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Transplant Nurse Practitioner Creates A New Role At UC San Diego Medical Center

By Stephanie Osborne BSN, RN, CCRN, CCTC

In the Fall of 2009 the UCSD Health Center began to prepare for the reopening of the heart transplant program. Heart transplants and ventricular assist device surgeries had been routine at the health center only three years previously, but had been placed on hold while the program was reevaluated. With the Sulpizio Cardiovascular Center only a year away from opening it was determined that the time was right for UCSD to begin surgical treatment of advanced heart failure once again.

Transplant nurse coordinators play a vital role in transplantation. One of the first steps toward establishment of heart transplant and support device therapy programs was to choose a nurse coordinator. Because of the demands for clinical expertise, expanded knowledge and practice and the ability to provide education to a larger staff expected to function effectively with heart transplant and support device patients, the decision was made to acquire an advanced practice nurse to provide these services. Amanda Topik had been a staff nurse in the Thornton ICU for several years and was familiar with cardiothoracic surgical patients. During her tenure in the ICU she returned to school to obtain her Masters in Nursing and her Nurse Practitioner education. As a result she was uniquely placed to be able to provide both the services of a Clinical Nurse Specialist in preparing policies and procedures for the new programs, as well as patient, staff and community education documents and content to enhance care of these patients. She also had the skill set for providing clinical support to the surgeons and cardiologists as an

advanced practice nurse clinician.

Although Amanda had immediate clinical responsibilities as she began to develop the role of advanced practice nurse in the post transplant clinics, her main focus had to be the development and refinement of policies and procedures for the new program so that an application could be submitted to the United Network for Organ Sharing, which certifies transplant programs. She was also required to develop the protocols under which she would be functioning as a nurse practitioner at the same time as she completed the transplant nurse coordinator competencies already in place. The days were long and reams of documentation were generated. The UNOS application was finally completed and documents were submitted in the Spring of 2010. Dr. Jack Copeland, renowned cardiothoracic surgeon from Tucson, Arizona, joined the surgical team in late summer and the program began to escalate rapidly.

UCSD Health Center already had one ventricular assist device in use at that time, the AbioMed (AB5000) Circulatory Support System. This device can provide temporary support to either the failing right or left heart, allowing for rest and possible recovery. It does allow some mobilization of the patient, but requires the blood to pass through an external device and is powered by a machine at the bedside. This device has been used for some time at the UCSD Health Center and the ICU staff, including Amanda and the ICU clinical educators, were already experienced in its use.

There are multiple devices on the market for the support of the left ventricle for patients with advanced



Stephanie Osborne BSN, RN, CCRN, CCTC received her BSN from the University of Connecticut in 1973. She has had experience in both outpatient nursing (in the community, as well as hospital clinics) and inpatient nursing (medical ward, medical and surgical intensive care, cardiac intensive care and stepdown, dialysis and emergency department), in clinical research and in clinical education. She came to UC San Diego as a Heart and Lung transplant coordinator in August of 1996, and achieved certification as a clinical transplant coordinator in February 2006. In April Stephanie was recognized as the UC San Diego 2009 Nurse of the Year.

heart failure. The Thoratec Heart Mate II has a good record and was selected as the first implantable left ventricular assist device to be deployed at UCSD. The HeartMate II has FDA authorization both as a bridge to transplant and for destination therapy in patients who are not candidates for transplant. Amanda took charge of the education of the staff for implantation and post implant care.



Amanda Topik MSN, RN, NP Heart and Lung Transplant Coordinator.

She attended on-site training at a certified facility to observe and participate in device implantation. She established relationships with other coordinators who were experienced, learning from them how they structured staff and patient education. Upon return to UCSD Amanda began the process of setting up educational sessions for physicians (medical, surgical, and anesthesia), pharmacists, nurses (stepdown and ICU), clinical educators, therapists, perfusionists, and OR staff. She developed educational checklists for patients and families, based upon what

she received from Thoratec and learned from her colleagues.

