

Research determines feasibility of newborn screening

June 4 2013, by Darci Slaten



A newborn girl receives pulse oximetry screening with UA medical student Lucy Han, center; her mentor, Dr. Brent Barber, and Thelma Gonzales, patient care technician.

Research by UA medical student Lucy Han finds that implementing

recommended pulse oximetry screening guidelines is feasible at Tucson's elevation. A recent simple pulse oximetry test revealed a potentially life-threatening critical congenital heart defect in a newborn that was surgically repaired at The University of Arizona Medical Center-University Campus.

A study conducted by University of Arizona College of Medicine-Tucson student Lucy Han evaluated [pulse](#) oximetry readings of newborns at The University of Arizona Medical Center-University Campus and found low false-positive results at Tucson's elevation – establishing that implementing recommended pulse oximetry [screening guidelines](#) is feasible.

Pulse oximetry is a non-invasive, painless and inexpensive test conducted on newborns after 24 hours of life to measure the percentage of [oxygen saturation](#) in the blood. Low saturation levels indicate a possible congenital heart problem, which may result in [congestive heart failure](#) or even death.

Babies born with critical congenital heart disease, or CCHD, may not have signs of a heart problem until after they leave the hospital, typically within the first four weeks of life. This is why pulse oximetry is considered such an important and necessary screening: If detected early, CCHD can be diagnosed and treated, improving outcomes.

In 2011, recommendations for newborn pulse oximetry screening of CCHD were made by the U.S. Health and Human Services Secretary's Advisory Committee on Heritable Disorders in Newborns and Children, or SACHDNC, the American Academy of Pediatrics, the American College of Cardiology Foundation and the [American Heart Association](#).

The recommendations were based on research findings that had been conducted in regions at or just above sea level, causing concern that the

established protocols – if followed in areas of higher elevation – might result in high rates of false-positives, causing unnecessary stress on the health-care system from additional tests required to verify CCHD in newborns.

"Arizona is one of 13 states that have not yet adopted this screening as a mandate, with elevation and the potential of false positives being two of many issues the state needs to consider," said Dr. Scott Klewer, a professor in the UA department of pediatrics and a researcher with the Steele Children's Research Center.

"The oxygen concentration in the air is lower at higher elevations," said Klewer. "This has led to concerns that the recommended 'cut-off' levels for a positive pulse oximetry screen (

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