and pulmonary edema, which interferes with gas exchange; additionally, the concomitant reduction in flow through normal vessels can cause hypoxia, with reactive vasoconstriction of the pulmonary vasculature in those areas. PTE patients are therefore ventilated with relatively high tidal volumes of 10 to 12 ml/kg to overcome atelectasis and promote optimum gas exchange, and diuretics are administered to maintain a negative fluid balance and minimize pulmonary edema. Initial ventilator settings maintain a high minute ventilation until the metabolic acidosis resulting from altered tissue perfusion during hypothermia, bypass and circulatory arrest resolves. PTE nurses monitor arterial blood gases and pulse oximetry closely, consulting with the physician and the respiratory therapist to adjust ventilator settings according to changes in the patient’s condition. Once the patient is hemodynamically stable, the nurse elevates the head of the bed to at least 30 degrees and begins side-to-side turning to promote further fluid mobilization and gas exchange.

One major complication of PTE

is reperfusion lung injury, a localized acute inflammation of the lung tissue that allows leakage of protein and fluid into the alveoli, creating a significant barrier to gas exchange. Severity varies among patients, ranging from pulmonary edema and hypoxemia to (rarely) hemorrhage. Reperfusion injury requires supportive care until the inflammation subsides and gas exchange normalizes. In most cases this means prolonged mechanical ventilation, higher positive end expiratory pressure (PEEP) for alveolar recruitment, and diuresis. Some RPI patients cannot



tolerate being turned to a particular side and occasionally an individual may not tolerate being turned at all, which incurs significantly higher risk for pressure-related skin injury. RPI patients may be so severely hypoxemic that nitric oxide (iNO) is added to the ventilator circuit. Nitric oxide is a vasodilator, and since it is inhaled through the ventilator circuit it affects only those vessels in ventilated lung areas, improving ventilation/perfusion matching and gas exchange. The PTE nurse coordinates care with the respiratory therapist to ensure arterial





blood gas sampling immediately prior to initiation of iNO and approximately 10 minutes after it is started; comparison of the two gases allows the team to assess the effectiveness of therapy. The nurse must also be thoroughly familiar with the iNO machine, which has a special circuit for the ambu bag that provides continued delivery of iNO during use. In the most extreme cases of reperfusion



injury refractory to these therapies, the physician may institute extracorporeal support for oxygenation, carbon dioxide removal, or both. A perfusionist runs the ECMO (extracorporeal membrane oxygenation) or ECCO2R (extracorporeal carbon dioxide removal) machine and coordinates all associated care and lab draws with the bedside nurse. In all cases, treatment for reperfusion injury is supportive until the condition abates, characterized by

resolving chest radiograph opacities and improvements in arterial oxygen and carbon dioxide tension. The RPI and recovery process may last several weeks. Fortunately only about 10% of PTE patients experience RPI as a significant postoperative complication.

### Perfusion

CTEPH patients present with right heart enlargement and hypertrophy that has developed in response to abnormally high pulmonary pressures, which constitute the workload (afterload) of the right heart. The right heart is ordinarily a low pressure system, but with CTEPH the pulmonary artery pressures, normally about 25/10 mmHg (tip: remember a quarter over a dime!) may equal or even exceed systemic blood pressure, and pulmonary vascular resistance, usually no more than 250 dynes/sec/cm<sup>5</sup>, can be quadruple normal or worse. True to the Frank-Starling law of the heart, the right heart changes in response to the increased workload by enlarging and stretching to accommodate more volume, which generates more rebound force with each contraction, enabling the right ventricle to overcome the resistance and pump blood into the pulmonary arteries. Tricuspid regurgitation develops. Eventually the ventricle becomes so enlarged that it exceeds the capacity for increased rebound with increased stretch; the heart muscle becomes overstretched, weak, and eventually fails completely.

