Evidence-Based Practice NK3
   a. Provide one example, with supporting evidence, of clinical nurses’ implementation of an evidence-based practice that is new to the organization.

   AND

   b. Provide one example, with supporting evidence, of clinical nurses’ use of an evidence-based practice to revise an existing practice within the organization.

**Example b: Clinical Nurse Use of Evidence-based Practice to Revise an Existing Practice – Use of Midlines Catheters**

**Clinical Nurse**
In July 2017, Briana Glaspy, BSN, RN, TCRN, Clinical Nurse; Gina McConnell, BSN, RN, CCRN, Supervisor/Educator Cardiothoracic Intensive Care Unit (CTICU); and Melissa Chapin, BSN, RN, CCRN-CSC, Supervisor/Educator CTICU, noted that their unit’s number of central line days was higher than the average of the ICUs, which increased their patients’ risk for central line-associated bloodstream infections (CLABSI). They therefore set out to reduce the number of line days on their unit.

Glaspy had been trained in the Emergency Department on a new midline peripheral intravenous (PIV) line device that was approved for longer dwell times than a standard PIV. She suggested that this could be used in place of some central lines to reduce the number of central line days in the CTICU. Glaspy recommended engaging Edward Keating, BSN, RN, CEN, CPEN, CPN, Clinical Project Manager, into the CTICU discussions. (Evidence NKb-1, CTICU Planning Meetings Minutes) Glaspy and Keating were among the first nurses at WakeMed Health & Hospitals who had been trained to insert midline IVs.

Keating, a member of the CLABSI Task Force, had experience with midline IV devices and ultrasound guided peripheral IVs (USGPIV). The task force worked to reduce central line days by removing unnecessary lines, considering alternatives prior to insertion and evaluating the need to place central lines. The Centers for Disease and Control (CDC) has a 1A recommendation to decrease unnecessary central line use as a primary CLABSI reduction measure (O’Grady et al., 2011). Keating partnered with Glaspy, McConnell and Chapin to evaluate whether midline devices, which are approved to dwell for up to 28 days, and USGPIVs might be viable alternatives to some central venous catheters (CVC). (Evidence NKb-1, CTICU Planning Meetings Minutes)

**Evidence-based Practice**
On September 1, 2017, Keating, Chapin, McConnell, Ellen Wheaton, BSN, RN, CCRN and Bard representative Brian Fitts met to discuss current literature and best practices. Keating conducted a literature review before the meeting and sent the group several journal articles to review.

This evidence supported the premise that some CVCs can be safely replaced with a midline and that doing so could provide the necessary access for many patients without requiring a central line. The Michigan Appropriateness Guide for Intravenous Catheter Recommendations found that midline catheters are associated with lower infection rates than central catheters and are preferred when treatment will likely exceed six days (Moureau & Chopra, 2016). Studies in the *Journal of the Association for Vascular Access* found that midline catheters are suitable for long-term access, and another study found that vancomycin can be safely administered through a midline catheter (Caparas & Hung, 2017). (Evidence NK3b-2, Vancomycin Administration Through a Novel Midline Catheter: Summary of a 5-Year, 1086-Patient Experience in an Urban Community Hospital) (Evidence NK3b-3, Extravasation Prevention and Management [Adults only] Policy)

The task force decided during this meeting to immediately begin training CTICU nurses in USGPIV insertion as a step toward midline insertion. Glaspy and another CTICU nurse were trained to place USGPIVs at that time because most CTICU patients come out of the operating room with a triple-lumen CVC and an introducer. Glaspy, after completing 30 successful USGPIV insertions, began training CTICU nurses in USGPIV and midline IVs in preparation for a January 1, 2018 go-live date.

**Revision of Existing Practice**

A meeting to discuss the readiness for go-live of the practice revision was held on December 11, 2017, attended by Glaspy; Keating; Chapin; Wheaton; Atif Raja, MD, Anesthesiology; Shelly Schaad, MSN, RN, CRNA, Chief Anesthesiology; and William Killinger, MD, Cardiothoracic Surgery. Raj and Killinger discussed the criteria for not placing CVCs in the operating suite. The goal for CTICU nurses was to remove any central lines that had been placed and to insert a midline catheter by the time the patient transfers out of the CTICU. (Evidence NK3b-4, September 2017 Charge Nurse Meeting Minutes)

This process was implemented on January 2, 2018, with CTICU nurses placing midlines in patients who no longer received CVCs intraoperatively. Chapin sent the Midline
Powerglide Initiative updated process to all CTICU staff members by email on January 19, 2018. (Evidence NK3b-5, CTICU Updates Email)

Outcomes
USGPIV insertions at WakeMed Health & Hospitals increased from an average of 20 per month in April 2017 to an average of 120 per month in April 2018. In the 10 months following implementation, central line days decreased from an average of 2,798 to 2,004, a 29% reduction. By incorporating clinical nurses placing midline peripheral IVs along with other measures, WakeMed Health & Hospitals has decreased the number of central line days and the risk to patients.