Neonatal length has been utilized as a marker of nutrition and a more accurate reflection of growth when weight is and routinely plotted against standard growth curves. International efforts have focused on determining anthropometric protocols for neonatal growth standards. For example, the International Fetal and Newborn Growth Consortium for the 21st century (2013) has created the INTERGROWTH 21st project, a large, multicenter project involving neonatology and pediatrics across multiple countries in an effort to elucidate fetal, newborn, and preterm growth. Similarly, research regarding the most accurate determination of length has been underway. Wood et al. (2013) highlighted the importance of accurate measurements in term neonates by standard clinical practice (tape and nonstandardized length board) compared to an infantometer. Researchers found low positive predictive values when standard clinical practice measurements were utilized. Cheikh et al. (2016) assessed the precision of measuring crown to heel length when using an infantometer in an effort to determine how best to the tool. Accurate assessment of length to detect growth trends has led to a rise in quality improvement projects. One recent study by Paveaue et al. (2018) included preterm infants <35 weeks with serial length measurements at birth and the first week utilizing an infantometer.

Neonatal length is an important marker of nutrition. Errors in measurements can potentially impact treatment decisions. Admitting providers (resident/nurse practitioners) routinely utilize tape measurements for admission length, however recent research has suggested that length boards (infantometers) yield more accurate results. Over the course of a year, neonatal-perinatal medicine fellows implemented a QI project involving admission neonatal length measurements in the neonatal intensive care unit (NICU) utilizing two different instruments. Through a series of PDSA cycles, fellows began routine implementation of infantometer measurements alongside routine tape measurements for all admissions. Length measurements for residents, nurse practitioners, and fellows were compared utilizing both instruments using paired t-tests. The results of this study indicate that there is no significant difference between tape and infantometer along with a statistically significant correlation between measurements.

Demographics for each group show similar characteristics across the four groups in terms of gender, ethnicity, birth weight, and NEC. In National, the major participant centers involved were Texas Children’s, Texas Tech, University of Texas Southwestern, and Children’s Memorial Hermann.

In our NICU population, routine tape measurements appear equivalent to the measurements obtained from the gold standard infantometer and term infant tape. Thus, implementation with routine practice appears appropriate for accurate estimations of neonatal growth. Length measurements obtained by fellows appears to be less than with less experienced providers. If important that measurements are feasible for preterm infants especially those who are extremely critically ill and low birthweight and require limited manipulation. Providers are cautioned that those infants who are large for gestational age as there does appear to be a significant difference between measurements depending on the instrument.

Methods & Quality Tools

SMART AIM Statement

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PDSA Cycle 1

PDSA Cycle 2

Results

In our NICU population, routine tape measurements appear equivalent to the measurements obtained from the gold standard infantometer and term infant tape. Thus, implementation with routine practice appears appropriate for accurate estimations of neonatal growth. Length measurements obtained by fellows appears to be less than with less experienced providers. If important that measurements are feasible for preterm infants especially those who are extremely critically ill and low birthweight and require limited manipulation. Providers are cautioned that those infants who are large for gestational age as there does appear to be a significant difference between measurements depending on the instrument.

Conclusion