A successful endarterectomy produces a dramatic decrease in right heart workload, eventually restoring normal or near-normal pulmonary pressures. Tricuspid regurgitation resolves, cardiac output increases, and right heart enlargement begins to reverse. In the immediate postoperative period hemodynamic management specifically targets right ventricular function, which distinguishes PTE from other cardiothoracic surgeries. The right heart remains volume dependent for optimal function, so hemodynamic management becomes a balancing act between ensuring

adequate volume (preload) for right ventricular function while keeping the patient “dry” to minimize pulmonary edema and support good gas exchange. The PTE nurse can determine the best central venous pressure (CVP, a correlate of preload) to achieve this balance through careful analysis of the patient’s hemodynamic profiles, and can use the data to plot a right ventricular function curve that graphs the optimal CVP range for that patient.

In other respects hemodynamic management is similar to other cardiothoracic surgeries. The nurse titrates dopamine for inotropic support to strengthen ventricular contractions and maintain a mean arterial pressure of 65 to 85 mmHg and a cardiac index above 2 L/min/m<sup>2</sup>. Atrial and ventricular pacing wires enable the nurse to pace the heart to support cardiac output and treat postoperative arrhythmias, most commonly junctional and atrial arrhythmias. Serum electrolytes are drawn every six hours and replaced per protocol when low, to prevent ectopy or poorly perfusing heart rhythms. When necessary, 5% albumin is used to restore adequate preload, although PTE management generally dictates that fluid administration be minimized. The nurse checks hemoglobin and hematocrit levels every six hours, apprises the physician of acute changes and transfuses blood products as necessary. A continuous sodium nitroprusside infusion may be titrated for tight control of systemic hypertension as general anesthesia wears off, or as the patient is awakened in preparation for the ventilator weaning process.

PTEs are the only CT surgery patients to have two arterial pressure catheters, one femoral and one radial, placed in the OR. The femoral arterial line provides an accurate blood pressure once the patient is rewarmed and the core temperature restored to near normal after hours of deep hypothermia at 20°C. The radial arterial line is inaccurate until several hours after ICU admission when the patient is sufficiently recovered to regain normal perfusion and body temperature in the

extremities. Once the femoral and radial arterial pressure readings correlate, the nurse removes the femoral line.

Anticoagulation management is diligent and individualized. CTEPH is a disease of abnormal, chronic clot formation, so anticoagulation is vital to prevent re-thrombosis after endarterectomy. All patients have an inferior vena cava filter placed preoperatively as prophylaxis against migration of emboli into the pulmonary bed from deep venous thromboses, and sequential compression stockings are applied after surgery. The PTE nurse begins administration of subcutaneous heparin as soon as the chest tube output has slowed to a physician-specified hourly level, usually within 12 hours of the patient's arrival in ICU. Individuals with prothrombotic factors such as antiphospholipid antibody, factor V Leiden, or protein C or S deficiency may be on a heparin drip postoperatively, entailing regular PTT monitoring and careful heparin titration to achieve the therapeutic goal without incurring acute postoperative bleeding.

### Neurological Assessment

Despite every effort to ensure cerebral protection during circulatory arrest, neurological insult is a possible sequela of surgery, so once the patient is hemodynamically stabilized the PTE nurse weans the sedative infusion until the patient rouses enough to nod yes or no to simple questions and move all four extremities to command - usually just a weak squeeze of the hands and a wiggle of the toes. The nurse assesses for pain, briefly reviews the plan of care with the patient, and then reinstates sedation to maintain a Richmond Agitation Sedation Scale (RASS) of -2 to -3 depending upon the individual's tolerance of the endotracheal tube, lines and other devices. The following morning the sedation is weaned completely off if the PTE physician determines the patient is a candidate for extubation. Delirium may become apparent as the patient awakens and may be a contraindication for extubation if the patient is unable

to remain calm and cooperative for the ventilator weaning process. The incidence and treatment of delirium in this patient population is similar to that for other cardiothoracic surgeries.

