Development and Implementation of a Standardized Newborn Bilirubin Protocol for Primary Care Clinics
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Introduction of Problem

Two thirds of newborns will appear clinically jaundiced during their first weeks of life. Despite the majority of these newborns experiencing transient physiologic jaundice, benign in nature, some newborns are and will become critically ill.\textsuperscript{1} Due to the prevalence of early discharge from the hospitals post-delivery, there is a re-emergence of newborns having acute bilirubin encephalopathy, an early phase of central nervous system (CNS) damage caused by hyperbilirubinemia that can be reversed with proper treatment, and kernicterus, the chronic form of bilirubin encephalopathy with irreversible damage to the CNS.\textsuperscript{1-3} The purpose of this project was to decrease the risk of high bilirubin levels in newborns that could become detrimental without proper follow-up by creating and implementing an evidence-based bilirubin protocol for high-risk newborns of 35 or more weeks gestation.

Literature Review

Early identification of hyperbilirubinemia and initiating prompt phototherapy, the primary treatment for hyperbilirubinemia, is key to preventing CNS damage caused by toxic levels of bilirubin.\textsuperscript{1,4,5} Hyperbilirubinemia can usually be managed in the outpatient setting by a primary care provider, however, without a proper screening protocol, newborns may end up readmitted to the hospital and/or have permanent sequelae.\textsuperscript{6,7} There are guidelines for the management of hyperbilirubinemia.\textsuperscript{2} To prevent the occurrence of central nervous system damage caused by excessively high bilirubin levels, education of health care staff has been shown to be significant to help address and treat newborns at risk.\textsuperscript{1}

Methodology

To develop and implement a hyperbilirubinemia protocol for primary care use required multiple actions. A standard protocol was developed within a primary care clinic including an algorithm, documentation tools, and standing orders. An algorithm based on the American Academy of Pediatrics (AAP) guideline was created to assist in triaging and managing newborns with hyperbilirubinemia. An intake form was created for nursing and other health care professionals to complete during the first contact with a high-risk newborn and use for subsequent follow-up encounters, including important health history information. Having a standard intake and follow-up form allows for consistency in assessment, documentation and clinical decision-making to make correct treatment choices. Standing orders were developed and approved so nurses can follow the protocol for laboratory orders, follow-up appointments, weight checks, etc. This saves provider time and allows newborns to receive timelier follow-up. A nursing in-service was developed and presented on newborn hyperbilirubinemia and implementation of the bilirubin protocol. A questionnaire was completed by 14 pediatric primary care nurses before and after the in-service to measure knowledge. In addition, a parent handout was developed that can be used by providers and nursing staff.
Evaluation

Provider consensus on the bilirubin protocol was obtained prior to the nursing in-service. On the 32-question test, nursing scores improved from 52.8% correct at baseline to 95.3% after the in-service. This resulted in a 43% improvement in pediatric nursing knowledge of newborn hyperbilirubinemia and management. Education can improve nursing assessment, nursing triage, family education, nursing confidence and autonomy, clinic efficiency, and ultimately patient outcomes. A limitation of this project is that long-term follow-up data has not been collected; however, there is evidence in the literature from the AAP.

Impact on Practice

In general, many newborns with hyperbilirubinemia do not receive proper follow-up, which places them at risk for preventable kernicterus and bilirubin encephalopathy as well as unnecessary emergency room visits and hospital readmissions. Prior to this project, nursing staff did not know how to appropriately and effectively triage newborns with hyperbilirubinemia so it was left to individual providers who did not have a standard protocol in this practice. This project resulted in a standardized bilirubin protocol for newborns of 35 or more weeks gestation which helps to ensure proper follow-up to decrease the risk of CNS damage and developmental delays in this population. The protocol is applicable to similar pediatric primary care practices and helps to demonstrate the impact of doctors of nursing practice.

Conclusion

Studies have shown that clinical practice guidelines, as well as education and communication between staff members involved in the care and follow-up of high-risk newborns with hyperbilirubinemia improves the odds for recovery for this group of patients.\(^1\) With the implementation of the standardized bilirubin protocol in this primary care clinic, appropriate follow-up and treatment of affected newborns should improve. Increased knowledge, confidence, and consistency in dealing with high-risk newborns are now apparent within this practice.

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References


