SE2EO: The healthcare organization supports the nurses' participation in local, regional, national or international professional organizations.

Provide two examples, with supporting evidence, of improvements resulting from a change in nursing practice that occurred because of clinical nurse involvement in a professional organization. Supporting evidence must be submitted in the form of a graph with a data table that clearly displays the data.

Example 1: Professional Organization – American Nephrology Nursing Association

Background/Problem:

The acute hemodialysis unit provides over 6,000 treatments a year to an array of complex patients. Adequacy of hemodialysis in chronic renal failure patients reflects the removal of accumulated waste products in the blood and is typically measured on a monthly basis. Adequate hemodialysis contributes to overall feeling of well-being and decreases the incidence of mortality.

In acutely dialyzed patients, the Renal Unit nurses were striving to obtain an adequacy measure with each hemodialysis treatment. Occasionally the physician would order pre- and post-treatment blood urea nitrogen (BUN) to determine if the toxins were being removed from the blood effectively. However, this was not a standard practice and was only ordered if there was question about the clearances acquired with hemodialysis. The national standards for measuring adequacy of hemodialysis in acutely ill patients were not available.

Judy Kauffman, MSN, RN, CNN, Nurse Manager of the Acute Renal Unit; Ruth Morgan, BSN, RN, Clinician III; and Cindy McMillan, BSN, RN, CNN, Clinician III, saw an opportunity to leverage involvement with the American Nephrology Nurses Association (ANNA) to initiate the development of a standard measure for acute hemodialysis adequacy. As members, they partnered with other members interested in the development of benchmarks for acute care dialysis units.

Judy Kauffman, MSN, RN, CNN, Nurse Manager and Cindy McMillan, BSN, RN, CNN, Clinician III worked to develop a standard measurement to monitor the adequacy of hemodialysis in acutely ill patients.

In 2012, Kauffman was appointed for a three-year term as the facilitator for the Acute Care Specialty network group for ANNA. This group actively participates in frequent blog discussions to connect acute care hemodialysis nurses and share innovations and best practices. This close connection provided the nurses with an opportunity to gather intelligence from other organizations on this topic. They set a goal to develop a standard measurement to evaluate adequacy of hemodialysis.

The most recent *Kidney Disease; Improving Global Outcomes (KDIGO)* recommendations[1] stated, "We recommend delivering a Kt/v (K= dialyzer clearance of urea, t= hemodialysis time, v=volume of distribution of urea) of 3.9 per week when using intermittent or extended RRT (renal replacement therapy) in AKI (acute kidney injury)."

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[1]Kidney Disease: Improving Global Outcomes (KDIGO) Acute Kidney Injury Work Group. Recommendation 5.8.3. KDIGO Clinical Practice Guideline for Acute Kidney Injury. *Kidney inter.,* Suppl. 2012; 2:1-138.

This would be equivalent to a Kt/v of 1.3 with the hemodialysis treatment occurring three times in a week.

Goal Statement:

Develop standard measurement to monitor the adequacy of hemodialysis in acutely ill patients. The team decided to start with the best evidence available, setting a goal to achieve the chronic hemodialysis target of Kt/v of 1.2.

Description of the Intervention/Initiative/Activity(ies):

The Renal Unit interprofessional quality committee engaged in seeking a solution to hemodialysis adequacy measurement in July 2012. As they evaluated the methods immediately available, the group decided to implement pre- and post-treatment blood sampling to measure BUN, which would then be converted into a urea reduction ratio. After a short time, their evaluation revealed that this practice added additional costs to the patient with the laboratory specimen processing, wasn't easy to obtain, and real-time adjustments couldn't be made to the procedure to achieve optimal hemodialysis.

In April 2013, the team reviewed evidence provided by the American Nephrology Nurses Association, in the organization's resources. The team first referenced the guidelines provided by the National Kidney Foundation (NKF) to consider how they could best measure adequacy of hemodialysis. Searching literature and available feedback from the ANNA Acute Care Specialty network group, they found that there were no standardized measurements or national benchmarks for acute hemodialysis for the team to reference.