By early September we had identified our first Heartmate II candidate, a 42 year old man with endstage ischemic cardiomyopathy, NYHA Class IV, on maximum oral therapy and IV inotropes, with chronic volume overload, ascites and malnutrition. He was too ill and debilitated to tolerate a heart transplant and the hope was that use of the VAD would allow for his condition to be stabilized, making it possible for him to gain weight and develop some strength. Amanda provided intensive pre operative education with the patient and his mother, who was to be his primary caregiver, in preparation for the implantation of the VAD as a bridge to transplant. Update classes were provided to the ICU staff and the stepdown unit staff so they would be ready to care for the patient. Surgery took place on 09/28/2010. Amanda was present to assist with the implant, along with the Thoratec support personnel. She was there for hands-on education with the OR staff, as well. She provided support in the ICU for the first few days until the

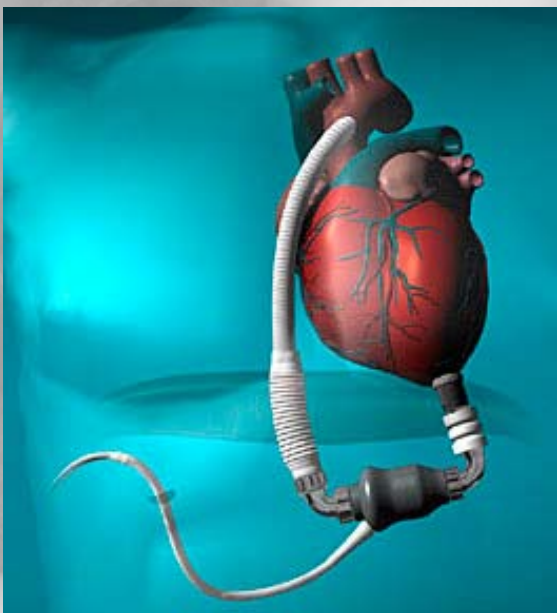
staff began to feel more comfortable with the nursing care, at which time her role became more clinical – rounding on the patient and doing further education in self care for the VAD patient and his mother. At the same time, she contacted his local paramedic group and provided education for them so that in case they were called to his home they would be familiar with the requirements of a patient with a Heartmate II ventricular assist device. She contacted the electric company, as well, to ensure that the patient would never have an interruption in the power supply to his home.

The patient did well, was discharged from the hospital after only two weeks to start his rehab at home. He was a star patient, managing the multiple device alarms and parameters with ease, with frequent input to his management from Amanda who saw him in clinic and handled his concerns over the telephone when he called. He became rather famous at UCSD, speaking to various groups and to the news media about his experience. He got stronger and improved his nutritional status in a very short time. He was listed and quickly received a heart transplant. He continues to make good progress, even taking his first trip away from home at the end of February.

There are other options in use at UCSD for patients with specific problems not met by the Heartmate II. The TandemHeart Percutaneous Ventricular Assist Device can be inserted either in the cardiac catheterization laboratory by a cardiologist or in the operating room by a CT surgeon. This device can provide short term support in patients with postcardiotomy cardiogenic shock, allowing the heart time to strengthen and potentially to recover. Support can be provided for either the right or the left heart, alone or in combination with other devices, from a console outside the body.

In selected patients with severely damaged hearts when both ventricles fail, when valves fail, in cases of severe arrhythmias or other electrical problems, or in transplant patients with donor heart rejection the SynCardia

Heartmate II Placement



Brad is a 41 year old man with a long history of ischemic cardiomyopathy. He had a 5 vessel bypass in March 2009, followed by placement of an ICD/Bi-V pacemaker. He continued to require frequent hospitalization for CHF exacerbations and eventually required a continuous infusion of milrinone. He was listed for transplant on 9/22/2010, but continued to deteriorate. On 9/27/2010 he was transferred to UCSD Thornton hospital for implantation of a Heartmate II ventricular assist device. He was very deconditioned and nutritionally at risk at implant, but rallied quickly in the hospital once he achieved a cardiac output with the VAD. He was discharged on post operative day 17. At home he continued his conditioning program and an aggressive nutrition program was started. He became more functional and gained enough weight that he could be listed Status 1 A for heart transplant in late December. On

January 10, 2011 he was taken to the OR where the VAD was explanted and the new heart was implanted. He left the hospital again after only 17 days. Brad has done well post transplant, even becoming something of a UCSD ambassador, visiting other patients in the program, both before and after implant of devices and transplant.



