



Jaundice Screening Research Study Tool

Lübeck, April 17



How the tool works

This tool will continue to grow and change with new material. We hope you find it to be helpful. We have compiled studies that are referenced in multiple PowerPoints and webinars into one template to make it easier to find the reference you are looking for.

The next slide is the table of contents where we have identified major topics within jaundice management then grouped the research studies into these categories.

The numbers next to each category are hyperlinked to bring you directly to the article slide. For example, there are 6 studies within the tool that talk about the first category "Accuracy". The "back" hyperlink on the study slide will take you back to the table of contents.

Each study slide includes short information on the research conducted: Objective, result, and conclusions plus a link to read more or purchase the full study.



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Categories

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5	Implementation	1	2	3								
6	Reducing readmission	1										
7	Multi-racial population	1	2	3	4	5	6					
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9	Reducing blood tests	1	2	3	4							
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Impact of a transcutaneous bilirubinometry program on resource utilization and severe hyperbilirubinemia

Back

Stephen Wainer, Seema M. Parmar, Donna Allegro, Yacov Rabi, and Martha E. Lyon

Pediatrics 2012;129;77;
originally published online
December 19, 2011

<http://pediatrics.aappublications.org/content/129/1/77.full.pdf>

Objective: Assess impact of programmatic and coordinated use of TcB on the incidence of severe neonatal hyperbilirubinemia and measures of laboratory, hospital, and nursing resource utilization

Result: TcB implementation was associated with reductions in the overall incidence of total serum bilirubin draws and overall phototherapy rate, a reduced age at readmission for phototherapy, and duration of phototherapy readmission

Conclusion: Integration of routine hospital and community TcB screening within a comprehensive public health nurse newborn follow-up program is associated with **significant improvements in resource utilization and patient safety**

Measuring transcutaneous bilirubin: A comparative analysis of three devices on a multiracial population

[Back](#)

Francesco Raimondi*, Silvia Lama, Francesca Landolfo, Maria Sellitto, Angela Carla Borrelli, Rosalba Maffucci, Paola Milite, and Letizia Capasso

BMC Pediatrics 2012, 12:70
doi:10.1186/1471-2431-12-70

<http://www.biomedcentral.com/1471-2431/12/70>

Objective: Compare the performance of three most widespread transcutaneous bilirubinometers on a multiracial population of term and late pre-term neonates

Result: In the total study population correlation analysis using Pearson coefficients showed **good results for Bilicheck** ($r = 0.86$) **and JM-103** ($r = 0.85$) **but poor for BiliMed** ($r = 0.70$)

Conclusion: Bilicheck and JM-103, but not BiliMed, are **equally reliable screening tools** for hyperbilirubinemia in our multiracial neonatal population

Transcutaneous bilirubin measurement: Comparison of Respironics BiliCheck and JM-103 in a normal newborn population

Back

Romagnoli C, Zecca E,
Catenazzi P, Barone G, Zuppa
AA

Clin Biochem. 2012
Jun;45(9):659-62. doi:
10.1016/j.clinbiochem.2012.03.0
14. Epub 2012 Mar 19

<http://www.sciencedirect.com/science/article/pii/S0009912012001427>

Objective: Compare the accuracy of **BiliCheck™** (Respironics, Marietta, GA) and Konica-Minolta Air Shield **JM-103** (Drager Medical Inc, Telford, PA) to evaluate total serum bilirubin (TSB)

Result: Linear regression analysis showed a good correlation between BiliCheck™ and TSB ($r = 0.8212$) as well as between JM-103 and TSB ($r = 0.8686$). **BiliCheck shows a tendency to underestimate TSB.** The mean difference in TSB–TcB was $- 1.4$ mg/dL for BC ($- 4.7/+ 1.8$ mg/dL) and 0.3 mg/dL for JM-103 ($- 2.6/+ 3.2$ mg/dL). ROC analysis for TSB ≥ 12 mg/dL showed area under the curve for BiliCheck™ significantly lower than those for JM-103 ($p < 0.0001$). **JM-103 resulted less time expensive than BiliCheck**

Conclusion: In spite of similar diagnostic accuracy JM-103 could be preferred for some practical advantages, but its suitability in performing universal screening for severe hyperbilirubinemia deserves further investigations