According to the NKF, the requirement for monthly (chronic) measurement of hemodialysis adequacy is a compromise between cost and the utility of the measurement. The dose (dialysis prescription) can be assessed more frequently by measuring conductivity (or ionic) clearance across the dialyzer membrane. The method is based on the assumption that changes in dialysate conductivity are caused by transmembrane movement of small electrolytes, mostly sodium, that behave like urea. A step up in dialysate sodium concentration followed by a step down while measuring conductivity changes in the effluent dialysate tend to eliminate the effect of cardiopulmonary recirculation (CAPR) and provides a sodium clearance that is similar to or only slightly less than the simultaneously measured cross-dialyzer urea clearance. When applied in this fashion, conductivity clearance can be used safely as a substitute for the blood-side urea method for measuring hemodialysis dose. As stated above, KDIGO recommends "delivering a Kt/v of 3.9 per week when using intermittent or extended RRT (renal replacement therapy) in AKI (acute kidney injury). This would be equivalent to a Kt/v of 1.3 with the hemodialysis treatment occurring three times in a week."

This method does not require consumables or blood sampling and can be used with each hemodialysis treatment to predict the delivered Kt/v in real time before the treatment is finished, without incurring additional costs for the patient. In July 2012, the team made a decision to pursue this methodology. Software was available to allow the calculation to be done within the machine at no added cost.

The team decided to start with the best evidence available, setting a goal to achieve the chronic hemodialysis target of Kt/v of 1.2. The next steps included obtaining the needed equipment to monitor the Kt/v and developing the clinical plan to achieve it. The team provided input through staff meetings and email.

The team contacted the manufacturer of the hemodialysis machines after researching available software options that could be added to the machine to measure Kt/v in real time. The hemodialysis machines were all programmed by the manufacturer to allow the nursing staff to obtain the Kt/v and the clinical specialist for the company provided staff training on how to utilize the software in the machine.

In July 2012, Kauffman, McMillian and Morgan worked with nephrology physicians, Rasheed Balogun and Kambiz Kalantari, to develop a draft algorithm. They sought feedback from the clinical nurses via email, small-group conversations and staff meetings. The quality team finalized the adequacy algorithm, empowering the clinical nurses to make adjustments in the treatment in order to obtain a Kt/v of 1.2.

In July 2012, the renal unit implemented this practice change. The physician group was educated on the change process and how the nurse-driven algorithm would demonstrate the delivered dose of adequate hemodialysis. The nursing team worked with the Epic builders to include Kt/v documentation on the hemodialysis flow sheet. Until automated reports could be obtained from Epic, the unit manually collected the daily Kt/v on each patient for unit-based tracking. The quality team incorporated a report of Kt/v at the monthly quality meeting, and outcomes were posted on the quality-metrics board in the Renal Unit.

In July 2013 the quality team increased the expected Kt/v from 1.2 to 1.3 based on recommendations from KDIGO. This nurse-driven quality project has provided evidence of the hemodialysis adequacy. The nurse has been empowered to intervene during the actual procedure in order to achieve the desired Kt/v, by methods such as increasing the blood flow rate, increasing the hemodialysis flow rate and increasing the duration; if all interventions have been exhausted, the clinician consults with the nephrologist to determine if a vascular-access evaluation is needed in interventional radiology.

Using her role in the ANNA, Kauffman shared her team's experience developing the nurse-driven algorithm and monitoring acute hemodialysis adequacy using the Acute Care Specialty network.