### Psychosocial Issues

Nursing is both a science and an art, and the art of nursing is fully realized in the psychosocial aspects of PTE care. The description of the surgery alone is frightening, and to a layperson the ICU environment seems overwhelming and intimidating. Just walking into a room full of complicated machines can create profound stress, which is intensified by the unending barrage of noise from alarms and equipment. The bedside nurse has the perfect opportunity to create a rapport with the patients and family members that engenders trust and reduces their stress. Much of the PTE nurse's time is spent educating families about the recovery process and plan of care as well as explaining the alarms, monitoring parameters, machines and medications. Kim Kerr notes the vital role PTE nurses play in nurturing both patients and families. "Many of our patients are from out of town; some have never even been on a plane! Families are here alone without their support systems. They really depend on the nurses to help them." PTE patient Robert Ledebor observes, "We met many hardworking, friendly, professional PTE nurses. Their attitude was always positive, and my wife always received all the help that she needed. All of our nurses were highly skilled and seemed to really love what they do." His wife Mary heartily agrees. "The ICU nurses were so supportive and friendly," says Mary. "They could easily be distant because everything is so critical and they have so much to do, but they were always professional and accommodating, never impatient. I felt free to ask questions and never felt bothersome. I really appreciated that the nurses treated my husband with dignity and respect even when he was sedated and unconscious. They genuinely care." For the patients and families, the PTE nurse is the primary resource for all their immediate

postoperative needs, from coordinating conferences with the physicians to finding a good restaurant for dinner after a weary day in the waiting room.

Once the patient is extubated, the nurse weans off the drips, removes the pulmonary artery catheter and gets the patient out of bed to a chair as soon as possible. Priorities of nursing care are patient mobilization, nutrition, and diligent pulmonary toilet with incentive spirometry, with the goal of transferring the patient to a lower level of care a day or two after extubation.

PTE nursing is an opportunity to provide holistic patient and family-centered care for a truly unique patient population that demands the very best critical care nursing has to offer. UCSD's leadership in this field, coupled with the academic medical center culture, ensures that Thornton ICU nurses engage in cutting edge practice as vital and collaborative members of the multidisciplinary PTE team. As any PTE nurse will tell you, the very best reward is seeing former patients walk back through our ICU doors months or even years later for a purely social visit, with a smile and a hug for the nurses who helped make that possible and a story or two about the wonderful lives they've reclaimed.

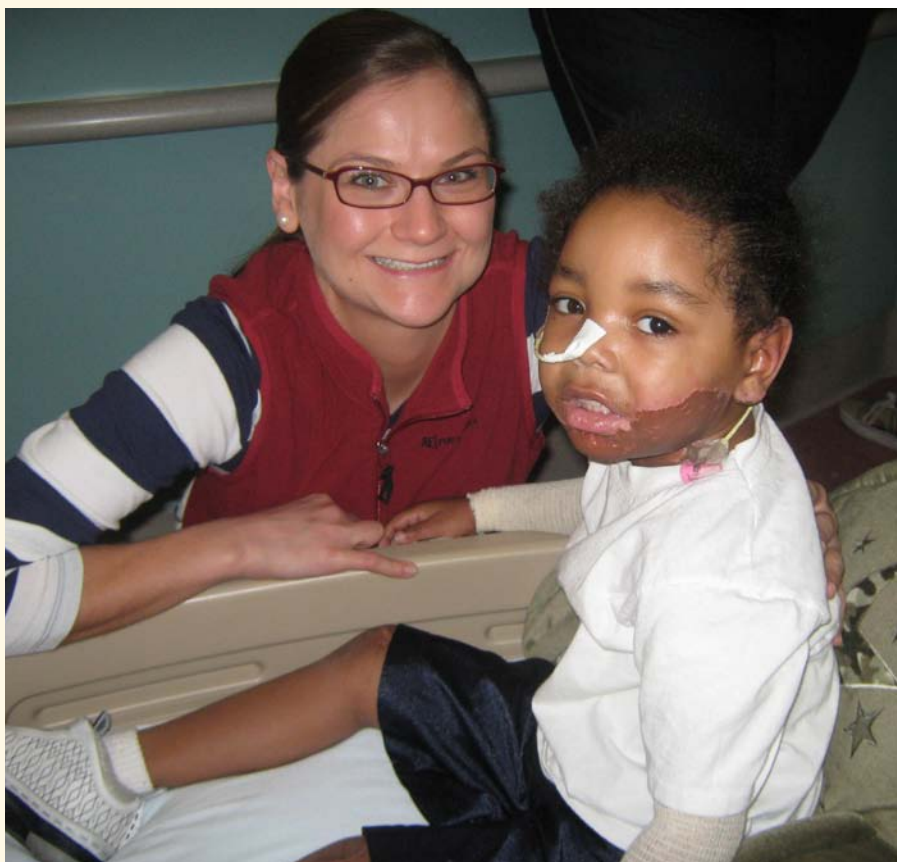
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# From Hospital To Camp

