Acoustic technique developed to detect knee osteoarthritis

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A revolutionary medical technique using sound waves to identify osteoarthritis in the knee has been developed by researchers.

The UK is leading this new field of health research based on listening to the sounds emitted by the body.

Microphones are attached to the knees of patients, and the high frequency sound waves emanating from their knees are measured as they stand up. These acoustic emissions are interpreted by computer software to give information about the health of the patient's knee.

The portable device could eventually be used by GPs, hospital doctors and nurses to assess patients with knee osteoarthritis regularly to see whether the knee is changing or responding to treatment.

It was developed by a large research team led by Lancaster University and involving partners from the University of Central Lancashire, Manchester University, the NHS and industry.

Lancaster University's Professor Goodacre, who is also a consultant rheumatologist, said: "Potentially, this could transform the ways in which knee osteoarthritis is assessed and treated. Unlike an MRI scan, this approach can tell you what happens when the joint moves and it can also measure how the knee is changing over time."

He said this could herald a new method of medical assessment based on interpreting body sounds.

"Researchers are only just starting to explore the idea of listening to structures like joints, arteries or the intestines and seeing if the sounds they make can tell us about diseases. So this is a new field and the UK is leading in this area."

The team has received a £560,000 grant from the Medical Research Council and the project will see the recruitment of over 200 patients with various types of osteoarthritis so the technique can be further tested.

The project is being delivered through the Lancaster Health Hub, which

brings together Lancaster with the University of Cumbria and many NHS organisations throughout Lancashire and Cumbria to work together on clinical research to improve health care.

If this new technology proves effective, it will be taken forward into clinical practice through the North West Coast Academic Health Science Network (AHSN), for which Professor Goodacre is medical director. The AHSN is a new organisation established by NHS England with the aim of improving the development and uptake of innovation in the NHS.

Provided by Lancaster University