

## Newport hospital leading the way with pioneering “world-first” recycling plan

A NEWPORT hospital is pioneering a healthcare “world-first”.

St Woolos Hospital could revolutionise how the healthcare system deals with medical waste wrap material, following a trial with a recycling machine designed by Thermal Compaction Group Ltd.

The recycling process sees discarded wrap - which is used to package surgical equipment - reduced in volume size by a machine called ‘Sterimelt’.

Its heating and reduction process turns the used wrap into a sanitised, solid, briquette which can then be re-used to make domestic or industrial products, such as buckets and chairs.

“This is the first of its kind in the world,” said Mr Tim Hourahine, technical and compliance manager at Thermal Compaction Group Ltd.

“The trial has shown that we can take the wrap as waste, reduce its volume substantially, render it inert and then re-introduce it to the supply chain.

“For a Newport hospital to be able to do this is unique. The Welsh NHS is taking a close interest in what we are doing and other hospitals are very keen to embrace the technology.

“There is so much interest because, at the moment, the majority of the waste wrap is either landfilled or incinerated which is exceptionally expensive. The recycling process removes that cost, plus it produces a workable product which will have a commercial value in the future.”

Following the year-long trial, between Thermal Compaction Group and the Aneurin Bevan University Health Board, both agreed a deal to begin using the Sterimelt immediately.

Peter White, the waste and environmental manager for the health board, which agreed to trial the recycling process at St Woolos, one of Wales’ oldest hospitals, said: “Before we implemented this system, all the wrap was going out as infectious clinical waste so there is a significant disposal cost when it goes to alternative heat treatment (incineration).

“Currently, two tonnes of sterilisation wrap from the Royal Gwent Hospital are recycled and diverted from the clinical waste stream per month.

“However, this will increase once the other hospital sites within the health board implement the new system.”

Thomas Davison-Sebry, director of sales and marketing of the Thermal Compaction Group added: “It has all been very positive. Not only is it good from an environmental point of view, it is sustainable and provides its own circular economy.

“It will save the NHS a lot of money, and it creates a revenue source which obviously benefits patient care.”

Source: South Wales Argus

## Virtual Reality Simulation - The Future of Orthopaedic Surgery?

*Simon Newman, Hip Fellow, Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust; Visiting Fellow, Orthopaedic Research Institute, Bournemouth University*

*Tom Wainwright, Associate Professor of Orthopaedics, Orthopaedic Research Institute, Bournemouth University*

*Robert Middleton, Consultant Orthopaedic Surgeon, Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust; Professor of Orthopaedics, Orthopaedic Research Institute, Bournemouth University*

Virtual reality simulation has been a mainstay of training in military and civilian aviation for decades. The UK government is keen for the safety culture of the airline industry to be replicated in the health service and the growth of surgical simulation is one example of how this is being embraced.

The old surgical training methods of learning surgical techniques through a “see one, do one, teach one” approach on patients are no longer appropriate. Virtual reality simulators provide a means to deliver training on particular operations through a medium where no one sustains any harm. An additional bonus is that other members of the theatre team can participate and understand some of the surgical challenges for themselves.

Arthroscopic procedures have been most amenable to virtual reality simulation in orthopaedic surgery, as a standard computer screen may be used as a realistic substitute for a theatre monitor. Commercial simulators for knee and shoulder arthroscopy are increasingly available for trainees in academic or dedicated simulation centres around the country. Studies have shown that performance on these simulators correlates to surgical experience levels, suggesting they may have use in assessing surgical competence in the future.

Increasingly attempts have been made to simulate non-arthroscopic procedures with dynamic hip screw and intra-medullary nail operations some of the earliest. These have combined a screen displaying images of surgical anatomy and fluoroscopy with instruments that provide force feedback (haptics) when they come into contact with the virtual tissues. More recently attempts have been made to develop simulators for more complex open operations. At the Orthopaedic Research Institute at Bournemouth University the UK’s first total knee replacement virtual simulator, developed by Ossim Technologies, is currently undergoing validation trials. This technology relies on haptic feedback in response to images on a screen. The Orthopaedic Research Institute is also conducting validation trials for knee and hip arthroscopy simulators, developed by VirtaMed.

Where next? Despite the advances, orthopaedic virtual reality simulation still has some way to go in terms of development. One issue is availability, with most simulators being quite expensive, fragile and bulky to store. The excellent TouchSurgery team has opted to lower costs by making simulations available via personal technology such as phones and tablets.



Whilst this provides a great medium to learn the steps of a procedure any time, any place, it does not offer the immersive experience of the simulators used in the aviation industry. In the future higher fidelity immersive simulations utilising the likes of Microsoft’s HoloLens and Oculus Rift are likely to be developed, but will need to be combined with a new generation of robust and more mobile haptic devices to meet the demands of users.

Currently available virtual reality simulators provide a good method to understand the stages involved in an increasing number of common procedures for inexperienced surgeons and other members of the theatre team. In the future we can expect better, more immersive simulations that will not only satisfy inexperienced practitioners, but also allow experienced surgeons to simulate real operations before they perform them and maintain their skills much as pilots are able to do so now with modern flight simulators.