Evaluation of transcutaneous Bilirubinometry in preterm neonates

Back

Schmidt ET, Wheeler CA,
Jackson GL, Engle WD

J Perinatol. 2009 Aug;29(8):564-9. doi: 10.1038/jp.2009.38. Epub 2009 Mar 26

<https://www.ncbi.nlm.nih.gov/pubmed/19322191>

Objective: Compare the accuracy of BiliCheck™ (Respironics, Marietta, GA) and Konica-Minolta Air Shield JM-103 (Dräger Medical Inc, Telford, PA) to evaluate total serum bilirubin (TSB)

Result: Linear regression analysis showed a good correlation between BiliCheck™ and TSB ($r = 0.8212$) as well as between JM-103 and TSB ($r = 0.8686$). **BiliCheck shows a tendency to underestimate TSB.** The mean difference in TSB–TcB was $- 1.4$ mg/dL for BC ($- 4.7/+ 1.8$ mg/dL) and 0.3 mg/dL for JM-103 ($- 2.6/+ 3.2$ mg/dL). ROC analysis for TSB ≥ 12 mg/dL showed area under the curve for BiliCheck™ significantly lower than those for JM-103 ($p < 0.0001$). **JM-103 resulted less time expensive than BiliCheck**

Conclusion: In spite of similar diagnostic accuracy JM-103 could be preferred for some practical advantages, but its suitability in performing universal screening for severe hyperbilirubinemia deserves further investigations

Back

Maisels MJ, Ostrea EM Jr, Touch S, Clune SE, Cepeda E, Kring E, Gracey K, Jackson C, Talbot D, Huang R

Pediatrics Vol. 113 No. 6 June 1, 2004 , pp. 1628 -1635

<http://pediatrics.aappublications.org/content/113/6/1628.abstract>

Objective: Evaluate the Minolta/Hill-Rom Air-Shields Transcutaneous Jaundice Meter model **JM-103**

Result: There was a close correlation between TSB and TcB values in all of the population groups: **white** (n = 503, r =.949); **black** (n = 253, r =.822); and **East Asian, Indian/Pakistani, and Hispanic** (n = 93, r =.926)

Conclusion: TcB measurements using the JM-103 jaundice meter correlate very closely with TSB levels over the range of TSB encountered in this study. The correlation in black infants is not as close as in other groups, but because the tendency in blacks is for the JM-103 to overestimate serum bilirubin levels, dangerous clinical errors are unlikely to occur. **The measurement technique is rapid and simple, and it is easy to perform repeated measurements over time, thus reducing the likelihood of error**

Transcutaneous bilirubin levels in an outpatient and office population

Back

M J Maisels, W D Engle,
S Wainer, G L Jackson,
S McManus, and F Artinian

Journal of Perinatology (2011)
31, 621–624; doi:10.1038/
jp.2011.5; published online 3
February 2011

[http://www.nature.com/jp/journal/
v31/n9/abs/jp20115a.html](http://www.nature.com/jp/journal/v31/n9/abs/jp20115a.html)

Objective: The use of TcB measurements has been studied extensively in the newborn population, but there have been few studies in outpatient populations and none from the offices of practicing pediatricians

Result: Good correlation between the TcB and TSB measurements ($r=0.78$, $P=0.0$). 59% of TSB's were ≥ 15 mg dl⁻¹ and, although the number of false-negative readings increased when the TSB values exceeded 15 mg dl⁻¹, it was nevertheless possible to use TcB measurements to accurately predict the risk of TSB levels ≥ 15 mg dl⁻¹

Conclusion: In outpatient settings, a TcB measurement with the JM-103 provides a **reliable screening method** for the identification of hyperbilirubinemia even when the TSB level exceeds 15 mg dl⁻¹. Using the maximum of three independent measurements reduces the number of false negatives, but increases the number of false positives. **The use of TcB measurements in an outpatient practice should be a valuable tool for the practitioner**

Cost-Effectiveness of Transcutaneous Bilirubinometry Program for Screening and Diagnosis of Neonatal Hyperbilirubinemia in Alberta

Back

Department of Health
Technology Assessment and
Innovation, Alberta Health
Services

