

**NK4EO – Innovation in nursing is supported and encouraged.**

Provide two examples, with supporting evidence, of an improvement that resulted from an innovation in nursing. Supporting evidence must be submitted in the form of a graph with a data table that clearly displays the data.

**Example 1: Non-Nutritive Suck and Cue-Based Feedings Instead of Scheduled Feedings in the Newborn Intensive Care Unit****Background/Problem:**

The UVA Neonatal Intensive Care Unit (NICU) cares for approximately 350 preterm babies each year. Babies in the NICU struggle with basic needs. Eating enough orally to meet nutritional demands is a complex task for these preterm babies, who are challenged with difficulties in many of their underdeveloped body systems. Yet, eating enough to gain weight is one of the crucial functions required to improve their overall health and achieve their ultimate discharge from the NICU. These infants are kept in the NICU until optimal feeding and weight gain are achieved.

Nurses providing care to NICU babies were required to follow prescribed nutrition orders managing the intake of oral feedings, with the goal of maximizing administration of nutrition to facilitate weight gain. The feeding plan often included requirements for feeding specific volumes at designated times. Reaching full oral feedings with adequate weight gain is one of the last achievements required of premature infants before they can be discharged home. However, for the nurse, administering an appropriate amount of feeding to babies who are tired, fussy or otherwise not interested in eating is very difficult. Cue-based feeding programs are suggested as a means to facilitate progress of NICU babies to full oral feedings at an earlier day of life and discharged home sooner, as measured by the length of stay (LOS). The innovative approach is associated with improved health outcomes.

**Goal Statement:**

Overall NICU length of stay will be reduced with the introduction of cue-based feedings for all infants, promoting early transition to full oral feedings to facilitate weight gain and expedite discharge.

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

Debra Owens, MSN, RN, NNP-BC, Advanced Practice Nurse 2- Nurse Practitioner, was interested in trialing cue-based feeding as an approach to supporting an early transition to full oral feedings. This innovative approach dismissed the traditional plan to administer a set amount of feeding at a designated time. Instead, babies would be monitored for signs of readiness to eat and would be fed at the time “cued” by them.



With assistance from colleague Jamie Hicks, MSN, RN, NNP-BC, Advanced Practice Nurse 2-Nurse Practitioner, Deb spearheaded the formation of an interprofessional NICU group named “The Cue-Based Feeding Champions.” After a thorough review of the literature, the Champions developed an algorithm with a new clinical practice guideline aimed at changing the approach to oral feedings. The Champions then presented the new guideline to the Division of Neonatology and the Children’s Hospital Clinical Practice Committee. Both groups approved the new practice guideline in April 2012.



Debra Owens, MSN, RN, NNP-BC, APN II-NP and Jamie Hicks, MSN, RN, NNP-BC, APN II-NP led the formation of “The Cue-Based Feeding Champions.”

Cue-based feeding was not just an innovative approach to health outcomes. It was one of the largest changes to nursing culture in the UVA NICU’s history. Jamie recognized that in order for the practice to change effectively, the Champions needed to convince the NICU team that the potential for improved outcomes was worth the interruption to work flow at the bedside. Jamie studied change theory and designed a strategic and multifaceted education plan that recognized nursing’s contribution and skill with oral feedings, educated the NICU team on assessing infant feeding readiness cues, and emphasized the importance of improved clinical outcomes.



The process, as described below, educated a staff of over 150 healthcare team members:

- “Milestone Markers” were created in order for nurses to perform a consistent qualitative assessment of each infant’s progress during a feeding
- Written articles for the NICU’s biweekly communication tool, “Friday Footnotes”
- Nursing presentations to residents and fellow physicians during NICU morning intake rounds
- Small group education sessions
- Poster at the annual mandatory NICU Skills Fair
- Shadow box display
- Presentations during nursing shift change report
- Collaboration with Epic personnel to create ordering and documentation functions for LIPs and nursing staff

Once education was complete, the Cue-Based Feeding clinical guidelines were enacted in September 2012. At that time, all NICU infants were transitioned to cue-based feeding.