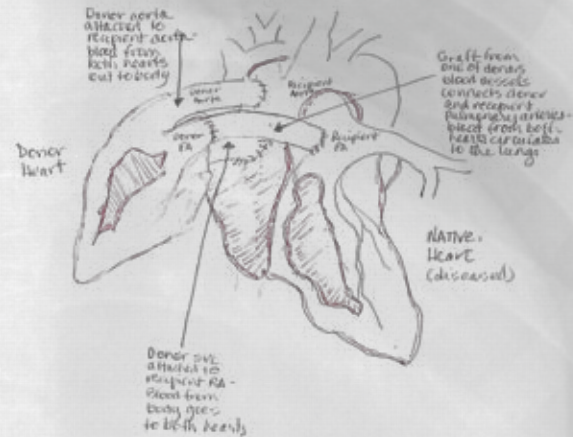
Tyson is a 36 year old man with a long history of nonischemic cardiomyopathy, complete heart block and LV thrombus requiring warfarin therapy, who was hospitalized in January 2011 with worsening CHF. His condition continued to deteriorate despite the addition of IV inotropes so he was listed urgently for transplant. On February 13, 2011 he received a heterotopic heart transplant, a relatively rare procedure where his own heart remained in place while the second donor heart was implanted next

to it. He was facing death, but because of very high pressures in his lungs, a donor heart would be likely to fail. Positioning the new heart on the right side of the donor heart and surgically attaching the donor and recipients' left atria allowed oxygenated blood in the patient's native heart to flow into the donor heart. This blood is then pumped by the donor ventricle into the patient's original aorta and then out to the rest of the body.

Tyson was extubated on post op day 1. Inotropes were slowly weaned. On day 4 he transferred to the ward. He gradually increased his activity and spent time with the transplant nurse practitioner learning about the care of his new transplanted heart. He was discharged home on day 11 and continues to do well. He is expected to return to normal activity within a few months.

Heterotopic Heart Transplant

Not shown - Donor and Recipient left atria are joined so blood from lungs flows to both hearts



total artificial heart (TAH) is an option for bridge to transplant. Use of the total artificial heart can eliminate the problem of right ventricular failure which cannot be managed by a left ventricular device alone. Use of the TAH eliminates the need for defibrillation or antiarrhythmic drugs. Inotropes are not needed. It can offload the venous system, ensuring low CVP, high cardiac output and control of volume. It can be used as rescue for acute cardiogenic shock in emergent situations and also in patients with chronic multisystem organ failure caused by heart failure. It allows for removal of the diseased, enlarged heart which is often a source of thromboemboli and arrhythmias. It also allows for early extubation and early ambulation, so that patients can rehabilitate to the point of being good transplant candidates. When they are no longer in heart failure patients have improved appetite and can benefit from early aggressive nutritional therapy. The complication rate is similar to that of

other implantable devices, with infection and anticoagulation being the most significant issues. Amanda became the super user of the TAH when it was brought to UCSD, again arranging for and providing staff and patient education, as well as support prior, during and after implantation. She was instrumental in establishing a system for anticoagulation reporting, ensuring that results were timely. She will also be attending the implants until the OR staff are comfortable with the surgical demands of the pump, as well as assisting the nurses in the ICU and on the stepdown unit to become comfortable with the care of these challenging patients.

Clearly the advanced practice cardiothoracic surgical and transplant nurse practitioner role at UCSD is varied and challenging. Now that the policies and procedures are in place and we have done several implants of assist devices and several heart transplants, Amanda is increasing her clinical

management skills. She sees patients in pre transplant clinics, orders workups for device implantation or transplant, rounds on patients in house, provides patient education both pre and post device implant and pre and post transplant. She follows patients with the surgeons and cardiologists after device implant or transplant. She participates in the ongoing quality assurance monitoring of the program with the goal of ensuring that required certifications are obtained so that the entire program will thrive. She attends weekly multidisciplinary conferences where patient care is discussed and candidates are presented for devices or transplant. She also takes call, triaging patient complaints on nights and weekends, as well as serving as transplant coordinator for both the heart and lung transplant programs when donors become available. Her role will continue to evolve and to be refined over time as the program grows in size and complexity and as she integrates new skills into her practice.