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### Rapidity of Change in Surgery



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In early July, Professor Derek Alderson stepped down as President of the Royal College of Surgeons (RCS). Shortly before that, Prof Alderson discussed with HealthManagement.org the current challenges in education, research and leadership areas and shared his views on the future of surgery.

***One of your interest areas is improvement of surgical standards through education, research and clinical performance. Since the start of your tenure as president of the RCS in July 2017, where have you seen the most encouraging moves and achievements in the above areas?***

I suppose the fundamental change is to get surgeons to understand that their role in the modern world is not simply the delivery of clinical surgery, but it is simply looking after patients and being able to do safe and effective operations on them. The world of clinical surgery is changing quickly, and for someone who is focussed on only a small clinical area, it is insufficient to sustain them for the next 30 to 40 years in a career.

The surgical community should understand that there are other roles. That is the real change. The surgeon should not be viewed simply as a person who does operations on people; the surgeon of the future has a much broader portfolio and more responsibilities. Of course, developing clinical skills is fundamental and the most important for any surgeon.

I would say, however, that all surgeons, as they go through their training and as they progress through their career, must not forget that they also have the responsibility to educate and train as part of their regular job.

I also believe that all surgeons should be involved in quality improvement programmes. In doing so, most contribute to patient-based research, such as clinical trials and other types of studies that directly affect patient care. By doing quality improvement work you raise questions such as why is something better? And the questions have to be answered by doing proper, well-organised research studies. Thus, you develop a culture of clinical research through participation in quality improvement programmes. That is the second essential aspect of a surgeon's career.

In addition, surgeons must get involved in the management and leadership of the profession and at the local level, within their own hospital or region. Surgeons are the most experienced individuals in a clinical team, so people will always look to the surgeons for degrees of leadership. Understanding the healthcare system that you work in, which is always becoming more and more complex, and being willing and having the skills to lead is also fundamental.

When I look at all these strands – clinical skills; education and training; research; management and leadership, I don't think any one individual is going to be an expert in every area. But every surgeon must have some experience in each of those areas, and the amount of time you devote to each one will vary during a good career. At the beginning, of course, surgeons want to develop their clinical skills more than anything else. Later in their career, some might move away from the direct care of patients more into the management of their hospital or the healthcare system in general. The emphasis will vary at different times. I do not see one particular route that suits everyone, but people have to embrace all of these ideas in order to have a successful career.

We are seeing the change already. We see an increased number of specialists with interest of being involved in clinical trials. We have set up a system in the UK, a clinical trials network, that would be reliant on input from trainees. This network now exists across the whole of the UK in all surgical specialties, and many countries in Europe have created similar research networks based on trainees. There is, in fact, a global surgical network of trainees who contribute to trials, mainly in low- and middle-income countries and sub-Saharan Africa.

***You wrote about the necessity for surgical curricula to include training in management and leadership. Why do you think these skills are so critical for future surgeons?***

This is because of the rapidity of change. Let me give you a simple example. If a surgeon nowadays completes a training and has not had any training in robotics surgery, I would say that – unless they could in some way develop all of those skills – this surgeon will become a dinosaur. Because they cannot offer the best the patient might want. The surgeon has to have a more flexible attitude right from the start in their career and not expect the patient group that they treat to never change in the next 20 to 30 years.

So many new developments are occurring even within just the clinical management of the patient. We rely on much bigger teams. We are beginning to see the need to get patients more fit for major surgery before they even come to the hospital, what we call pre-habilitation. We increasingly rely on information like genomics that is altering the nature of surgery. We will do more surgery to prevent problems and less surgery on advanced problems. Therefore, people have to be ready to change. It is very difficult to know exactly what things will look like in, say, ten years' time. And if we do not give people the skills to be able to change, they will become fossils within their own career.

***What else would you like to see implemented in future curricula?***

I would most like to see a situation where no trainee surgeon would ever carry out an operation on a human that they would not be able to demonstrate their competence in a simulator. I would also like to see a situation where no surgeon ever goes into an operating theatre without having been trained for that type of surgery in a virtual or simulated environment.

If everybody could undergo these two types of training before they attempt to do an operation, even under the best supervision in the world, it would make surgery incredibly safe and it would instil fantastic confidence in patients in all parts of the world.

***How do you see the surgery hospital environment changing in the next five to ten years?***

We will see more technology getting into the hospital. For example, one of the consequences of the COVID-19 crisis has been the use of video conferencing and video consultations replacing face-to-face consultations. Not that it completely eliminates the need of face-to-face consultation and examination, but it can make everything simpler and more straightforward, speed up the hospital processes and increase throughput. The use of that type of technology is already making a difference.

It is likely that robotics will be incorporated increasingly into surgery, which means it becomes more technological. We will require more assistance and help from people with robotics expertise in order to see that whole area develop properly and correctly. We will see that beginning to influence training more and more, for a young surgeon to carry up an operation in a simulator, similar to those used by airline pilots. The impact of technology will be enormous, and this will alter the way we deliver surgical care.

***Could you expand on your ideas about robotic surgery? What are its opportunities and challenges?***

There are two challenges here. The first is convincing everyone, including politicians, those who organise the healthcare systems, that robotic surgery is beneficial for patients, that you get better results by using robotic assistance than with conventional approaches. To gain that evidence takes time. You have to go through learning curves, you have to understand how to make use of the robotic system, and then you must prove that it is better for patients in some demonstrable way. In the meantime, of course, robotic surgery is expensive compared to other alternatives that are currently available, which is an important aspect from the healthcare economy point of view.