January 2013

<http://www.albertahealthservices.ca/Researchers/if-res-htai-cea-tcb.pdf>

Objectives: Cost-effectiveness of TcB+TSB strategy versus visual assessment+TSB strategy for screening and diagnosis of neonatal hyperbilirubinemia

Results: TcB strategy for screening and diagnosis of neonatal hyperbilirubinemia comes with an incremental cost of USD 59.43 and USD 8.25 per one additional correctly diagnosed infant in the hospital and community settings, respectively

Conclusions: Results of 1-way sensitivity analysis also showed that ICER for TcB strategy may increase or decrease due to a higher cost of TcB and patient's travel cost, respectively. This indicates that extending the Calgary TcB program to rural settings may associated with an increased/decreased ICER depends on the difference in cost of TcB reading in rural and urban as well as the difference in patient's travel cost

Impact of skin tone on the performance of a transcutaneous jaundice meter

Back

Wainer S, Rabi Y, Parmar SM, Allegro D, Lyon M.

Acta Paediatr. 2009
Dec;98(12):1909-15

<http://www.ncbi.nlm.nih.gov/pubmed/19764923>
<http://onlinelibrary.wiley.com/doi/10.1111/j.1651-2227.2009.01497.x/abstract>

Objective: Evaluate the performance of the Konica Minolta/Air-Shields **JM-103** jaundice meter on the basis of **infant skin tone** during the early neonatal period

Result: Multivariate linear regression analysis showed a significant impact on serum and transcutaneous bilirubin agreement by skin tone. Highest precision and lowest bias were observed for medium skin toned infants. Greater disagreement between serum and transcutaneous measurements was noted at serum bilirubin concentrations > 200 micromol/L. Insufficient numbers of dark skin toned infants were enrolled to evaluate fully the performance of the jaundice meter for this group

Conclusion: The JM-103 jaundice meter **displayed good correlation with serum bilirubin concentrations in light and medium skin tone infants**, although it showed a tendency to under-read in the lighter skin tone group and to over-read in the darker skin tone group. **The device shows excellent performance characteristics for use as a screening device**

“Halving the heel pricks”: Evaluation of a neonatal jaundice protocol incorporating the use of a transcutaneous bilirubinometer

Back

Hartshorn D, Buckmaster A.

J Paediatr Child Health. 2010
Oct;46(10):595-9

<http://www.ncbi.nlm.nih.gov/pubmed/20722994>

Objective: Assess the impact of implementing a new jaundice protocol incorporating the use of the Konica Minolta/Air Shields JM 103 Jaundice Meter in the setting of an Australian **post-natal ward**

Result: 426 of the 2197 live births in T1 required one or more TSBRs compared with 119 of the 1169 live births in T2. This represents an odds ratio of 0.47 (95% confidence interval 0.38-0.58) for infants in T2 having ≥ 1 TSBR compared with T1. There was no difference between the groups for rates of phototherapy (3.8% vs. 3.0%; $P= 0.2$) nor any difference between the groups for peak SBR during phototherapy (301.9 $\mu\text{mol/L}$ (standard deviation, SD 58) for T1 versus 303.2 $\mu\text{mol/L}$ (SD 54) for T2; $P= 0.45$). **The estimated cost saving per year is USD 6966.00**

Conclusion: TcBR measurement in conjunction with our protocol **significantly reduces painful procedures and costs without increasing the risk of delaying treatment with phototherapy**

Back

Sanpavat S, Nuchprayoon I.

J Med Assoc Thai. 2007
Sep;90(9):1803-8.

<http://www.ncbi.nlm.nih.gov/pubmed/17957922>

Objectives: 1) To evaluate the accuracy TcB measurement compared to TSB in the pre-term infants and 2) To establish cut-off values of TcB that indicated need for TSB

Method: Premature infants whose birth weight was more than 1,000 grams and gestational age less than 36 weeks had paired T(C)B-TSB assessment when jaundice was observed

Result: Two hundred and forty-nine paired T(CB)-TSB measurements from 196 premature neonates were obtained. **The correlation coefficient between TcB and TSB was significant (r 0.79, $p < 0.0001$).** T(C)B had a tendency to overestimate TSB with the mean difference of TSB- T(C)B = -0.3 +/- 1.5 mg/dL and 95% confidence interval of the mean -0.1 to -0.5 mg/dL. **Screening with T(C)B would eliminate painful procedure of blood taking by 40%**

Conclusion: Noninvasive TcB assessment demonstrated significant accuracy when compared to TSB. TcB can be adopted as a screening test to identify the need for blood sampling of serum bilirubin in premature infants

Evaluation of a new transcutaneous bilirubinometer in Chinese newborns

[Back](#)

Ho HT1, Ng TK, Tsui KC, Lo YC.