## Caring for UCSD's Burn Center Patients

By Joann Gutowski, RN, BSN



At UCSD's Hillcrest hospital you may occasionally see a little red wagon being pulled through the hallways, carrying one of our VIPs, a pediatric burn patient. The wagon is one way we can help a little one cope better with what is a very traumatic event in his or her life, by allowing a safe and comfortable way for the patient and family members to enjoy a more normal activity and to escape, for a little while, the difficult hospital routine.

Many pediatric burn injury patients tell a similar story. One moment they are at home with their parents and, in a flash, they find themselves on a

gurney, in the back of an ambulance or a helicopter, on their way to the hospital. The scenario varies. Maybe they were playing with matches. Perhaps they reached up to touch a hot stove or were scalded with hot water. Sadly there are also cases of abuse that result in terrible burns. Some of the children were just demonstrating normal childhood curiosity with no awareness that their inquisitiveness could lead to a life changing experience.

UCSD's Burn Center is one of only 14 such centers in the state of California and is the only one in San Diego County. The next nearest burn center is

two hours away by car. Approximately one million children suffer burns each year, with 40% requiring hospitalization (American Academy of Pediatrics, 2000). Twenty-five percent of patients admitted to our Burn Center annually are under the age of 18. We know that hospital admission is difficult enough for an adult. Imagine being a young child, in terrible pain, in a new and frightening place, with no real understanding of why it hurts so much.

### ADMISSION

The admission process can be very busy, depending upon the degree of damage (first, second or third degree) and the total body surface area (TBSA) affected by the burns. Often the children are brought in by helicopter and are brought immediately to the trauma bay or the Burn ICU (BICU). It can be very difficult for the nurse emotionally. There is an urge to offer comfort, to reassure them that "it's going to be ok," but their physical care may take first priority. Laboratory tests, wound care and other testing may interfere. The doctors want to get in quickly and do their assessments, too. Fluid resuscitation is a priority. We also need to determine exactly what happened and whether an inhalation injury has occurred, severe enough to compromise the airway, which might require imminent intubation. The arrival of parents or family members presents other problems. We need to prepare them for what they are about to see. Their reactions are never predictable, but in all cases we need to reassure them that we are doing everything we can for their child and that this is the best place for the child to be at this difficult time.



**Joann Gutowski, RN, BSN** works at UCSD as a staff nurse in the Burn Intensive Care Unit. She graduated from the University of Connecticut's School of Nursing in 2004. After working in Connecticut for a year and a half on a Medical-Surgical floor, Joann decided to take her nursing skills "on the road" and came to San Diego as a traveler in 2006. She started on 11W, but found a special niche in the BICU. Burn nursing is not just a job for Joann. She has taken her skills and her compassion out into the community, working as a professional volunteer at the Burn Camp, a mentor to a burn survivor, as well as continuing to work with patients beyond their hospital discharge.

## HOSPITALIZATION

Burn nursing is not for the faint-hearted. Dressing changes can be very painful, which is traumatic for the nurse as well as the patient. It is not uncommon for the nurse to be shedding tears right along with the patient, even if the tears are just caused by anxiety over this traumatic procedure. Often patients require anesthesia for dressing changes if the burned surface is large and painful enough. The drug of

choice is Ketamine, given for moderate sedation. If the child is not intubated it is a good choice because it allows for aggressive debridement, along with physical and occupational therapy to minimize contractures. The sedated patient will have no memory of the pain or fear after an hour post procedure. Every effort is made to avoid surgery in the burn patient, but if surgery is indicated these patients have the highest priority. During surgery, burned tissue is

excised so that skin grafts may be placed over the open areas as soon as possible. The physicians usually place temporary skin (allograft) initially so that the injured areas can be prepared for permanent grafting of the patient's own skin (autograft) in the next few days.

