**RADM O. Marie Henry Publication for Clinical Nursing Practice**
**Presenters:** Mary Myers, RN, MSN, PCCN and Ellen J. Eckes, MSN, ARNP, FNP-BC, CCRN
**Publication**- A Novel Approach to Pain Management in Persons with Sickle Cell Disease

(Transcript)

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**CDR Hadsall:** Thank you so much for that presentation. We look forward to some great questions at the end. Moving on the next award recipients are myths Miss Mary Meyers and Miss Ellen Eckes nurse practitioner. Miss Myers and Ellen Eckes are awarded the rear Admiral. Marine Henry publication for critical nursing practice their award for their presentation the topic as a novel approach to pain management in persons with sickle cell disease. This Myers is a service educator for the medical surgical specialty service a part of the nursing department at the clinical Center of the National Institutes of Health in Bethesda Maryland. Her specialty areas cardiology pulmonary vascular, autoimmune and immune deficiency diseases a wide array of specialties she has published numerous articles and loves a challenge of sharing knowledge and developing fun and interest of ways to conduct and help better educate. Ellen Eckes is a clinical nurse special dose for the medical surgical specialty service a part of the nursing department at the National Institutes of Health in Bethesda Maryland. Her specialty of also includes pulmonary, vascular medicine, and cardiology. This Myers and Ellen Eckes will now present their outstanding research and sickle cell management crisis.

**Myers-Eckes:** Good morning everyone we are honored to have been presented this award for publication and we thank you for the opportunity to present to you today. This publication came to fruition due to our desire to share with the nursing community a novel approach to pain management in a specific patient population those with sickle cell disease.

Our objectives today target an awareness of the disease sickle cell standard care treatment for chronic and acute pain management, historical pain management, a discussion of the novel methodology for pain management, nursing assessment and care for subcutaneous pain management and patient benefits from the standard of care.

Sickle cell disease is an inherited blood disorder of the hemoglobin synthesis leading to a production of the defective form of hemoglobin, hemoglobin S so we want to know why that is so important. One in every 500 black or African-American births is affected by sickle cell disease one in every 36,000 are affected and one in every 12 African-Americans have a sickle cell trait. So is pictured in the slide the normal red blood cell is normally around and easily passes through vessels. The sickle cell takes on a sickle shape and it is very rigid and when these cells pass through the blood vessels they cause occlusion. In addition these cells usually live 10 to 20 days as opposed to the 90 to 120 days of a normal cell thus further reducing oxygenation to the tissues. Due to the process there are periods of ischemia with perfusion vascular to activation injury or a continuous inflammatory response. Decreased oxygen to the tissues contributes to the crisis they saw occlusive crisis contributes too many infections acute chest syndrome pulmonary hypertension and organ damage.

Due to individuals having these multiple success abilities they are very able to have a stressor to precipitate a crisis these crisis need to be as fast early and treated to avoid any worsening of their

symptoms. Standard treatment includes for praying crisis includes hydration pain management and oxygen therapy. Additional treatments depend on the underlying cause for example if an infection than antibiotic treatment or if they have a significant reduced hemoglobin hematocrit transfusion with red blood cells.

So pain is subjective we have to listen to our patients and nursing assessment relies on the patient's self-assessment and frequently the area of reported pain may indicate the underlying process. Patients with an acute brain crisis precipitated by infection risk for development of acute chest syndrome and must be evaluated and treated emergency beginning with the care treatment supplements pain management and oxygen. Hypoxia and decreased vasculitis a nation may lead to avascular necrosis chronic inflammatory response in hypo? Of all streets may lead to strokes or end organ damage and decreased peripheral circulation particularly around bony eminences like the ankle lead to one these become very difficult to heal due to their decreased perfusion.

