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Improving everyday life experiences for young children with cancer

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Children with cancer regularly have long term central line catheters inserted in the chest to deliver medication. Often termed ‘Hickman Lines’, they result in tubing protruding from the chest, which can result in medical issues including infections, but also discomfort for the child, particularly when sleeping. A team of researchers, led by [Dr Jess Power](#), including [Professor David Leaper](#) and [Joanne Marie Harris](#), has been investigating the design and development of a product to contain these external lines, providing greater comfort and safety for the child whilst also meeting the needs of the medical community.

The project makes use of innovative experimental and industrial research to develop a strategically designed harness for children aged 2-4 years with cancer. The aim is to reduce the chances of infection around the central line as well as combat common issues such as discomfort when sleeping due to the line becoming tangled, snagged or pulled out.

### **Key input from those caring for children with cancer**

The project team were approached by the [Little Heroes Cancer Trust](#) who had recognised the need for a product to contain long term central lines. Right from the beginning, the team were keen to focus on the children themselves and providing the best levels of comfort possible. Working with Little Heroes and consulting with experts from the [Royal Liverpool University Hospital](#), a series of focus groups were carried out with parents and carers of children with cancer to ensure that those using the product were at the heart of the design.



### **Preventing infection**

With initial funding support from the [Collaborative Ventures Fund](#), followed by top-up funding from the [Yorkshire Innovation Fund](#) and Little Heroes Cancer Trust, the project team has been able to carry out initial research and progress the designs to prototype stage. The antibacterial properties of a range of materials, sourced both locally and nationally, are being explored in order to find a suitable material which will reduce levels of infection whilst also maximising comfort.



### **Collaborative research leads to innovative design**

Part of the [Institute of Skin Integrity and Infection Prevention](#), the project team brings together innovative research from across the Schools of Art, Design and Architecture, Computing and Engineering and Human and Health Sciences. This interdisciplinary team includes experts in performance materials, surface design and infection control – all areas integral to the development of a product which must meet the needs of children, families, carers and the medical community.

### **Ensuring the end product is available to all children**

With the underpinning research in place, the team are hoping to see the harness ready for manufacturing by July 2015. A key focus of the project has been to ensure that the harness can be produced using cost-effective processes to ensure it can be made available to all children with cancer through NHS trusts and services. An article summarising the project and paving the way for future research is planned for September 2015.