Use of Transcutaneous Bilirubinometers on Newborns.

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Use of Transcutaneous Bilirubinometers on Newborns

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Background Significance

- Transcutaneous bilirubinometers (TCBs) purchased for Mother Baby Unit (MBU) but not currently being used because there is no place to document results in EPIC.
- Staff requires reeducation on how to safely and accurately use TCBs.
- TCBs are a noninvasive method for testing jaundice risk in newborns which would:
  - Reduce cost per patient.
  - Save time (approximately 15 minutes to obtain serum bilirubin vs. 2 minutes to obtain transcutaneous bilirubin).
  - Prevent invasive procedure for the infant.

PICO Question

In mother baby nurses, does education on the use of TCBs compared to no education result in comparable bilirubin levels between serum and transcutaneous testing.

Methods

- Nurses on MBU began using TCBs on newborns (greater than 24 hours old, and excluding newborns on phototherapy).
- Documented transcutaneous and serum bilirubin results on a spreadsheet in the nursery.
- Transcutaneous and serum bilirubin levels were tested at the same time.
- Nurses educated on use of TCBs via learning module made from bilirubinometer instruction manual.
- After education, MBU nurses continued to use TCBs and documented results.
- Bilitool.com was used to calculate the risk zone (low risk, low-intermediate risk, high intermediate risk, and high risk) in which each serum and transcutaneous level fell.
- Compared accuracy (risk zones) of transcutaneous and serum bilirubin levels from before and after education.

Outcomes

- Before education on the use of TCBs:
  - 15 results were calculated to be in the same risk zone category.
  - 14 results were calculated to be in different risk zone categories.
- After education on the use of TCBs:
  - 23 results were calculated to be in the same risk zone category.
  - 6 results were calculated to be in different risk zone categories.

Evidence

- “Neonatal jaundice is a common physiological adaptation during the first week of postnatal life. Although the majority of infants have a mild clinical course without neurological morbidity, permanent neurological sequelae may occur with severe hyperbilirubinemia.” (Kitsommart., et al, 2016)
- “The use of the transcutaneous device is a lower cost screening solution for assessing the risk of hyperbilirubinemia in neonates than blood sampling methods.” (McKenzie & Palmer, 2010)
- “This study has determined that the true cost of a transcutaneous measurement with BiliChek’s calibration tip and the labor cost involved to complete a transcutaneous measurement is lower in cost compared to the supplies and labor cost required for a heel stick.” (McKenzie & Palmer, 2010)

Conclusion

- Educating MBU nurses on the use of the transcutaneous bilirubinometers resulted in more comparable bilirubin levels between serum and transcutaneous testing.
- To improve future research:
  - Hold an in-service to educate nurses on how to correctly use bilirubinometer.
  - Use a larger sample size.
  - Collect data for a longer time period.

REFERENCES