Participants:

SE2EO Table 1. Participants, Algorithm Development: Adequacy of Hemodialysis

Name	Discipline	Title	Department
Judy Kauffman	Nursing	Nurse Manager	Renal Unit
Rasheed Balogun	Physician	Associate Professor of Medicine	Nephrology
Ruth Morgan	Nursing	RN Clinician III	Renal Unit
Cindy McMillan	Nursing	RN Clinician III	Renal Unit

Outcome(s):

SE2EO Figure 1. Dialysis Adequacy (June 2012-October 2012)

Dialysis Adequacy

	Jun. 2012	Jul. 2012	Aug. 2012	Sep. 2012	Oct. 2012
Kt/v	1.22	1.36	1.37	1.43	1.42
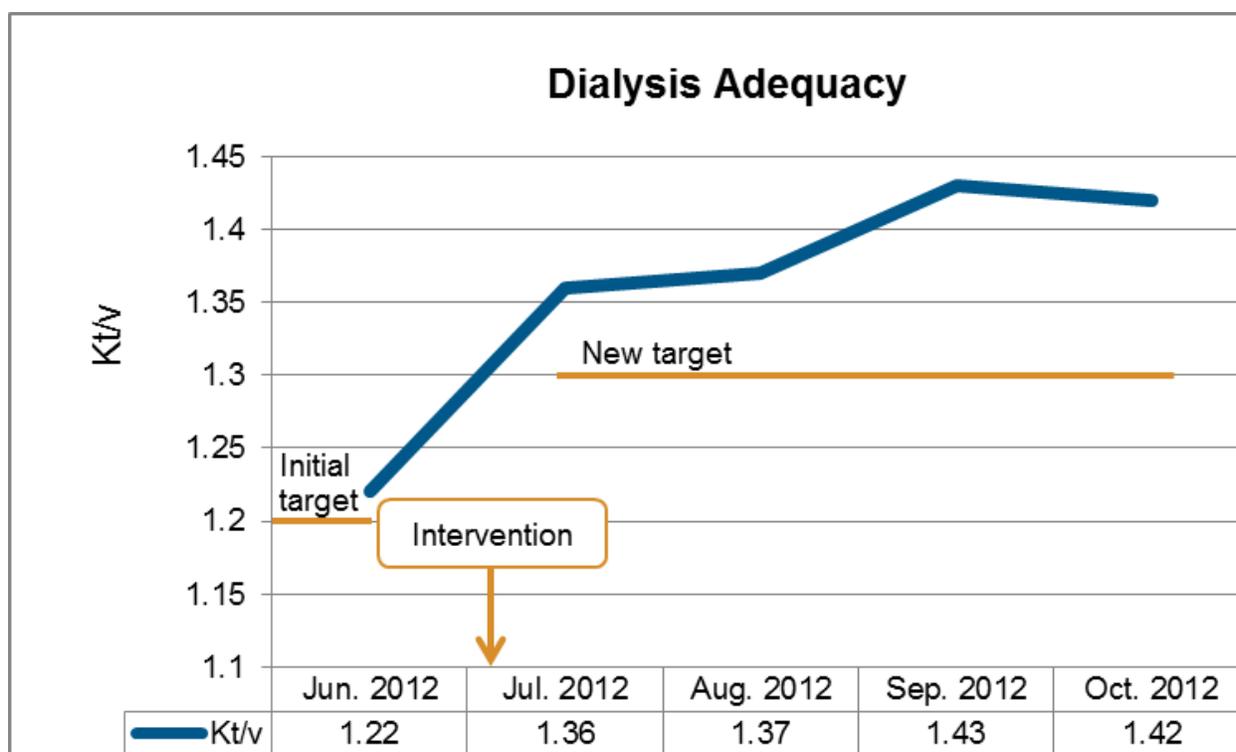
Example 2: Professional Organization – Academy of Medical Surgical Nurses

Background/Problem:

Beth Quatrara, DNP, RN, CMSRN, ACNS-BC, Clinical Nurse Specialist – Advanced Practice Nurse 3, at University of Virginia Health System, became a member of the

Academy of Medical Surgical Nurses (AMSN) in 1999. With a strong background in the care of patients with medical and surgical digestive health conditions, she is well versed in the nutritional needs of hospitalized patients. In 2011, she published an article in *MedSurg Matters* highlighting the evidence supporting enteral feeding in patients with severe acute pancreatitis.

