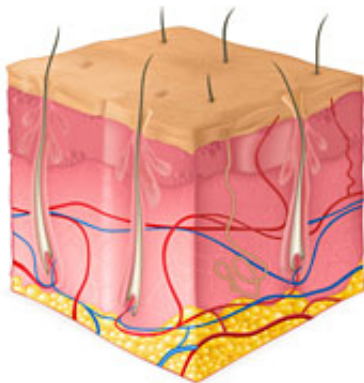


# Use of nanoparticles administered via hair follicles will combat surgical site infections and wounds

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Infections contracted during surgical operations are a serious healthcare problem, leading to death in some cases. Now, a research project at the University of Huddersfield is investigating the use of nanoparticles as a way to disinfect wounds. It could prove to be much more effective than existing techniques because the particles would be tiny enough to enter the skin via hair follicles, ensuring much better penetration of the area affected by surgery.

The University's Head of Pharmacy, Professor Barbara Conway, has developed the nanoparticle concept and it will now be further refined

during a doctoral programme that she supervises. Syrian-born researcher Khaled Aljammal has begun work on the project and receives funding via a new scheme, which means he is part of a network of bioscience and health researchers at go-ahead universities around the UK.

The issue addressed by Professor Conway's project is that of [surgical site infections](#), or SSIs. It is estimated that every year, five per cent of patients who undergo surgery in England and Wales develop one of these infections and they are major source of prolonged illness and a significant cause of death in patients. Also, they add strain on healthcare resources and fighting the infections is becoming more difficult because of growing resistance to antibiotics.

More effective use of antiseptics to treat the area affected by surgery is vital. Professor Conway's strategy is to develop a system of delivering the antiseptic drugs via minute particles less than a billionth of a metre in dimension.

"Making them nanoparticle size will help them to carry things into the skin better than current antiseptic regimes," said the Professor. "We think they will penetrate the skin better by the hair follicle route – and that is the site where bacteria will sit in the skin."

Professor Conway – who is a member of the University of Huddersfield's Institute of Skin Integrity and Infection Prevention – has been working for several years on methods for improving the delivery of antiseptics to reduce the incidence of SSIs. Now, she is exploring the use of nano-sized formulations that have an antiseptic drug incorporated into them. They could be administered in the form of a liquids, gels or even creams.

## **Doctoral Training Alliance**

Khaled Aljammal will be carrying out lab-based research aimed at developing and demonstrating the practicality of nanoparticle drug delivery. He has been awarded full funding through the recently-launched Doctoral Training Alliance (DTA), an initiative of University Alliance, the organisation that unites UK universities with a mission to provide high-quality teaching and research that makes a real-world impact.

The Syrian researcher is one of two University of Huddersfield researchers who have begun their doctoral programmes under the DTA. He gained his first degree in his native Syria before relocating to the UK four years ago for a Master's in Pharmaceutical Technology. This was followed by a spell working as a formulation scientist for the company Lena Nanoceutics.

His passion for research then led him to apply for the DTA project supervised at Huddersfield by Professor Conway. As the project progress, it is intended that scientific articles and presentations will reveal its findings and these will be used to inform improved strategies to reduce the incidence and severity of such infections.

Provided by University of Huddersfield

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