Rapid Response Report: Summary of Abstracts

Title: Transcutaneous Bilirubin Measurements in Newborns: Clinical and Cost-Effectiveness, and Guidelines

Date: 09 December 2013

Research Questions

1. What is the clinical effectiveness and diagnostic accuracy of transcutaneous bilirubin measurements in well newborns?
2. What is the cost-effectiveness of transcutaneous bilirubin measurements in well newborns compared with serum bilirubin measurements?
3. What are the evidence-based guidelines regarding transcutaneous bilirubin measurements in well newborns?

Key Message

One health technology assessment, two systematic reviews, one economic evaluation, and three evidence-based guidelines were identified regarding transcutaneous bilirubin measurements in well newborns.

Methods

A limited literature search was conducted on key resources including OVID’s Medline, PubMed, The Cochrane Library (November 2013), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. No methodological filters were applied. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2008 and Nov 26, 2013. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

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RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, economic evaluations, and evidence-based guidelines.

One health technology assessment, two systematic reviews, one economic evaluation, and three evidence-based guidelines were identified, regarding transcutaneous bilirubin (TcB) measurements in well newborns. Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

A 2013 health technology assessment\(^1\) concluded that TcB was a safe screening tool for the detection of hyperbilirubinemia, but could not be considered as a replacement for serum bilirubin determinations when a bilirubin result near the upper threshold of normal was detected. The report also stated that, although using TcB measurements resulted in a reduction of health care resources, it was uncertain that it could be considered to be a more cost-effective procedure than visual inspection and clinical history combined with serum bilirubin testing.

One systematic review\(^2\) focused on pre-term infants, but the abstract did not specify if these were well infants or infants requiring intensive care nursing. It concluded that TcB devices were reliable in estimating bilirubin levels and could help to reduce blood sampling. Another systematic review\(^3\) stated that the included trials on TcB testing were of low quality, with those studies demonstrating that TcB measurements were generally reliable at predicting which infants did not require phototherapy.

An economic evaluation based in Australia\(^4\) found that incorporating a new protocol that included using a TcB device significantly reduced costs compared with serum bilirubin assessments.

Three evidence-based guidelines\(^5-7\) address the use of TcB devices. The Canadian Paediatric Society guideline\(^5\) recommends that either serum bilirubin or TcB measurements can be used for infants; however they state that the TcB measurements are not as accurate at higher bilirubin levels and results should subsequently be confirmed using serum measurement when levels are near the upper threshold. The guideline from the Association of Women’s Health, Obstetric and Neonatal Nurses\(^6\) recommends a bilirubin level be obtained from infants prior to discharge using either TcB or serum measurements. The NICE guidance\(^7\) on neonatal jaundice recommends TcB for infants more than 24 hours old, with a gestational age of 35 weeks or more, and specifies that the bilirubin level should be checked by serum bilirubin if the TcB result is greater than 250 micromol/litre.
REFERENCES SUMMARIZED

Health Technology Assessments


Systematic Reviews and Meta-analyses


Randomized Controlled Trials
No literature identified.

Economic Evaluations


Guidelines and Recommendations


APPENDIX – FURTHER INFORMATION:

Resource Utilization Studies


Clinical Practice Guidelines – Methodology uncertain


Review Articles
