

Swedish heart test saves lives of newborns with heart defects

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A test, known as pulse oximetry screening, takes only a couple of minutes and can be carried out by a midwife. When tested on 40,000 newborns in West Götaland, 92 percent of cases of duct-dependent congenital heart disease were detected. Credit: University of Gothenburg

The US Secretary of Health recently supported a recommendation that all babies born in the US are to be screened for critical heart defects, before leaving hospital. Behind this decision is a study from the Sahlgrenska Academy at the University of Gothenburg, and the West Götaland Region's maternity units in Sweden which shows that a simple test can save the lives of newborns with these heart defects. Other countries too are set to make the test mandatory.

One or two out of every thousand babies are born with duct-dependent congenital heart disease, a life-threatening condition where the normal connection between the heart and either the lungs or the aorta is missing. When the ductus arteriosus, a blood vessel that is open only in the foetus, gradually closes in the days after delivery, the flow of blood to the lungs or the aorta is cut off, resulting in circulatory collapse. Most of these heart defects can be corrected by one or more operations, but many of the children do not have an audible heart murmur and they are rarely

detected by the standard pre-discharge medical examination.

Critical defect undiscovered

It is estimated that a third of all newborns with duct-dependent congenital heart disease therefore leave hospital without their critical defect being discovered, and there is a risk of this number rising as the average stay in hospital grows ever shorter.

Most cases were detected

Between 2004 and 2009, researchers at the Sahlgrenska Academy lead by professor Ingegerd Östman-Smith managed to develop a simple test where sensors on the baby's right hand and either foot are used to check the blood's oxygen saturation. This test, known as pulse oximetry screening, takes only a couple of minutes and can be carried out by a midwife. When tested on 40,000 newborns in West Götaland, 92% of cases of duct-dependent congenital [heart disease](#) were detected.

Major international impact

The study from the Sahlgrenska Academy has made a major impact internationally after being published in the highly respected British Medical Journal. All newborns in Beijing are already being screened, and Anne de-Wahl Granelli, who based her thesis on the method, has been invited to Washington, Singapore, Vietnam and Argentina to present the results during the past year.

Screening recommended in the US

Last week the US Secretary of Health decided to recommend that all [babies](#) born in the US should be screened using the Swedish protocol before leaving hospital. Several counties in Sweden have also introduced the test, although there is not yet any coordinated national recommendation.

Worldwide attention

"People around the world are now talking about 'the Swedish study', and I've been invited to Nanjing in China to help start up a screening programme there this autumn," says de-Wahl Granelli.

"I'm absolutely delighted that the research has had such an impact. My colleagues and everyone else who helped us with the clinical side of the study over a three-and-a-half-year period all deserve a share of the credit for the attention it has been given worldwide."

Pulse oximetry screening for newborns The study at the Sahlgrenska Academy revealed that mortality among infants discharged with an undiagnosed critical heart defect was 18%, or around one in six children, but only 0.9% for those diagnosed before leaving hospital. During the period covered by the study, there were no deaths from undiagnosed [heart defects](#) of this type in the West Götaland region, but five deaths at home in the regions used for comparison.

Provided by University of Gothenburg

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