Arch Dis Child Fetal Neonatal
Ed. 2006 Nov;91(6):F434-8.
Epub 2006 Jul 18.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2672758/>

Objectives: To evaluate the use of a new transcutaneous bilirubinometer (**JM-103 Minolta Airshields**) for detection of hyperbilirubinaemia in term or near-term healthy **Chinese newborns**.

Result: 997 paired TcB and TSB measurements were evaluated **in term or near-term newborns. TcB was significantly correlated with TSB**, with a correlation coefficient of 0.83 ($p < 0.001$).

Conclusion: An accurate point-of-care bilirubin analyser facilitates bilirubin screening and avoids unnecessary blood tests. Although using the transcutaneous bilirubinometer JM-103 might result in a significant difference between TcB and TSB measured in Chinese newborns, combining the use of TcB and the 75th centile in Bhutani's nomogram **as the cut-off level can identify all cases of significant hyperbilirubinaemia**.

Back

Sanpavat , Nuchprayoon I.

J Med Assoc Thai. 2007
Sep;90(9):1803-8.

<https://www.ncbi.nlm.nih.gov/pubmed/17957922>

Objective: To evaluate the accuracy of transcutaneous bilirubin (T(C)B) measurement compared to total serum bilirubin level (TSB) in the pre-term infants and 2) To establish cut-off values of T(C)B that indicated need for TSB.

Result: Of all the variables of birth weight, gestational age, and postnatal age, **only postnatal age significantly influenced the correlation of T(C)B-TSB**. In the early postnatal age of 1-4 days, the number of T(C)B reading overestimated TSB more than underestimated. However, at > or = 5 days of age, the number of underestimation was more than those of overestimation. **Screening with T(C)B would eliminate painful procedure of blood taking by 40%.**

Conclusion: Noninvasive T(C)B assessment demonstrated significant accuracy when compared to TSB. T(C)B can be adopted as a screening test to identify the need for blood sampling of serum bilirubin in premature infants.

Hyperbilirubinemia and transcutaneous bilirubinometry.

[Back](#)

el-Beshbishi, Shattuck,
Mohammad, Petersen

Clin Chem 2009 Jul;55(7):1280-7. doi:
10.1373/clinchem.2008.121889.
Epub 2009 May 14.

<http://clinchem.aaccjnls.org/content/55/7/1280.long>

Summary:

Neonatal jaundice or **hyperbilirubinemia is a common occurrence in newborns**. Although most cases of neonatal jaundice have a benign course, **severe hyperbilirubinemia can lead to kernicterus**, which is preventable if the hyperbilirubinemia is identified early and treated appropriately. **TcB measurement is a viable option in screening neonates to determine if they are at risk for clinically significant hyperbilirubinemia**. Total serum bilirubin should be measured by a clinical laboratory if a newborn is shown to be at higher risk for clinically significant hyperbilirubinemia. In addition, external quality assessment to identify biases and operator training issues should be part of any TcB monitoring program.

Evaluation of a point-of-care transcutaneous bilirubinometer in Chinese neonates at an accident and emergency department.

Back

Lam TS1, Tsui KL, Kam CW.

Hong Kong Med J. 2008
Oct;14(5):356-60.

<http://www.hkmj.org/abstracts/v14n5/356.htm>

Objectives: To evaluate the **use of a point-of-care transcutaneous bilirubinometer, JM-103 Minolta**, for estimation of the serum bilirubin level in the management of neonatal jaundice **in term or near-term Chinese neonates.**

Result: The mean age of the 113 neonates at the time of data collection was 5 days (range, 3-7 days). **Transcutaneous bilirubin showed a good correlation with total serum bilirubin;** the highest correlation coefficient was 0.83 ($P < 0.001$).