After grafting the donor sites are like brand new second degree burns. They are very painful because the nerve fibers are still intact. In addition to controlling discomfort, the nursing care focus at this time is preservation of the new skin grafts. We make every attempt to optimize nutrition to aid in the healing process. If the child is still in ICU and still on the ventilator, he or she is often paralyzed to prevent the graft from sheering. The patient is heavily sedated to ensure adequate pain management since they are unable to communicate their degree of pain while paralyzed. Infection control is critical at this point, as well. Strict infection prevention strategies include education of family members in careful hand washing and in the wearing of protective gowns and gloves whenever they enter the room.

Pneumonia is an ever present risk for intubated burn patients. Meticulous suctioning techniques are essential and a frequent (every two hours) turning regimen is instituted. The



patients receive chest percussion four times every day to keep secretions mobilized and lungs inflated. Sedation is weaned as early as possible, which helps to promote good pulmonary toilet and to achieve timely extubation. The patients are evaluated by a critical care pediatrician attending daily, who contributes, along with the burn surgery team, to the ongoing development of the plan of care. The critical care pediatrician helps to determine optimum sedation and he assists in preventing and treating withdrawal symptoms after extubation. The bedside nurse is the one who really knows when a child is ready to get the tube out of his or her throat. It is impossible to keep them still, which drives the parents crazy along with the nurse! When the extubation finally happens everyone breathes a sigh of relief. We look forward to seeing some smiles, to a good appetite, those rides in the wagon, and yes...for seeing them enjoy Sponge Bob on TV. Every one of the burn center nurses knows that song and could sing it word for word, at a moment's notice!

## DISCHARGE

All the nurses at the burn center find the day of discharge a bitter-sweet day. They know that discharge from the hospital is the goal of all their efforts. But it is tough to see the kids go home. After the weeks, and sometimes months, of hospitalization they seem like family. They will never be forgotten. And their journey is not finished. After discharge they may require physical and occupational therapy to prevent contractures, requiring hospital visits twice a week. The parents will eventually be instructed to perform the therapy at home. Patients are fitted with pressure garments, worn over the burned areas, which are used to compress the grafts and decrease scarring. These garments are worn 23 hours a day for a year, and are removed only during showering. Additionally parents are instructed to keep their children out of the sunlight, so that the grafted areas will not turn darker in color (quite a challenge with a young child!). When you look at the long term care of these patients it

becomes clear that their recovery does not end when they leave the hospital. Full recovery may take months, even years, and further surgeries or other treatment may be required.

When you see the kids come back with their parents for those post-discharge visits and "thank you's," you are glad to have had the opportunity to care for them in the hospital, no matter how difficult it was. You realize that despite all they endured here, despite the fact that they may not look the way they did before their burns, it has been worth the effort. You have only to look into the eyes of their parents to realize that nothing matters except having their child still with them. That is what really counts.

## A LOOK INTO THE FUTURE

Recovery does not stop with hospital discharge. There are tremendous emotional, psychological and physical hurdles for any child after severe burns. One way we have for kids to cope with their injuries is Burn Camp. In San Diego we are able to offer a camp session twice a year. The February camp is a three-day session at Big Bear Mountain. The August camp is held in Eastern San Diego and lasts a week. The original Burn Camp was established by the Burn Institute of San Diego in 1987. It was so popular that they went on to start San Diego's own Camp 'Beyond the Scars' in 1994. Both camps are designed to give young burn patients the opportunity to be outdoors, have fun and spend time with others who have shared similar experiences. As stated in the burn institute's website, "For many children, this special camp is the first time they have seen another child with burn injuries. Campers learn to feel better about themselves and gain a renewed sense of self-esteem." A recent study in the *Journal of Burn Care and Research* demonstrated the benefits of attendance at a burn camp. The evaluation forms were given to 19 children and families who attended the National Burn Camp in Belgium. The forms consisted of open ended questions and were given at various times during the camp

experience. The campers indicated that they felt more self-confident, had better coping skills, made new friends and they felt a sense of accomplishment after attending the camp.