As a result of her background, she was appointed by the AMSN to be the clinical representative to the Alliance to Advance Patient Nutrition. Our Chief Nursing Officer (CNO), Lorna Facteau, DNSc, RN, and the Director of Adult Medical-Surgical Care, Joel Anderson, MSN, RN, CNL, both support her position in this organization, which includes participating in regularly scheduled Steering Committee meetings, speaking at national conferences and writing on topics of nutrition.

Through her involvement with the Academy of Medical Surgical Nurses, Beth identified opportunities to improve the nutritional needs of our patients and felt strongly that the interprofessional approach developed by the alliance was imperative to fully address patient nutritional needs. While at the AMSN Convention in October 2012, Dr. Quatrara met with leaders from *nutritionDay*, the team who manages the international nutrition assessment of hospitalized patients (http://www.nutritionday.org). In November 2012, Beth collaborated with Wendy Phillips, RD, the Nutrition Director of UVA Health System, and Kate Willcutts, MS, RD, CNSC, Manager of Digestive Health Clinical Support, to participate in *nutritionDay* at UVA Health System. Participation included an evaluation of the nutritional status of patients on two acute care units and one intensive care unit and allowed them to establish a comparative baseline of the nutritional status of UVA patients. The evaluation demonstrated that 46% of those surveyed had weight loss prior to admission and that 52% had a poor appetite prior to admission. A large percent of patients were entering our Health System with concerning nutritional conditions.

Goal Statement:

Improve the referral rates of patients at risk for malnutrition to Registered Dieticians.

Description of the Intervention/Initiative/Activity(ies):

Quatrara, Phillips and Wilcutts presented the *nutritionDay* findings to nursing staff at the April 23, 2013, Evidence-Based Practice Symposium. During the question-and-answer session, they heard concerns from nurses about the multiple steps required to enter a nutrition referral. Barb Trotter, BSN, RN, CMSRN, was in attendance. Barb is an active member of AMSN. Serving as the Chair of the local chapter of AMSN and attending the 2012 AMSN Convention, Barb has advocated for streamlining processes of nursing care and improving patient nutrition. She highlighted the numerous computer screen requirements that were necessary for an RN to enter an RD screening referral. She worked with the team to develop solutions.

In summer 2013, the team met with Laurie Brock, MSN, RN, Nurse Informaticist, and Laura Brock, Senior Clinical Applications Analyst and Programmer, to determine if the electronic medical record, Epic, could be used to streamline the referral of at-risk patients to Registered Dieticians. The Malnutrition Screening Tool (MST) was already embedded in Epic, triggered to be completed on admission. RN compliance with completing the MST upon admission and identifying patients who were at-risk for malnutrition was on target. However, identifying at-risk patients wasn't resulting in subsequent Nutrition consults. After a patient was identified as at-risk, five additional Epic steps were required to place a nutrition screening referral. The multistep process identified by Barb was cited as the primary barrier.

The first step in the Alliance Nutrition care model supported by AMSN is appropriate screening and referral. In August 2013, the five-step process previously required for an RN to complete an RD screening referral was removed. Now when a patient is identified as at-risk for malnutrition, the RD automatically receives an electronic notification in Epic of the need for an evaluation.

Participants:

SE2EO Table 2. Participants, Malnutrition Screening Initiative

Name	Discipline	Title	Department
Beth Quatrara	Nursing	Advanced Practice Nurse-3, Clinical Nurse Specialist	Nursing Governance
Barb Trotter	Nursing	Clinician IV	3 West
Kate Willcutts	Nutrition	Manager	Nutrition Services
Wendy Phillips	Nutrition	Director	Nutrition Services
Laurie Brock	Nursing	Nursing Informaticist	Epic
Laura Brock	Information Technology	Senior Applications Analyst/Programmer	Epic

Outcome(s):

The RN-to-RD referrals for patients identified as at-risk for malnutrition increased from less than **30% to 100%.**

SE2EO Figure 2. Registered Dietician Referral Compliance