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Willow Goff

Michael Schwartz MD

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# Comparing Bilirubin Measurements of Sternum and Lower Abdomen: A Pilot Study for Using Transcutaneous Bilirubin Measurements During Phototherapy

Willow Goff, Michael D. Schwartz MD

Lehigh Valley Health Network, Allentown, Pennsylvania

## INTRODUCTION

- Transcutaneous bilirubin (TcB) measurements cannot be performed during after phototherapy treatment<sup>1</sup>
- Hyperbilirubinemia occurs in about 10% of full-term and 25% of preterm infants<sup>2</sup>
- Prior studies have investigated TcB measurements in nontraditional covered and exposed locations, but none have looked at the lower abdomen of infants not on phototherapy
- Assessment of the lower abdomen may lead to the possibility of using TcB during and after phototherapy, reducing the need for painful heel sticks

## OBJECTIVE

- Determine the relationship between transcutaneous bilirubin measurements of the standard sternal location and those taken from the lower abdomen, covered by the diaper

## METHODS

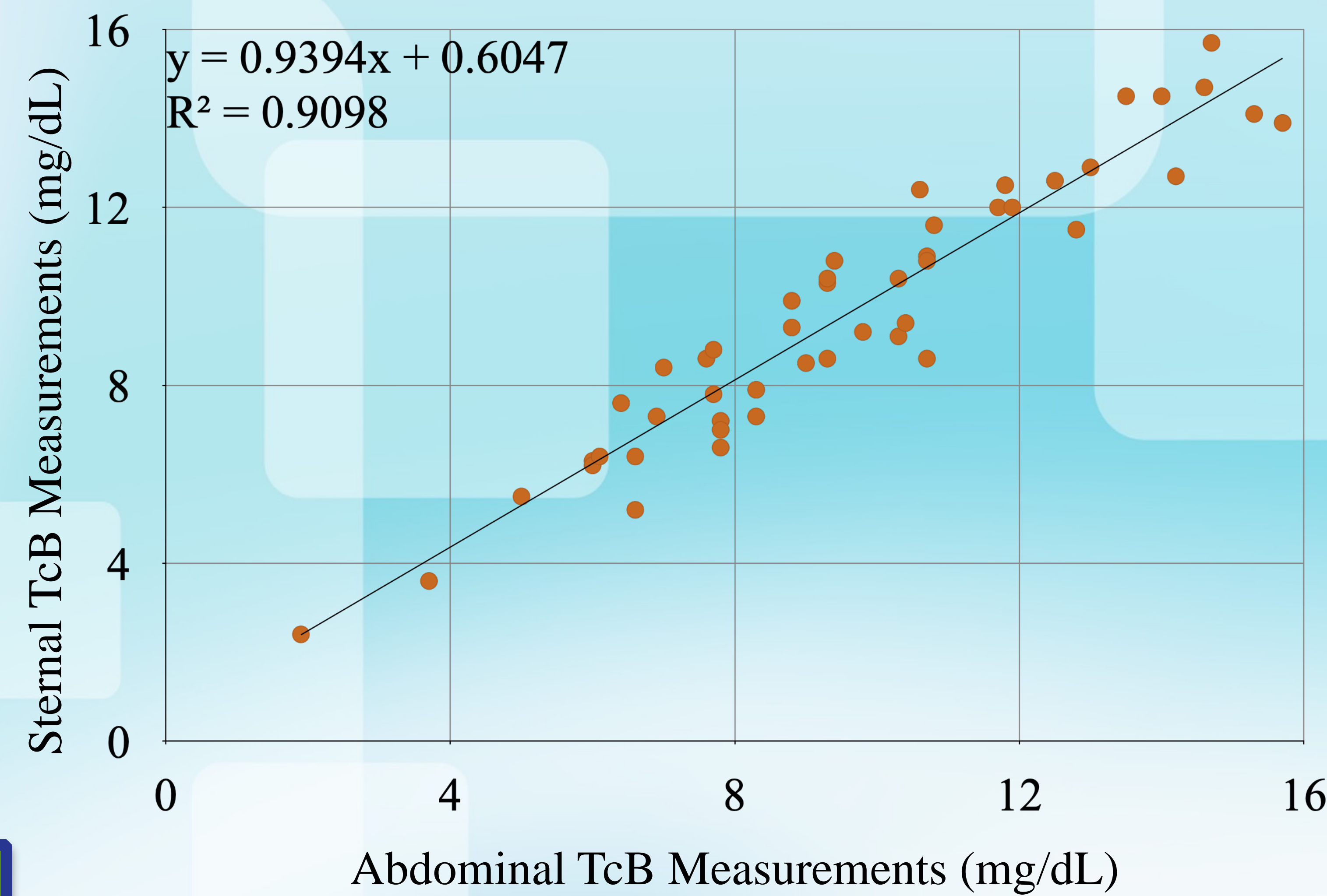
Clinical measurements taken in outpatient setting using JM-105

Measurements recorded on paper log without any patient or clinical information

Statistical analysis performed using linear regression calculator

## RESULTS

Figure 1: Sternal Measurements vs. Abdominal Measurements



- The slope (m) of the linear regression plot, 0.939, the high r value, 0.954, and the high R<sup>2</sup> value of about 0.910 combined with the small y-intercept shows that there is no significant difference in the bilirubin measurement at the two locations

Table 1: Linear Regression Information

Sample Size (n):	48
Slope (m)	0.969
Regression Equation:	$y = 0.939x + 0.604$
Correlation Coefficient (r):	0.954

- Standard deviation of absolute difference: 0.530
- Mean of absolute difference: 0.762

## CONCLUSIONS

- There is no significant difference between TcB measurements of the sternum compared with those of the lower abdomen, under the diaper
- TcB measurements of the sternum correlate positively to those taken on the lower abdomen with a correlation coefficient of 0.954
- The strong correlation coupled with the small standard deviation and mean indicate that the lower abdomen could be a useful location for TcB measurement

## FUTURE DIRECTIONS

- Further study is needed to assess whether TcB measurement in the diaper area correlates with serum bilirubin during and after phototherapy
- Future studies should be conducted to further confirm or refute our findings

### References:

1. Casnocha Lucanova L, Matasova K, Zibolen M, Krcho P. Accuracy of transcutaneous bilirubin measurement in newborns after phototherapy. *J Perinatol.* 2016 Oct;36(10):858-61. doi: 10.1038/jp.2016.91. Epub 2016 Jun 9. PubMed PMID: 27279078.
2. Costa-Posada U, Concheiro-Guisán A, Táboas-Ledo MF, González-Colmenero E, González-Durán ML, Suarez-Albo M, Duran Fernández-Feijoo C, Pumarada-Prieto M, Martínez-Reglero C, Fernández-Lorenzo JR. Accuracy of transcutaneous bilirubin on covered skin in preterm and term newborns receiving phototherapy using a JM-105 bilirubinometer. *J Perinatol.* 2020 Feb;40(2):226-231. doi: 10.1038/s41372-019-0557-9. Epub 2019 Nov 25. PubMed PMID: 31767979; PubMed Central PMCID: PMC6985020.

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