For the past two years burn center nurse Joann Gutowski has attended camp as a nurse and counselor. She has also participated in the Burn Institute's peer mentorship program, acting as a mentor to a 15 year old burn survivor. Joann says "I cannot say enough about what this camp does for the kids. It is a camp like no other, in some ways, but in between having fun in the pool and participating in day trips and activities, kids are able to attend counseling sessions together. They can reflect on their injuries, share their feelings, learn coping skills, and make new friends. They have the opportunity to learn responsibility, and eventually, at the age of 18, may become a Leader in Training (LIT), and later may even become a counselor to campers like they themselves once were. I always knew I wanted to be a nurse, but I never thought I would work in the BICU, caring for children who were so badly hurt. They have survived more than just a fire, overcome more than just surgeries, and they live with more than just scars . . . visible or invisible. These kids are incredible."

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# Rapid Response Program at UCSD

CONTINUED FROM PAGE 7

systolic blood pressure was in the sixties. It turned out that his hematocrit had dropped from 33.6 to 22.7 in the span of 90 minutes. Although Myrna's call was appropriate, Sam was decompensating so quickly that, when I got there, his condition would have justified a code blue call. Since help came so fast though, we didn't have to take that step.

No time was wasted. I immediately called the critical care resident. When he called back, Rhonda filled him in on the situation while I spoke with the house supervisor. Luckily, there was an empty bed on the CCU. The resident



showed up on the unit minutes later, took one look at Sam and said "Let's go". Sam was already packed up for the transfer, so we just started wheeling him up toward the elevator. Up on the CCU, the medicine team was rounding. They stopped abruptly and turned their attention to their new patient. Within 20 minutes, Sam was already packed up for the transfer, so we just started wheeling him up toward the elevator. Up on the CCU, the medicine team was rounding. They stopped abruptly and turned their attention to their new patient. Within 20 minutes, Sam was intubated, a central line had been placed, blood was

infusing and a vasopressor had been started. While this was all happening, the surgical team came to see him and, less than two hours from the time of the rapid response call, Sam was in the OR.

It's easy to feel good about individual successes like this one, but the big question is whether or not the development of a rapid response team has had its intended effect overall. Has it reduced the number of cardiopulmonary arrests seen throughout the medical center? Since the Institute for Healthcare Improvement first endorsed the concept of using these teams in 2004, they have been implemented at hospitals across the country. There is no uniformity in the way that they look or function, however, so the outcome statistics are bound to be variable. Here at UCSD, we have put together a model that appears to be both working well and improving over time. The numbers tell the story. According to the data that Dr. Davis collects and analyzes on a quarterly basis, this fiscal year, so far, has seen a 36% reduction in inpatient code blue calls when compared to the last. Over the same period of time, there has been a 41% increase in the number of rapid responses that are called. The analysis also shows that patients have a much better chance of surviving until discharge if their nurse calls for a rapid response instead of waiting until a code blue is the only option. Additionally, even those patients who end up being "coded" have a better chance of survival now that the rapid response program is in full gear. Compared with baseline numbers from fiscal year 06/07, Dr. Davis shows that there has been a 2.7 fold improvement in the percentage of non-ICU arrest patients that survive until discharge and a 67% improvement in the percentage of ICU "code" patients who make it out of the hospital as well. It would seem that, even for those rapid response patients who end up in arrest, early intervention improves their



chances. From a resource utilization perspective, there is good news too. An average sixteen minute decrease in the time spent on an average response shows that we are learning to be more efficient as our activity increases.

Of course, the facts and figures only tell part of the story. For the nursing staff, much of the pay-off from the rapid response initiative comes in the form of empowerment. It's empowering for nurses to make a judgment call that bring the full strength of the medical center to bear on the urgent needs of their patients. It's empowering, as well, for nurses to be able to step up to new challenges and to demonstrate how expert they really are. And, above all, it's empowering for nurses to share their knowledge. Whenever a rapid response is called, it is a learning opportunity for everyone involved. The team takes this even further, when, at the center-wide nursing grand rounds, they present studies of real rapid response cases. These experiences and the insights gained from them are not just presented by the responding nurse, but by the nurse who initiated the call as well. The collegiality that you see at one of these sessions, the pride that nurses take in their practice: that's a success story.