Conclusion: The new point-of-care transcutaneous bilirubinometer, JM-103 Minolta, demonstrated good correlation with the serum bilirubin measurement in Chinese neonates aged 3 to 7 days. **Thus, it is a useful screening device to facilitate quick decisions on disposal of jaundiced neonates presenting to accident and emergency departments or in out-patient clinic settings**

Back

Stillova , Matasova K, Zibolen M,
Stilla J, Kolarovszka H.

Indian Pediatr. 2009
May;46(5):405-8. Epub 2009
Jan 1.

[http://www.indianpediatrics.net/
may2009/405.pdf](http://www.indianpediatrics.net/may2009/405.pdf)

Objectives: Evaluate the accuracy of transcutaneous bilirubinometry in preterm newborns less than 32 weeks of gestation. Close correlation ($R=0.933$) existed between total serum bilirubin and transcutaneous bilirubin values measured over sternum

Result: The results of studies regarding older types of bilirubinometers (**Minolta JM-101TM, Minolta JM-102TM, BiliCheckTM**) in premature infants are controversial(9-13), **but data suggest that transcutaneous bilirubinometry has the potential to reduce the number of blood samples significantly.**

Conclusion: We conclude that transcutaneous measurements using **Minolta JM-103TM correlate closely with TSB levels in neonates of less than 32 gestational weeks over the presented range of TSB.**

Reliability of transcutaneous bilirubin devices in preterm infants: a systematic review.

[Back](#)

Nagar G, Vandermeer B, Campbell S, Kumar M.

Pediatrics. 2013 Nov;132(5):871-81. doi: 10.1542/peds.2013-1713. Epub 2013 Oct 14.

<http://pediatrics.aappublications.org/content/132/5/871.long>

Objectives: Transcutaneous bilirubin (TcB) devices are widely used for the estimation of serum bilirubin levels in term and near-term infants. **Our objective was to review the diagnostic accuracy of TcB devices in preterm infants**

Result: For the 2 commonly used TcB devices (**JM103 and BiliCheck**), the results were comparable at the forehead site, although the **JM103 device exhibited better correlation at the sternum; however, the JM-103 device exhibited better precision than the BiliCheck**

Conclusion: The **TcB devices reliably estimated bilirubin levels in preterm infants** and could be used in clinical practice to reduce blood sampling.

Back

Ramachandran A., Owen L.,
Morris R.

A jaundice community project.
Infant 2016; 12(4): 125-29.

http://www.infantgrapevine.co.uk/journal_article.html?RecordNumber=6892

Objectives: This article reports on the impact of introducing **the TcB to community midwives in Abertawe Bro Morgannwg University Health Board in south Wales.**

Result: With the new referral pathway, waiting times for an infant with neonatal jaundice dropped to an average time of 58 minutes. TcB testing was noted to have 100% specificity for predicting a requirement for phototherapy and the need for hospital admission.

Conclusion: The **TcB** is an **effective tool** for community midwives **to screen newborn infants for hyperbilirubinaemia in the first two weeks of life.** This article reports on the impact of introducing the TcB to community midwives in ABMUHB: hospital referrals were halved; **waiting times in PAUs were reduced to a quarter**; parents and staff reported high satisfaction levels with the device. The TcB enables **midwives to reassure parents quickly** and **reduces the cost** and inconvenience to families as care is delivered at home. By early detection, the use of a TcB was effective in limiting maximum serum bilirubin levels attained by the majority of infants who required treatment. Manufacturer-offered training and service packages will assist implementation.

Screening for Hyperbilirubinemia in Japanese Very Low Birthweight Infants Using Transcutaneous Bilirubinometry

Back

Daisuke Kurokawa, Hajime Nakamura, Tomoyuki Yokota, Sota Iwatani, Takeshi Morisawa, Yoshinori Katayama, Hitomi Sakai, Tomoaki Ioroi, Kazumoto Iijima, and Ichiro Morioka,

Submitted for publication Jun 15, 2015; last revision received Jul 21, 2015; accepted Aug 13, 2015.

