

A revolution in the monitoring of unborn babies

April 26 2007

New technology, the size of a mobile phone, which could save the life of an unborn child, has been developed by scientists from The University of Nottingham. The device monitors the baby's heart for signs of potential danger. It is small and easy to use so that mother's-to-be can keep a regular check on their baby's heart beat without having to go into hospital and be attached to a machine. No other technology allows them to do this.

It took 15 years of pioneering work and enterprise, with funding from Action Medical Research and Venture Capital, to develop the fetal heart monitor. Researchers believe the device has the potential to benefit 70,000 at risk babies a year in the UK alone.

Statistics show that as many as 10 babies a day are stillborn in the UK and 10 per cent of all pregnancies each year are high risk. The monitor lets doctors read signals produced naturally by the unborn baby's heart. They can then intervene if necessary and potentially save their lives.

The fetal monitor is the result of years of collaborative work between engineers and doctors at the University. The original research was carried out by Dr John Crowe and Dr Barrie Hayes-Gill in the School of Electrical and Electronic Engineering (EEE) and Professor David James and Dr Margaret Ramsay in the School of Human Development. In 2005 the technology was spun out to create Monica Healthcare Ltd. Led by both Dr Hayes-Gill and two ex PhD researchers from EEE, Dr Carl Barratt and Jean Francois Pieri, the company has gone on to develop the

monitor even further.

This highly sensitive device, which is able to detect 0.00000001 volts, has now been reduced to the size of a mobile phone. It can compute real time fetal readings and the resulting data can be transmitted by wireless technology to the nearest PC or hand held computer. The device has now passed all EU regulatory safety standards and is currently undergoing clinical trials.

Dr Barrie Hayes-Gill expects the device to go on sale in October this year. “To date we have successfully completed over 33 per cent of the clinical trial. We expect to complete clinical trials in July 2007. This represents a tremendous achievement to turn a research device into a medically approved product in only two years — an experience which will place us in good stead for future medical products that we have on our horizon.”

Currently hospital based ultrasound is used to record babies’ heart rates during pregnancy. While this technique has proven benefits, it needs to be administered by trained professionals and it is not suitable for routine, continuous, long-term monitoring. Dr Barrie Hayes-Gill and Dr John Crowe at The University of Nottingham recognised the need for a new technology that would fill these gaps.

One of the biggest obstacles in developing the fetal monitor was separating the baby’s heart beat from the mother’s signal. The team has successfully created a state-of-the-art device which can gauge both heart rates as well as fetal position. This unique home monitoring device could lead to a new approach in the management of pregnancy.

Dr Margaret Ramsay says it will play a key role in monitoring high-risk pregnancies. “For all these fetuses, the more we can monitor them, the greater the chance of us detecting that they are running into difficulties

before it is too late to help them. This may involve urgent delivery of the fetus.”

The device will be especially helpful in monitoring fetuses whose mothers have medical conditions like diabetes, autoimmune conditions such as systemic lupus erythematosus and Sjogren’s syndrome and obstetric cholestasis. It will also be useful in monitoring fetuses identified as growing poorly or where it is suspected that the placenta is unhealthy and hence the fetus may become compromised due to lack of oxygen.”

In England during 2004 and 2005 17 per cent of inpatient cases for women in NHS hospitals were due to complications of pregnancy or childbirth. By helping to detect potential problems with unborn babies early and monitoring expectant mothers in their own homes it is hoped the device could relieve the pressure on in-patient stays and reduce hospital costs. As well as spotting potential complications the new monitor can be used to provide reassurance and mother-baby bonding.

Source: University of Nottingham

Citation: A revolution in the monitoring of unborn babies (2007, April 26) retrieved 18 April 2024 from <https://medicalxpress.com/news/2007-04-revolution-unborn-babies.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.