# We proudly recognize.....

## Degrees:

Kathleen Thompson, RN, BSHA, CNOR, Nurse Manager of Main OR, completed her MBA in October 2008.

Lara Bentley, Labor and Delivery at Hillcrest, received her MSN in Nursing Leadership and Management from Western University in October 2008.

## Certification:

Rowena Basa, BSN, RN, Thornton OR, received Perioperative Certification in April 2009.

Neil Oabel, RN, CSN, CNN, Acute Dialysis, received Nephrology Nurse Certification early in 2009. Neil was also asked to speak at his high school reunion in the Philippines as a 'success story.'

Lara Bentley, Labor and Delivery, received certification in Inpatient Obstetrical Nursing in October 2008.

Erica Vu, Labor and Delivery, passed the boards in October 2008. to become a Certified Nurse Midwife.

## Presentations:

Rungfa Tangtumnu, RN, MSN, ACNP, ANP and Janine Dubina, RN, Nurse Manager of the UCSD Regional Burn Center, organized a well-attended Pulmonary and Critical Care Medicine Workshop entitled "Sepsis vs. SIRS and the Physiology of Ventilation," and presented by Dr. Peter Fedullo, Director of Pulmonary Critical Care Medicine with Dr. Rebecca Sell, pulmonary fellow, on March 26, 2009 at UCSD Medical Center Hillcrest.

Tia (Moore) Valentine, UCSD Emergency Department Clinical Educator, will be a guest speaker at the National Teaching Institute in New Orleans, May 16-21. Her presentation is entitled "the Science of CPR - Why Every Compression Counts."

Debbie den Boer, RN, BSN, GCRN, GI Motility Nurse at UCSD, presented a "From Basic to Expert" Esophageal Manometry Course on February 28, 2009. The course was a full day and awarded 7 CEUS.

Eileen Lischer, RN, BSN, MA, Clinical Manager Acute Dialysis, presented three talks at the 14th Annual CRRT (Continuous Renal Replacement Therapies) International Conference in Coronado, California in February 2009. The talks were entitled "Organizational Aspects of CRRT Programs,"

"Essentials for Developing, Nurturing and Growing a CRRT Program," and with Patricia Graham, RN, MSN, CNS, Hillcrest Critical Care, "Nursing Competencies."

Mary Hartley, BSN, BBA, MSN, Certified Perfusion Technologist, per diem at the Pulmonary Special Procedures Unit, taught the final class for the RN to BSN program at the University of Phoenix San Diego Campus in the fall term 2008. The class was "Senior Practicum. Leadership and Management."

Babette Ortiz, RN, CCRN and Patty McGill, RN, CCRN, Interventional Radiology, conducted the First Annual Imaging Services Conference for nurses and technologists on January 28 at UCSD medical Center Hillcrest. The one day-conference, attended by 100 people from UCSD, Naval Medical Center San Diego, Scripps and Sharp, featured topics including "Interventional Strategies for Pain Management," "Diagnosis and Treatment of AVMs and Aneurysms," "Uterine Fibroid Embolizations," "SIRTS and Taces in Treating Liver Tumors," "Current Topics in Nuclear Medicine," "Breast MRI Imaging," "Procedure, Problems and Patient Care" and "Limb Salvage."

## Publications:

Kim Boynton-Delahanty, RN, BSN, PHN, MBA, CIC, Administrative Director, Infection/Clinical Epidemiology Unit and TB Control, co-wrote "Infectious Diseases and Modern Health Care," published in the April 2009 Journal of Nursing.

Pamela Eliowitz, RN, Acute Dialysis, co-authored "Kidney Health and Failure Related to Long Term Undiagnosed Hypertension," published in the March 2009 issue of San Diego MD magazine.

Stephanie Osborne, RN, BSN, CCTC, co-authored an article with Dr. Patricia Thistlethwaite "Airway stenoses post lung transplantation: Incidence, management, and outcome," published in the December 2008 Journal of Thoracic and Cardiovascular Surgery.