### Participants:

**NK4EO Table 1. Participants, Cue-Based Feeding Initiative**

<b>Name</b>	<b>Discipline</b>	<b>Title</b>	<b>Department</b>
Debra Owens	Nursing	Advanced Practice Nurse 2- Nurse Practitioner	NICU
Jamie Hicks	Nursing	Advanced Practice Nurse 2-Nurse Practitioner	NICU
Patti Perks	Nutrition	Registered Dietician	Nutrition
David Kaufman	Physician	Associate Professor of Pediatrics	Neonatal/Perinatal
Sharon Ferraro	Nursing	RN Clinician III	NICU
Kathleen Borowitz	Speech-Language Pathology	Speech-Language Pathologist	Therapy Services

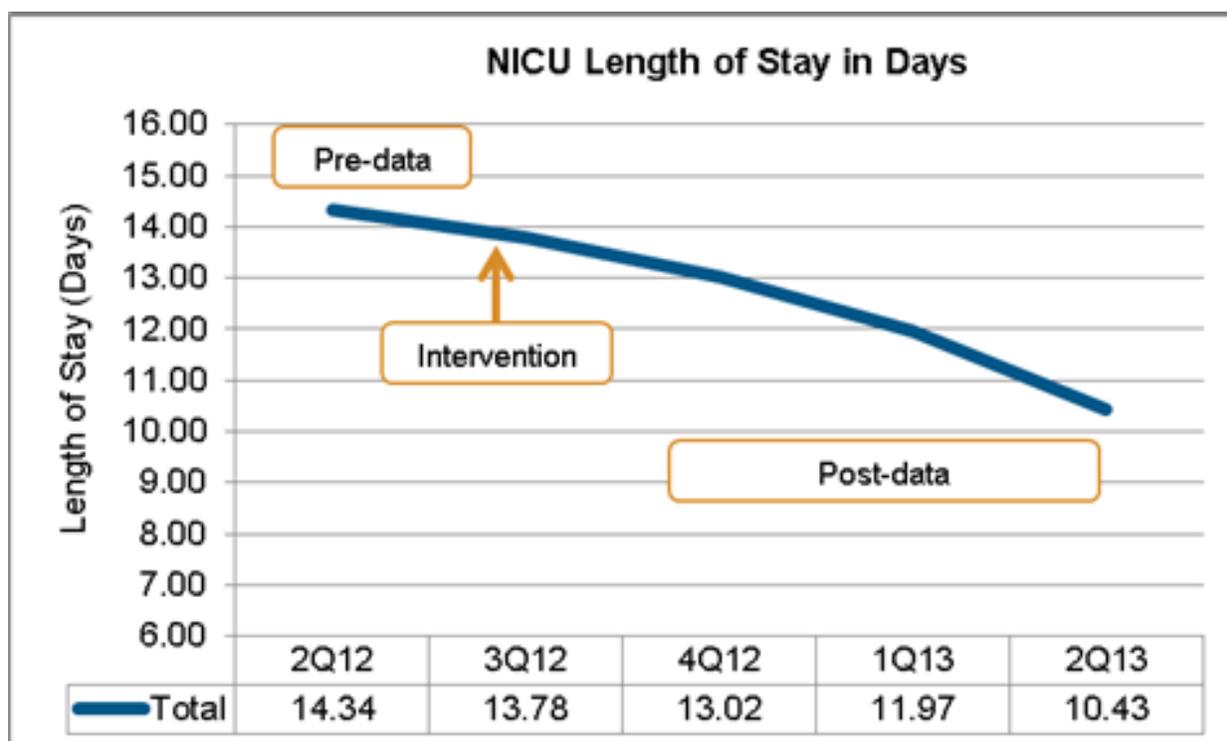
### Outcome(s):

With the introduction of cue-based feeding, overall NICU length of stay was reduced. Babies cared for after September 2012 received cue-based feeding, transitioned to full oral feedings, gained weight and were discharged sooner. These infants were



discharged from the NICU on an earlier day of life (average range 24.16-34.67) than babies cared for prior to September 2012 with the traditional prescribed feeding plan (43.97). This innovative intervention is associated with an overall decrease in NICU length of stay, from 14.28 days prior to the initiation of cue-based feedings to 10.38 days after this protocol began for all neonates (Figure 1). The health outcome innovation is helping preterm babies to go home sooner.

**NK4EO Figure 1. NICU Length of Stay in Days (2Q12-2Q13)**



**Example 2: Chlorhexidine Bathing to Reduce Catheter-Associated Urinary Tract Infections**

**Background/Problem:**

The catheter-associated urinary tract infection (CAUTI) rate at UVA Health System was statistically significantly above the standardized infection ratio (SIR) provided by the National Healthcare Safety Network (NHSN) for academic medical centers. The use of CAUTI prevention guidelines and traditional evidence-based practice strategies to decrease the infection counts were not resulting in sustained improvements. Despite multiple initiatives, the CAUTI rate remained well above the SIR for academic medical



centers. With a strong commitment to moving the metric, innovative health outcome approaches were explored.

