

Improved child hearing tests for the best start in life

Researchers in the Institute of Sound and Vibration Research (ISVR) at the University of Southampton helped conduct large scale trials of a test to diagnose hearing problems in newborn babies. Swift and accurate universal screening has transformed the way impairments are detected and enabled health professionals to act quickly to provide support, hearing aids or cochlear implants.

The National Health Service in England has now adopted the test; more than six million newborns will have been screened by the end of 2013. Other countries around the world are drawing on the ISVR research and the World Health Organisation gave its backing to the technique in 2009.

Permanent childhood hearing impairment (PCHI) affects more than one in a thousand babies. Before 2001, the standard way of detecting it was the health visitor distraction test, based on an observation of a seven month old's reaction to a distinctive sound. However, there were problems with the accuracy of such a subjective test and the relatively late age of the child being tested.

It is much better for the child if hearing impairments can be diagnosed as soon as possible. A universal newborn screening system can detect problems, children can be referred for further tests then, if necessary, support systems can be established, aids arranged and cochlear implants considered.

Healthy ears emit low level sounds called transient evoked otoacoustic emissions (TEOAEs) which can be detected by a microphone in the ear canal, usually within a few days of birth. ISVR researchers believed this fact could be used to develop a new way of screening for impairments and started trials of this screening method in the mid 1990s. They went on to contribute to the Wessex Trial of 25,000 newborn babies, which compared the new technique with the health visitor distraction test. Another large trial confirmed the positive results.

Professor Mark Lutman at ISVR analysed the findings and recommended policymakers consider a universal Newborn Hearing Screening Programme (NHSP) based on TEOAEs which would be more effective and cheaper than the traditional method. He and his co-workers were awarded the American Audiological Society Editors prize for outstanding research in 1997.

The Institute of Sound and Vibration Research (ISVR) was established at the University of Southampton in 1963. It is involved in fundamental work on understanding how humans hear sounds and process this information, carrying out cutting-edge research and educating the next generation of academic and practising audiologists. It was awarded a Queen's Anniversary Prize in 2006 for Higher and Further Education 'for improving the quality of life for the profoundly deaf and reducing noise pollution.'