Chronic pain management has no endpoint is continuous and at any time external stressors may affect the balance between chronic and acute pain. Care includes daily pain management with long and short acting opioids proper hydration and nutrition medical therapy designed to reduce hemoglobin S for instance drugs and scheduled blood transfusions and chelating agents to reduce iron overload from the transfusions. Acute pain management is an emergency they need hydration oxygen and pain management treatment of underlying cause with antibiotics are transfusions. We guide these with our technology like chest X-rays CT scans and we can jump with multiple disciplinary is like risk for Terry therapy for instance from IT and heat massage and relaxation.

So why is up to access needed and sickle cell disease. Patients have physical vessels to access it can be caused because of dehydration decreased blood flow or the fact they have had multiple access that leads to vesicle scars. Sickle cell is a disease with avascular necrosis in DDTs which also create difficulty with peripheral and central lines. As you can see these create problems for vascular access subcutaneous medication gives an alternative method for pain management.

What are the advantages? Well the main advantages we can initiate pain management immediately without the need for vascular access and that will help the patients in crisis. It also allows the access to be used for other therapies for blood or other method need to be administered. Minimal infiltration risk of subcutaneous management and we have identified that sub queue administration is as effective as I am for IV administration. So when we look at nurses management and assessment. When you do your nursing assessment it's a continuous assessment done of vital signs but you also include oxygen saturations in order to evaluate the potential of respiratory depression which goes with any patient. You want to ensure the patient can administer the medication through bolus dosing you want to make sure they know how to do it but you want to make sure their level of consciousness is okay which part of the nursing assessment is. Documentation as per institution but should include items such as it is a program parameters for the PCA what is the patient use how is the patient's level of consciousness along with her vital signs, site integrity and have the goals to maintain management safety.

As you can see by the picture there are a number of supplies to get included these are what we utilize here is the NIH. You utilize what are -- supplies you have. Most importantly what is

included are you need the medical order identifying the type of medication a program parameters in the carrier solution. You need an infusion pump your documentation sheet and your dressing supplies. Routinely we do it to nurse independent check which is looking at the five rights and verifying the pump settings against orders that were written.

So here you have a slide that shows you potential access points are sub cutaneous administration. Less tolerated sites are the abdomen when choosing the site is important to engage a patient remembers they have to have this so they should be included in the decision. Avoid a painful area that is another important piece you need to reassess per the institution. The slide was placed as a reminder of how to insert a needle subcutaneously again your institution will identify the frequency and height of site assessment dressing selection.

Possible complications can occur. Over sedation, that's the reason we do a level of consciousness frequently especially in a narcotic naïve patient. Infection we want to prevent with site assessment if there is an infection you want to be able to treat locally and move the site. Pruritus which occurs with narcotics in some patients what you want to do is change a site one way to correct it or potentially treat with medication either Benadryl or low dose Narcan. Another could be equipment failure as simple as a battery failure or something internally that causes the equipment not to function well. The level of nursing understanding of the procedure and equipment can also create a possible complication you want to make sure the nurses understand how to use the equipment well and understand the process of administering narcotics subcutaneously.

A big complication is patient dissatisfaction or non-satisfaction. We counter this through education and continual assessment.

So in summary acute pain crisis is a medical emergency. Immediate treatment is initiating with standard of care pain management oxygen and hydration and trading of the underlying anemia with blood products or infection with antibiotics. Obtain access for pain management subcutaneous is easy to obtain it is as effective as IV and intramuscular administration. We need to educate our patients so they are familiar with the method of dosing in -- assess and evaluate the site prior to insertion during the infusion and post access.

The benefits of sub queue PCA pain management are the immediate availability of initiating pain treatment. Even when IV access is difficult. It also allows for the IV access to be utilized for additional medications or treatments are needed. There is minimal risk of infiltration and it is as effective as an IV administration. Pain management is vital in subcutaneous PCA provides effective pain management. We would like to thank you again for this honor and we are available for questions. Thank you.

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**CDR Hadsall:** Thank you very much Miss Myers and Miss Eckes we are going to take questions after the final presentation. Thank you for that excellent informative presentation on sickle cell we -- congratulations on your award recipient.

Thank you.