

Commission on the Future of Surgery Call for Contributions

Introduction

The RCS has launched an independent commission to explore the future of surgery in the next twenty years.

We are currently seeking input, evidence and contributions from experts, researchers, innovators and future gazers from around the world. If your work is relevant to the scope of our inquiry, we would very much like to hear from you. Submissions are welcome until **18 February 2018**.

In the last 50 years, new findings and innovations have transformed surgery and the way clinical care is delivered. Innovations that were unthinkable only a few decades or years ago are now common practice.

To reduce surgical trauma on the patient, surgery has moved towards ever less invasive interventions, with fewer but more-precise cuts and incisions. Surgery is thus shifting from seeing, feeling and manipulating organs and tissues through the surgeon's own eyes and hands, to using an intelligent robotic medium to see and intervene inside the body.

Developments in artificial intelligence and machine learning suggest a future where surgeons and machines will operate in closer synergy, one making up for the weaknesses of the other. Discoveries in genetics point the way towards preventive strategies and patient-targeted therapeutic interventions, with fundamental consequences for surgical decision making and the way we treat patients. Advances in regenerative medicine lay the path towards a future where organs and tissues grown in the laboratory or built with three-dimensional printing could solve problems such as the shortage of organs or life dependency on immunosuppressive drugs.

We need your contribution to understand these and other changes that may take place in surgery, helping us and other health system leaders to prepare for the challenges and opportunities presented by new innovations and discoveries.

Scope of the inquiry

The Commission will consider what the future of surgery is *likely* to look like for patients in five years, *could* look like in ten years, and *might be* in 15 to 20 years.

The Commission will initially consider how demographic changes and the burden of disease will affect the delivery of surgical care.

We will then explore and identify the innovations that will most likely affect surgical treatment in areas such as:

- Minimally invasive surgery
- Robot-assisted surgery
- Nanotechnology

- Imaging
- Artificial intelligence
- Virtual reality
- Augmented reality
- Genetics and genomics
- Regenerative medicine
- Tissue engineering
- Transplantation
- 3D printing and planning
- Implants and prosthetics
- Stem cells
- Pharmacology
- Developments that may alter the choice of surgery as the preferred therapeutic intervention, or even make surgery redundant.

Commissioners will evaluate the possible relevance and value of such innovations, and their implications for:

- Patients and their choice of treatment in a rapidly changing health and social care system
- The training and role of future surgeons
- Staffing and career pathways of the surgical team
- Ethical and regulatory challenges
- Patient safety
- Clinical outcomes

We will take into account advances in digital technology and data, and health system challenges that will affect the future delivery of surgery – for example the risk of antimicrobial resistance, the development of new non-surgical interventions, the emergence of new care models, or the affordability challenges facing modern health systems.

Outside the scope

The Commission will *not* try to predict future NHS funding arrangements or government policy.

Questions to consider

In submitting your evidence, it may helpful to consider the following questions. Please note that this list is not exhaustive and it is only aimed as a guide for your submission. You may, for example, only wish to submit evidence related to your specific area of expertise.

1. We are particularly interested to hear about innovations you think may have a significant impact on surgery in areas such as:
 - Minimally invasive surgery
 - Robot-assisted surgery
 - Nanotechnology
 - Imaging
 - Artificial Intelligence

- Virtual Reality
- Augmented Reality
- Genetics and genomics
- Regenerative medicine
- Tissue engineering
- Transplantation
- 3D printing
- Implants and prosthetics
- Stem cells
- Pharmacology
- Developments that may alter surgery as the preferred therapeutic intervention for certain conditions, or even make surgery redundant.

It would be helpful if you can detail evidence suggesting the greater or lesser likelihood of the innovation occurring.

2. Are there any areas not listed above that we should consider or on which we should focus?
3. Please consider the direct or indirect impact of such innovations on areas such as:
 - Patients and their choice of treatment in a rapidly changing health and social care system
 - The training and role of future surgeons
 - Staffing and career pathways of the surgical team
 - Ethical and regulatory challenges
 - Patient safety
 - Clinical outcomes
4. Are there any areas not listed above that we should consider as directly or indirectly impacted by such innovations?
5. What will be the challenges of such innovations?
6. What will be the opportunities brought about by such innovations?
7. What steps do you think would be desirable or necessary, if any, to prepare for such innovations and their impact?
8. Would you be happy for your work / contribution to be featured in future media coverage about the Commission?

The submission

Submissions should ideally not be longer than 3,000 words and should be tailored to the issues relevant to the Commission.

We also welcome evidence such as peer-reviewed studies, research, articles, reports, statistics, etc. that were not drafted especially for this inquiry, but are relevant to the scope of the Commission's work.

Please submit your evidence to the Commission

By email

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By post

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Please do indicate if you do not wish your submission to be published.

If you have any questions about submitting your evidence please email the Commission at bpitruzzella@rcseng.ac.uk or call 02078696049.

Timeline

The Commission will accept submissions until **18 February 2018**

The Commission is expected to take verbal evidence in the New Year.