Another problem that we have to solve is how we train sufficient surgeons to become competent and good at robotic surgery as new robotic devices come to market. There are quite a few new robotic systems that are likely to be available in the next few years in addition to the systems that already exist.

The most important goal is to show that robotic surgery offers benefits to patients over and above existing systems, that it is not too expensive for a healthcare system to bear and that it is cost-effective. If, for instance, patients were able to recover faster and get back to work sooner, then perhaps the societal cost of robotic surgery is less than of conventional surgery.

Robotics is already being seen as an important element in some branches of surgery, such as urology or colorectal cancer surgery. Undoubtedly, it will be looked into in far more detail in the next five to ten years and will acquire more research evidence to show when it is beneficial and when it is not.

***How do you think genomics could influence future surgery for better outcomes?***

Genomics will have two major effects on surgery. The first is it will allow us to identify patients with high risk of developing certain surgical problems and to be able to offer them some form of surveillance. This, in turn, will facilitate early detection and treatment at an earlier stage that might be substantially less invasive.

The second effect is that by getting a profile for a patient, we can probably predict a number of parameters, such as the risk someone might have in relation to a particular operation or the best sequence of treatments for them. Now we do that on a very primitive genomic basis, but with modern genomics and all of the added information, it may be that we will become much better at it because a patient's profile tells us which of these treatment pathways will be best for that patient.

***Some healthcare 'modellists' favour the idea of deep generalists over super specialists in the future healthcare setting. Where do you think surgeons could fit into such a paradigm if at all?***

It is something of a minefield when we talk about specialism and generalism. The generalism of 10 or 20 years ago has really disappeared, so we have to be careful defining the subject here. If we take orthopaedic surgery, we have surgeons who are principally interested in trauma and those who are principally interested in elective non-traumatic orthopaedic surgery. Within that group as well there are those who specialise in hip or knee surgery and those who specialise in spinal surgery. Even within those broad areas there are subspecial levels.

We have a dilemma here, a practical problem. In order that every surgeon should understand their subject comprehensively, all surgeons need exposure to a wide variety of problems. But how do you expose people to certain areas of training without trying to make them achieve what we call competence in that clinical area? How do you construct training programmes and curricula that make people want to pursue that career? How do you entice the surgeon to believe that they could be doing a lot of good if they went down a certain line?

On the other side, there are the needs of the population and the country and its healthcare system. The surgeons we have trained do not always want to do what the population needs in terms of surgery. People often translate this into 'there's too many specialists and not enough generalists.' I'm not really sure that this is the correct way of looking at it.

What we need is to have more people in the system anyway, and we need to identify that very small number of highly technical, highly specialised operations that require a lot of resources and can only be done in a limited number of hospitals, and focus on putting those there.

At the other end of the scale, we should be doing our level best to make use of technology that allows as many people as possible to have their surgery close to their home and not to have to make long journeys to other cities because that is where certain operation is being done. We somehow need to balance these two sides.

***Has the COVID-19 crisis highlighted any areas in surgery that proved strong or weak or showed potential for improvement?***

There are several big lessons to learn from COVID-19. The first, of course, is the issue of preparedness. It becomes incumbent on all healthcare systems to think much harder about the future and be prepared for various scenarios. At the moment, we have to learn how to cope with or become better prepared for a viral pandemic. The sense of being prepared is a lesson we have had to learn because some countries were not well-prepared for something like that. In the meantime, there are other events that occur in different countries where preparedness is relatively weak. Some countries should be thinking much harder about how they would prepare for natural disasters or major terrorist incursions, for instance.

The second lesson is that we have learnt to collaborate more. Much of the competition that might have existed between countries in terms of supporting other countries with their healthcare problems have been handled admirably by many. We are seeing some real change as some of the protectionism that we might have experienced in the past, has disappeared. I think the COVID-19 crisis emphasised how important everything is on a global perspective, how important it is for people to understand the problems of others, pay attention to them. Of course, some countries are worse affected than others, but it has made the people realise that sharing – in learning, in collaboration – will be critical as we try and go forward.

Lastly, I think it has made us see what digital technologies can do. There are some quite simple technologies that could be and, in fact, have been used to make a big difference in the COVID-19 crisis. Video consultations or the development of apps to allow contact tracing are two

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obvious examples here.

***A side effect of the pandemic has been the abundance of research shared with no peer review. How do you feel about this phenomenon?***

This is a two-edged sword. In a crisis it is beneficial because sharing information rapidly is critical when you have a changing situation and no past evidence to draw upon. It was understandable for the scientific community to feel that it was reasonably responsible to move away from traditional practice in terms of publication. On the other hand, we must not forget the value of peer-reviewed publications and careful scientific assessment of the work in order to put work into true perspective. There is the danger of an enormous amount of low-quality publications or information being put out there as a result of trying to avoid or minimise the peer review process. But as long as people do not forget about the importance of doing well-designed studies with appropriate scientific rigour, I do not have a problem with it.

***What do you wish for the future of the RCS after you step down from its presidency?***

Today, the big problem is the lack of surgery in many parts of the world. WHO estimates that 16 million people die each year from what is called avoidable surgical death. And the next main challenge is the fact that many people do not have access to safe and effective surgery in their society or country. Advanced systems like ours, and organisations like the RCS owe it to the rest of the world now to encourage governments to invest more in surgery, so that they can begin to deliver effective, reasonable surgical care to their population in a way that at the moment is not being done. The number of people who die from, for instance, infectious diseases nowadays is far fewer than the number of patients who die for the want of surgery. There has to be greater attention paid to the need to offer surgery on a global scale. That is what I would like to see more than anything else. If colleges like ours won't do it, who will do it?

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