<https://www.ncbi.nlm.nih.gov/pubmed/26410797>

Objective: To assess the accuracy of **transcutaneous bilirubin (TcB) measurements at 5 different body sites in Japanese very low birthweight (VLBW) infants** and to determine a **cut-off value of TcB** to detect total serum/plasma bilirubin (TB) levels ≥ 10 mg/dL (171 μ M).

Result: TcB significantly correlated with TB, but the coefficient of determination varied among the sites (forehead, sternum, upper back, lower abdomen, waist). At a TcB value ≥ 8 , **the sensitivity was 100% at the sternum and upper back**, 85% at the waist, 84% at the forehead, and 64% at the lower abdomen to detect TB ≥ 10 mg/dL.

Conclusion: In Japanese VLBW infants, the accuracy of TcB measurements varies according to body site. TcB ≥ 8 on the **sternum or upper back is more reliable** than that on the forehead, lower abdomen, or waist to detect TB levels ≥ 10 mg/dL.

Transcutaneous bilirubinometry with the Bilicheck in very premature newborns.

Back

Willems WA, van den Berg LM, de Wit H, Molendijk A

J Matern Fetal Neonatal Med. 2004 Oct;16(4):209-14.

<https://www.ncbi.nlm.nih.gov/pubmed/15590448>

Objective: To investigate the potential advantages of use of the **Bilicheck** in the very preterm population, **with special emphasis** on the effect of possible adverse skin conditions on the accuracy of the measurements. In addition we estimated the potential for safe reduction of the number of blood samples taken for serum bilirubin determinations by introduction of the Bilicheck into the neonatal intensive-care unit (NICU).

Result: Correlations between TcB and TSB values varied between 0.86 and 0.88 and all were statistically significant. Bland-Altman plots and statistical analysis showed that the agreement between TcB and TSB measurements was largest for the group with good skin conditions, as expected. The Bilicheck device had an acceptable level of intra-device imprecision (2.29 +/- 13.51 micromol/l).

Conclusion: The Bilicheck is a screening device with the potential to reliably indicate hyperbilirubinemia in very preterm infants. **Caution is required when skin measurements are performed in the presence of peripheral edema and/or a poor peripheral circulation.** Its application in the NICU environment has the potential to **reduce the number of blood samples by 40%.**

Evaluation of transcutaneous bilirubinometry in preterm infants of gestational age 32-34 weeks.

Back

Stillova L, Matasova K, Mikitova T, Stilla J, Kolarovszka H, Zibolen M

Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub. 2007 Dec;151(2):267-71.

<https://www.ncbi.nlm.nih.gov/pubmed/18345262>

Objective: The aim of this prospective study was **to evaluate the accuracy of transcutaneous bilirubinometry** using the **Minolta Air-Shields JM-103 device** in preterm newborns of gestational age 32-34 weeks, and **to identify the most appropriate measurement site.**

Result: The study group consisted of 44 infants, including 6 very low birth weight (VLBW) neonates. **The correlations between transcutaneous and laboratory values were found to be significant and close.** Minimal differences were observed when measured over sternum. The measurements over forehead had a tendency to underestimate TSB levels

Conclusion: Noninvasive measurement by Minolta JM-103 demonstrated significant accuracy. The authors **recommend measurements over sternum or abdomen** in premature infants born within 32-34 gestational weeks as a reliable and accurate neonatal hyperbilirubinemia screening test. Transcutaneous bilirubinometry has the potential **to reduce the number of blood samplings, thus reducing neonatal pain and discomfort, parental distress and medical care cost.**

Transcutaneous bilirubin measurement at the time of hospital discharge in a multiethnic newborn population.

Back

Campbell DM, Danayan KC, McGovern V, Cheema S, Stade B, Sgro M

Paediatr Child Health. 2011 Mar;16(3):141-5.

<https://www.ncbi.nlm.nih.gov/pubmed/22379376>

Objective: Our study compared the accuracy of the TSB measurement with the TCB measurement using a **BiliChek meter** (Respironics Inc, USA) in an ethnically diverse population of term and near-term infants, when used by various health care personnel **just before discharge**. This represents more realistic use in a health care setting at a time in which follow-up or treatment decisions are being made with regard to jaundice.

Result: A total of 430 infants were enrolled. Correlation between the values was high. Sensitivity and specificity analysis of TCB values allowed estimation of clinically important TSB levels.