### **Goal Statement:**

The CAUTI counts and the SIR for CAUTI at UVA Health System will decrease after initiation of Chlorhexidine Gluconate (CHG) baths.

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

Chlorhexidine Gluconate bathing is an FDA-approved tactic to diminish surgical site infections (SSI). Additional research supports the use of off-label 2% CHG bathing in adult patients as a technique to reduce central line-associated blood stream infections (CLABSI). The benefits of CHG in decreasing SSI and CLABSI are well documented in the literature.

CHG bathing was not a standard of care at UVA. In February 2013, the CHG Bath Workgroup was formed to review the available literature and discuss the possibility of implementing the bath as a strategy to sustain CLABSI reduction and as an innovative approach to CAUTI prevention. A small number of quality improvement efforts and anecdotal case studies were demonstrating the benefits of CHG in decreasing CAUTI, yet no research was available on the topic. The workgroup determined that the off-label implementation of the CHG bath was a safe, effective approach to reducing infections and deserved a trial. The workgroup committed to rapidly implement an innovative plan for off-label use of CHG bathing as a unique approach to care. The team developed a comprehensive proposal and received administrative approval to move forward with purchasing CHG bath wipes to target CAUTI and CLABSI.

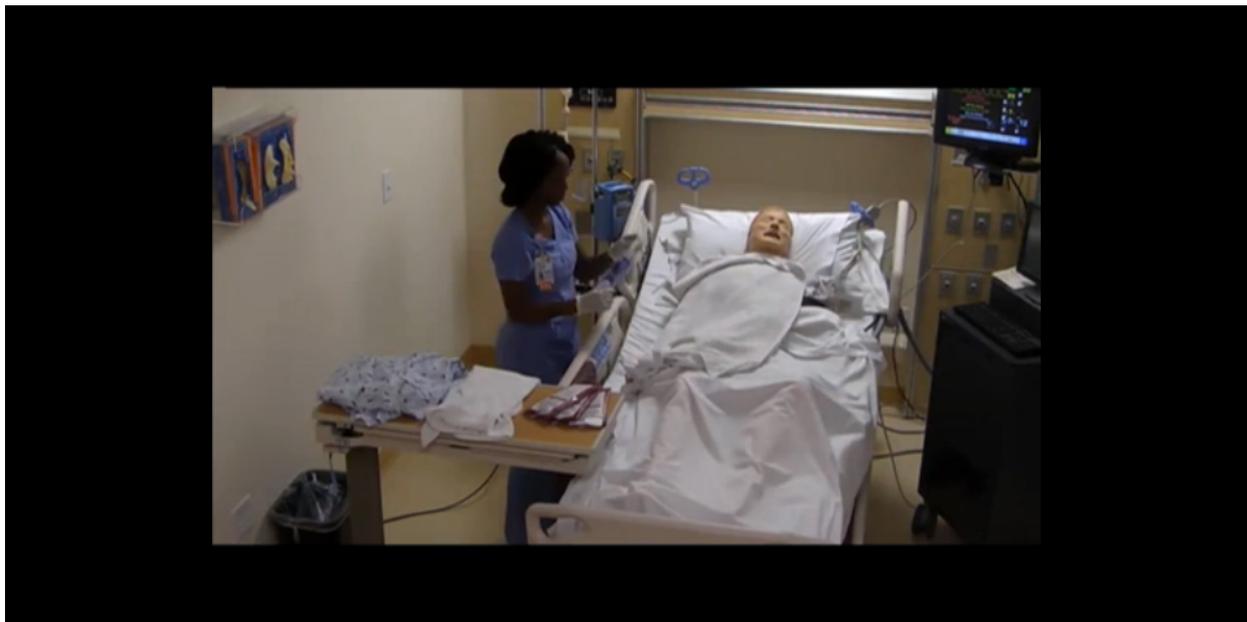
Since the workgroup was using the CHG bath to target CAUTI and CLABSI reduction, not SSI reduction, the CHG bath wipe manufacturer was unable to provide teaching supplies or human resources to assist with the change process. During the month of March 2013, the CHG bath workgroup designed all materials and teaching tools that would be required for the rollout. Capitalizing on the newly available resources at the Clinical Learning Simulation Center at the UVA School of Nursing, the workgroup decided to develop an innovative education process that included video, hands-on simulation and the integration of clinical scenarios. The workgroup filmed a video and designed pictorial handouts to clearly demonstrate the uniquely sequenced bath process. Both strategies highlighted the team's decision to distinctly dedicate one of the six bath wipes for urinary catheter cleansing only.

