

Will robots replace nurses and improve our wound care?



JEREMY RUSSELL
OR Productivity, Medical Devices
Guildford, Surrey

With healthcare systems worldwide facing an increasing demand from an aging population, healthcare leaders are continually searching for new means of efficiency. One promising new avenue is the use of robots in the clinical setting. In the future, healthcare professionals, surgeons in particular, are likely to be accompanied by a robotic assistant. With pinpoint precision, remarkable artificial intelligence (AI) and advanced algorithms, robots promised to make operations safer, faster and more hygienic. They may help bring down the cost of healthcare by eliminating human error, streamlining operating theatres, reducing operating time, and, crucially, free up staff for more pressing matters. In the context of wound care, improving surgical precision could help reduce surgical site infections and by eliminating variables, wound measurements and assessments could become more precise and compression bandaging more accurate, for example.

CURRENT HEALTHCARE CHALLENGES

By 2030, according to the World Health Organization (WHO), we are likely to have a 14 million global needs-based shortage of healthcare workers (WHO, 2013). Thought leaders, like Dr Bertalan Mesko, founder of The Medical Futurist, believe that technology will be the key to such challenges and that the uptake of medical robotics must be accelerated to help make healthcare more sustainable and more efficient in the future (The Medical Futurist, 2017).

In England alone, recent research suggested that NHS hospitals could undertake 17 per cent (280,000) more non-emergency operating procedures every year with better organised operating theatre schedules (Pym, 2017). The study, which analysed 2016 data collected from operating theatres in 100 NHS Trusts in England, revealed that more than two hours a day are wasted on average. This indicates that operating theatres are significantly underutilised, with each procedure becoming costlier as a result.

WHAT TECHNOLOGIES ALREADY EXISTS AND MIGHT THE FUTURE LOOK LIKE?

Mechanical medical assistants do already exist, and in many different incarnations. For example, researchers at the University of the West of England (UWE) Bristol's Robotics Laboratory (BRL) have created new robotic tools and devices to be used semi-automatically under the supervision of surgeons during invasive medical procedures (UWE, 2016). UWE BRL's Dr Sanja Dogramadzi, who researches the use of robotic technologies to repair complex joint fractures, believes these tools have the potential to aid orthopaedic, abdominal and cardiovascular surgery. "By using minimally invasive access to organs and tissues, robotic tools can help to reduce trauma, speed up recovery and minimise costs," she said. This alternative to the current open-joint surgery can help avoid the increased risk of infections and tissue failures that are major complications of such invasive surgery.

On a larger scale, Google's subsidiary Verily Life Sciences is working with Johnson and Johnson's medical device company Ethicon, combining knowledge of surgical instrumentation with machine vision, imaging analysis, and data analytics expertise. They announced that they recently demonstrated their first prototype: an AI surgical robot that assists surgeons during invasive operations by highlighting blood vessels, nerve cells, tumour margins or other important structures that can be hard to discern in tissue by eye or on a screen (Jof Enriquez, 2017).

Robotic systems will provide safer and faster operations to benefit both patients and clinicians, as well as lower costs for health service providers. For patients, this will bring a greater peace of mind due to the reduced risk of human error, as well as faster wound healing and smaller surgical scars. We are not yet within the realms of seeing clinicians made redundant by robots, however, rapid advancements in technology repeatedly remind us to consider all possibilities — no matter how far-fetched they might sound initially. **WUK**

References

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