Conclusion: The TCB correlated, but was imprecise in predicting TSB. TCB values can be used at the time of discharge to safely plan care for jaundiced infants if the limits of agreement are considered and clinical judgment is maintained.

Accuracy of transcutaneous bilirubin measured by the BiliCare device in late preterm and term neonates.

Back

Kitsommart R, Yangthara B,
Wutthigate P, Paes B

J Matern Fetal Neonatal Med.
2016 Nov;29(22):3641-5. doi:
10.3109/14767058.2016.114014
1. Epub 2016 Feb 10

<https://www.ncbi.nlm.nih.gov/pubmed/?term=Accuracy+of+transcutaneous+bilirubin+measured+by+the+BiliCare+device+in+late+preterm+and+term+neonates>

Objective: The objective of this study is to explore the accuracy and performance of a new transcutaneous bilirubinometer (TCB) for the screening of jaundice in late preterm and term infants.

Methods: A cross-sectional study was conducted. TCB measurements were performed **using the BiliCare(TM) bilirubinometer. Paired TCB and serum bilirubin (SB) measurements were analysed.**

Result: One hundred and fourteen paired samples were collected from 93 healthy late preterm and term infants. Bilirubin measurements were done at median (interquartile range) of 50.5 (34, 72) hours. The mean (SD) difference between the TCB and SB was 1.87 (1.98) mg/dL. SB level of at least 13.0 mg/dL, a TCB cut-off at 12 or 13 mg/dL had a sensitivity of 92.9% and NPV of 98.7%.

Conclusion: The BiliCare(TM) demonstrated good performance with positive bias for the screening of jaundice in healthy late preterm or term infants. However, if adopted, proper cut-off levels should be chosen because of sub-optimal device precision.

Evaluation of MBJ20® Transcutaneous Bilirubinometer in the Assessment of Severity of Neonatal Jaundice

Back

Chinelo Madubuike , Ebele F. Ugochukwu , Obumneme Ezeanosike , John Chukwuka and Henry Okpara ,

Received: 11 July 2016;
Accepted: 12 October 2016;
Published: 19 October 2016

<http://www.mdpi.com/2409-515X/2/4/8>

Summary: The objective of this study was to **evaluate the MBJ20® transcutaneous bilirubinometer** by Beijing M&B Electronic Instrument Co. Ltd. (Beijing, China) in the assessment of severity of neonatal jaundice. Two hundred and twenty-two paired samples from 88 newborns aged between 28 and 44 weeks of gestation at **Nnamdi Azikiwe University Teaching Hospital**, Nnewi Anambra State, were analyzed. These infants had total serum bilirubin (TSB) levels measured on clinical indication, and transcutaneous bilirubin (TcB) levels were obtained at the **forehead and sternum** within 10 min of the TSB levels. There was a close correlation between TSB and TcBF and between TSB and TcBS for all the paired readings.

Conclusion: Measurements of TcB by the MBJ20® transcutaneous bilirubinometer provide a good estimate of the TSB level and so can serve as a screening tool and not a substitute for TSB. Although TcBS yields values with a slightly better correlation to the TSB, it is advocated that estimation of TcB should be done at the sternum. **The use of MBJ20® will help to avoid the potential errors associated with the clinical estimation of bilirubin levels, but it should not be considered in isolation.**

Jaundice Screening Guidelines

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USA:

- <http://pediatrics.aappublications.org/content/114/1/297.full>

UK:

- <http://guidance.nice.org.uk/CG98/NICEGuidance>

Israel:

- http://www.medscape.com/viewarticle/577851_4

Germany:

- http://www.awmf.org/uploads/tx_szleitlinien/024-007l_S2k_Hyperbilirubinaemie_des_Neugeborenen.pdf

Canada:

- <http://www.cps.ca/documents/position/hyperbilirubinemia-newborn>

Australia:

- http://www.health.qld.gov.au/qcg/documents/g_jaundice5-1.pdf

Schweiz:

- http://www.neonet.ch/assets/pdf/Paediatria_d.pdf , <http://www.neonet.ch/assets/doc/bilirubin-d.pdf>

Thank you for
your attention.