The workgroup trained 947 nursing staff members in a two-week period (April 15-30, 2013). Training included watching a video depicting the new bath procedure as it would be uniquely performed at UVA and a simulated competency demonstration. Mannequins with invasive devices were used for return demonstration. The training



sessions were held on multiple days and across all shifts. Scenario-based questions were incorporated into the sessions to validate learning and reinforce understanding of the novel approach to CHG bathing. The evidence for the new CHG bath was shared, and the concept of interventional patient hygiene was emphasized. All of these tools provided opportunities for the rapid integration of new skills in an innovative manner.

On May 1, 2013, daily CHG bathing was implemented as a protocol order for all ICU patients (except neonates), as well as those with central lines and/or indwelling urinary catheters on acute care units. On the same day, CHG bathing was also implemented as a partial bath for at-risk patients; patients with indwelling urinary catheters received perineal care and localized cleaning with CHG if they experienced an episode of stool incontinence. Patients with standard central lines, dialysis catheters, PICC lines, implanted ports, MAC lines, Hohn catheters, Foleys and suprapubic catheters received full CHG baths on a daily basis.



## Chlorhexidine Bath

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Screen capture of video: the Chlorhexidine Gluconate (CHG) bathing video produced to aid in the training of clinical nurses.

The CHG protocol bath order was uniquely embedded into practice using technology. Through the use of the electronic medical record, clinicians are reminded of the bath procedure on a daily basis. The CHG bath appears on the medication administration record each day as required intervention. Scanning the bath product bar code confirms that the bath was administered and allows for compliance tracking of the intervention.



Pictured: Lisa Cantore Letzkus, MSN, RN, CPNP-AC, CCRN, Assistant Director, PNSO Nursing Research Program and Beth Quatrara, DNP, RN, CMSRN, ACNS-BC, Director, PNSO Nursing Research Program

### Participants:

**NK4EO Table 2. Participants, CHG Bathing Initiative**

Name	Discipline	Title	Department
Beth Quatrara	Nursing	Advanced Practice Nurse 3-Clinical Nurse Specialist	Nursing Governance
Kathleen Rea	Nursing	Advanced Practice Nurse 2-Clinical Nurse Specialist	5 Central
Lisa Letzkus	Nursing	Advanced Practice Nurse 2-Nurse Practitioner	Pediatrics
Elizabeth Enfield	Nursing	Advanced Practice Nurse 1- Clinical Nurse Specialist	Coronary Care Intensive Care Unit



Kristi Kimpel Wilkins	Nursing	Advanced Practice Nurse 2- Clinical Nurse Specialist	Surgical Trauma Burn Intensive Care Unit
Eve Giannetta	Nursing	Manager	Hospital Epidemiology / Infection Prevention
Christie Piedmont	Nursing	Infection Prevention RN	Hospital Epidemiology / Infection Prevention
Kyle Enfield	Medicine	Assistant Professor	Medicine / Infection Prevention
Costi Sifri	Medicine	Associate Professor	Medicine / Infection Prevention
Holly Hintz	Nursing	Director	Nursing Governance
Laurie Brock	Informatics	EMR Nurse Informaticist	Epic
Barbara Strain	Supply Chain	Director of Value Management	Supply Chain Management
Reba Childress	Nursing	Clinical Simulation Coordinator	School of Nursing
Petherree Norman	Nursing	Clinician II	5 Central

### Outcome(s):

The health outcome innovation of using CHG to wipe the urinary catheter of each patient during the daily bath, as well as the use of CHG to cleanse the urinary catheter of any patient experiencing an incontinent event, dramatically improved CAUTI outcomes. The introduction of CHG is associated with the largest sustained improvement in CAUTI to date. The novel, off-label methodology was successful. The novel CHG bath was implemented in May 2013, during the second quarter. Since the third quarter of 2013, both the number of CAUTI and the SIR for CAUTI at UVA have decreased dramatically.



NK4EO Figure 2. Catheter-Associated Urinary Tract Infections (1Q12-1Q14)