## CN III Promotions:

Fely De La Torre, RN, 8th floor Medical Surgical unit, Hillcrest, Improving Compliance with Blood and Blood Product Administration.

Uriel Dualos, RN, PACU, Improving compliance with Medication Reconciliation in the Peri-Operative Areas.

Michelle Duong, RN, 3 West Thornton, developed standardized care plans for chemotherapy and stem cell administration.

Laura Peluso, RN, Pulmonary Special Procedures, Hillcrest, The 5 "S" Rule:

Domenica Ching, RN, 3 East, Thornton, Corrective measures to improve patient safety, reduce potential medication errors related to usage of insulin and TB syringes.

Grace Basa, RN, Thornton ICU, developed standardized care plans for Cardiothoracic Nursing Care Plan.

Sarah Gabion, RN, Thornton ICU, developed Nursing Orientation Manual for Caring for patients diagnosed with CT-EPH and Caring for the patient undergoing PTE.

Julie Mello, RN, SICU, NRP - Growth

Lynne Gardea, RN, Main OR, NRP - Finance/Benefits

Julie Taylor, RN, 2 W Thornton, NRP - Stroke

Julie Taylor, RN, April Cate, RN, Julie Lande, RN, Infant Special Care, Little grad picnic and How to start a PIV in a neonate.

Nancy Barker, RN, CCU, Decreasing wound prevalence in CCU

Duane Anderson, RN, CAPS, NRP People-Team recruitment and retention.

Martha Leyva-Padilla, RN, Infant Special Care, NRP-NGEC Stress management/debriefing.

Laurie Elpers, RN, GI Suite, NRP - NGEC Role transition and patient satisfaction.

Rosemary Heller, RN, Psychiatry, NRP - NGEC Journal Club Looping

Annabelle Doctolero, RN, 3 East Thornton, NRP - NGEC Preceptor and Preceptee Appreciation.

Muhammed Junaid, RN, CAPS, NRP - NGEC Professional Conduct and Professional Appearance.

Shannon Sigurdson, RN, CCU, NRP - NGEC Computer Resources for RNs and Looping.

Mary Elko, RN, CCU, NRP - NGEC People Team.

# A Multitude of Hands Around Me

By Sal Chiappe, RN, AS

5:30 A.M.  
Winds hammer down,  
On a rain-swept highway  
Morning jazz,  
Rolls on the radio  
Matching the rain,  
Beat for beat

A wall of water from a passing semi,  
Sweeps over me like a tsunami  
From the sea  
My car went airborne from the road,  
I did not hear a sound  
Crashing into the back-end of a bus,  
And remembering little more

Soon i was traveling on my back,  
Through a thousand doors  
Taxing every bone and muscle,  
Oozing from every pore  
Fluids flowed out of me,  
Then flowed right back in  
A multitude of hands touched me,  
Fought for me,  
Refused to let me go

I looked down upon myself,  
And saw my family  
Gathered to say goodbye  
Their cheeks swollen with love,  
Hope receding from their eyes  
Slowly, i was slipping away  
As i felt a peace,  
I'd never known

Suddenly from the multitude around me,  
A rush of orders  
Reigned down  
And in their chaotic certainty,  
The multitude  
Knew exactly what to do  
Matching code blue,  
Beat for beat  
They brought me back,  
Fought me back,  
From the brink of certain demise  
As my family wept with joy  
The multitude nervously smiled,  
Relaxing a little bit at a time,  
As the adrenaline ran dry

7:33 A.M.  
Heartbeat strong and sure,  
The only sound i hear is jazz on the radio  
Rolling on the brain  
My wife clutches my hand,  
And thanks the multitude around me  
A thousand times and more,  
She cannot stop the platitudes,  
That fall from her lips  
Matching my thoughts,  
Beat for beat,  
Like jazz on the radio,  
In the silence of the streets



Sal Chiappe is a Case Manager at Moores UCSD Cancer Center, working with Dr. Sarah Blair and Dr. Michael Bouvet in Surgical Oncology. He has been a nurse for the past 23 years, but has a number of other interests, which include writing poetry, history, politics, and music. He also compiles an electronic newsletter for the Cancer Center, called Capstone, four times a week.







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