

Broken bones on the mend with anti-bacterial collar

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Orthopaedic experts at The University of Nottingham are hoping to reduce the rate of infections that often occur in the pinning of broken bones by developing a special collar to counter dangerous microbes.

Using technology developed by Dr. Roger Bayston in the School of Clinical Sciences, PhD student and nursing specialist Jennie Walker has been awarded an allied health professional training fellowship of almost £160,000 from Arthritis Research UK to devise an anti-microbial collar to prevent bacterial infections associated with broken bones.

Pins used to mend broken bones can often lead to infection. Up to 40 per cent of patients being treated in this way develop infections, which can in the worst cases, lead to osteomyelitis (bone infection) and septicaemia.

Dr. Bayston's anti-microbial catheter, used in the treatment of hydrocephalus (water on the brain) and severe kidney failure has already benefitted almost half a million patients worldwide, reducing infection

rates by between 60 to 85 per cent.

Dr. Bayston, who is based in the Division of Orthopaedic and Accident Surgery and specialises in research into surgical infections said: “We plan to use this same technology to design and test an antibiotic-impregnated collar which can be fitted to the skin surface for use in pinning broken bones.”

Serious fractures are often treated by inserting metal pins through the skin into the bone and stabilised by a metal frame.

He added: “The idea is to develop a cheap and user-friendly device impregnated with a substance that will kill bacteria before it can work its way down the pin and get into the wound, and can be taken off the patient, washed and replaced.”

Ms. Walker, who is also employed by the Nottingham University Hospitals NHS Trust to teach 5th year medical students, will carry out a pilot study to determine the collar’s usefulness in patients at the Queens Medical Centre, under the supervision of Dr Bayston, and Brigitte Scammell, Professor of Orthopaedic Sciences and Head of Division of Orthopaedic and Accident Surgery in the School of Clinical Sciences.

Ms. Walker said: “We need to carry out further research to perfect the collar. As the antimicrobial agents that we will use are already in clinical use we don’t expect to encounter any problem with side-effects.”

The researchers also want to find out which bacteria are most commonly associated with pin site infections and whether there are some patient groups who are at particularly high risk of [infection](#). They believe the device could also reduce NHS costs by avoiding the complications associated with infections.

Provided by University of Nottingham

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