[1523.602] Bilistick: An Accurate Low Cost Point-Of-Care Option for Total Bilirubin Determination in LMICs

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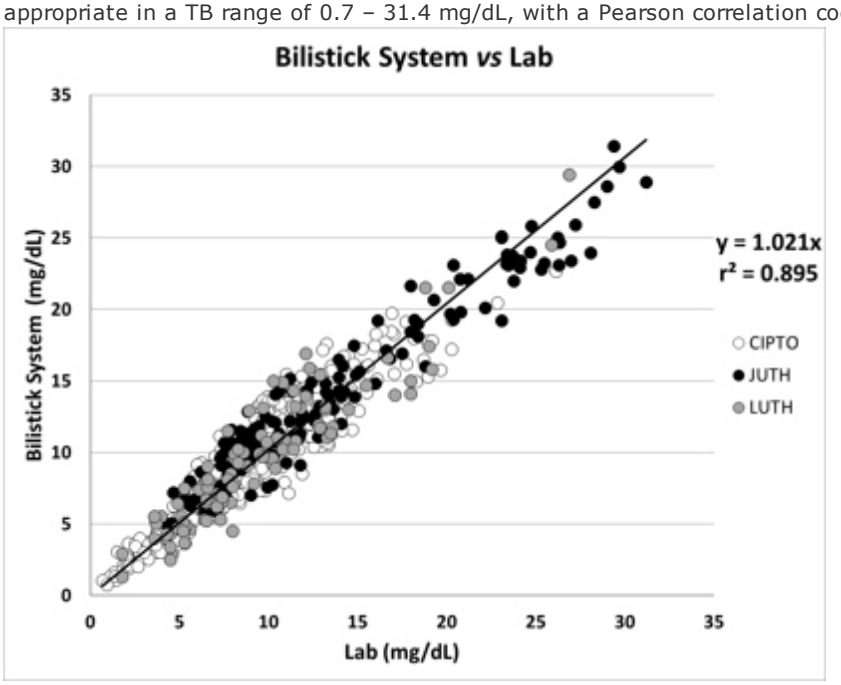
BACKGROUND: Acute bilirubin encephalopathy (ABE) continues to be a problem in low-middle income countries (LMICs). A cost-effective method to screen neonates for total bilirubin (TB) will facilitate evaluation of jaundiced infant and triage neonates at risk of ABE/kernicterus.
OBJECTIVE: Evaluate the accuracy of Bilistick System (BS), a low cost POC system to measure TB in neonates.
DESIGN/METHODS: BS is a portable battery operated LED-based reflectance reader and test strips for TB determination, requiring 25µl of whole blood applied to a paper strip with a blood cell-plasma separator. TB is reported 100 sec after sample loading. The reader alerts the operator if there is significant hemolysis or incomplete strip filling leading to unreliable results. The accuracy of the BS was assessed in 703 samples obtained from infants in 3 teaching hospitals: CIPTO (Indonesia), Jos University (JUTH, Nigeria) and Lagos University (LUTH, Nigeria). TB was measured simultaneously by BS and hospital lab, and the correlation between the 2 values analyzed by the Pearson coefficient.
RESULTS: Mean hematocrits value of the samples analyzed was 40.5% [18.0-64.0]. The accuracy of TB measured by BS *vs* labs was appropriate in a TB range of 0.7 – 31.4 mg/dL, with a Pearson correlation coefficient r = 0.963 (r^2=0.895).



HOSPITAL	n	Method	TB conc. mg/dL (M±SD)	TB range mg/dL	Pearson's coeficient r
CIPTO	458	Lab	9.49 ±3.87	0.68-26.13	0.935
		Bilistick	9.92 ±3.96	0.74-22.68	
JUTH	149	Lab	13.79 ±6.74	4.16-31.20	0.982
		Bilistick	14.31 ±6.16	4.56-31.40	
LUTH	96	Lab	9.51 ±4.76	1.80-26.90	0.984
		Bilistick	9.73 ±4.90	1.30-29.40	
ALL	**703**	**Lab**	**10.41 ±5.05**	**0.68-31.20**	**0.963**
		Bilistick	**10.83 ±4.98**	**0.74-31.40**	

CONCLUSIONS: The study supports the use of BS for routine TB screening. It may facilitate early identification of newborns requiring phototherapy treatment thus contributing to substantial reduction of the prevalence of ABE/kernicterus in LMICs.

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Date/Time: Saturday, April 30, 2016 - 1:00 pm
Room: Exhibit Hall F - Baltimore Convention Center
Board: 602
Course Code: 1523