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Over the horizon - future innovations in global urology

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Over the horizon - future innovations in global urology

In the previous two commentary articles we have discussed some of the issues surrounding global urology, with a focus on sub-Saharan Africa where the burden of urological disease is greatest. Coupled with low levels of infrastructure, funding and resources, the urological training environment is complex, with most urological care being provided by non-specialists. Accepting the challenges of working in this environment, we look ahead to potential developments and innovations to improve global urological care.

Educational resources

A survey and qualitative interviews of clinicians providing urological care was undertaken over several months in order to understand how surgeons were accessing educational content (unpublished data). Almost all accessed medical information using the internet on mobile phones. Sub-Saharan Africa is the second-largest mobile technology market and the fastest growing. In Zimbabwe, for example, growth has risen from 26% of households owning at least 1 mobile phone in 2008 to 80% of households in 2013 (9% annually)(1). Trainees utilised operative videos available on YouTube and free audio podcasts, but there was a strong desire for higher quality educational content.

Educational content

Urology trainees routinely possess pdf versions of a wide variety of urology textbooks and share these resources freely amongst themselves. To access research articles schemes such as the Health InterNetwork Access to Research Initiative (HINARI), set up between the World Health Organisation and major publishers, exist - but trainees often have difficulty accessing content as an institutional library login is required. Internet connectivity on hospital computers is generally poor compared to personal smart phones. The British Journal of Urology International was frequently cited by African trainees as being highly desirable to have easier access to.

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Online learning

Several resources exist such as:

1. The Ptolemy project - reviews on surgical topics with a focus on how evidence can be applied in resource-poor settings
2. The Royal College of Surgeons in Ireland - College of Surgeons of East, Central and Southern Africa Collaboration Programme - an Africa-centric surgical e-learning platform SchoolForSurgeons (requires a COSECSA login)
3. Joint University and Royal College of Surgeons of Edinburgh eLearning - in December 2013 a surgeon became the first doctor from Malawi to graduate online with a surgical sciences MSc
4. Surgical Care at the District Hospital (SCDH) manual - available free from the World Health Organisation

Telemedicine

Several systems for clinicians in remote areas seeking management advice exist, such as the Swinfen Telemedicine portal, which allows text and images to be securely referred to specialists across the world for rapid expert advice. On an informal level, WhatsApp mobile messenger service uses 3G internet networks to easily send picture messages and is commonly used for radiological and other clinical problems.

Innovations in training

Technology has enabled easier exchange of information and transfer of knowledge.

However, teaching surgical skills is challenging and new approaches to training are also required to improve urological services and care.

Task-sharing

Access to safe surgical care in rural areas remains a huge challenge (2). To address this the World Health Organisation (WHO) have recommended that clinical officers be trained to perform some surgical procedures. There is good evidence that key outcomes are comparable to surgeons performing the same procedures (3). Urolink have previously run clinical officer workshops teaching basic essential surgical skills.

Contemporary educational methodology

Teaching the management of surgical emergencies can be more effective by simultaneously training local faculty. Urolink run a urology module on the Association of Surgeons of Great Britain & Ireland and COSECSA 'management of surgical emergencies' (MSE) course and has now trained over 100 surgical residents in core urological surgical skills. By running a concurrent 'train the trainers' course before each module, 7 local faculty have been trained to run the course and in September 2014 the first independent MSE was run in Zambia. Summative and formative assessment have been positive with over 90% participants indicating at 6 months that the course had significantly improved their ability to manage emergencies(4).

Simulation

Simulation training is also highly desirable, and may have even greater potential benefits in resource-limited settings (5). Models can be taken out and left behind on visits so training can continue in the absence of an overseas presence. A circumcision model used on the MSE course has shown excellent face and content validity and hands-on training for endoscopic resection with a Bristol TURP trainer was used in the development of an endourology service in Ethiopia (6).

Tele-mentoring

Novel approaches have been used by other surgical specialties to teach specific surgical skills. Video tele-mentoring has been used to assist with remote supervision of laparoscopic general surgery in KCMC, Moshi, Tanzania.

Low cost technology

There are many examples of new technologies that have improved healthcare in resource poor settings. Lifebox have enabled advances in providing safe anaesthesia by combining provision of pulse-oximeters with training - a low cost, high impact intervention.

Unfortunately access to safe surgery lags a long way behind.

Professional development

Other benefits from attending training initiatives may include networking opportunities and socialising with colleagues. Technology can help further help to nurture and maintain these relationships.

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MDT

Newer technological developments, such as the CERNO health platform offer exciting opportunities for surgeons across the world to communicate real-time via video link for the purposes of global MDT or mentoring initiatives.

Research

Identifying local objectives in surgical and peri-operative care and enhancing ongoing research opportunities may lead to more successful and longer lasting collaborations (7).

Enabling trainees and urologists in low-income countries to access and engage in research may help to foster links and improve outcomes. A focus on research and innovation must be stressed in global urology forums, as the severity and volume of pathology in low-income settings (such as advanced stone disease, urological trauma, reconstructive surgery, paediatric urology and complex urethral stricture disease) may prove to be the richest clinical environment for understanding these conditions.

Innovation

Although often lacking in resources, patients and clinicians come up with innovative ways of dealing with every day problems. Examples include:

- mosquito net for inguinal hernia repair
- use of cut end of surgical glove for wound drainage following large hydrocele repair (often secondary to filariasis)
- catheter with magnetic tip to retrieve and re-use ureteric stents (when no cystoscope available)
- transurethral prostate resection in dextrose solution
- use of natural honey to treat infected wounds
- use of plunger from 2ml syringe as a stopper for a catheter when no urine bags available

Summary

There is increasing recognition of the importance of providing low-cost essential surgical care in low-resource settings. The current models of delivering urological education are limited and interventions from overseas organisation could be enhanced by collaborating more effectively and monitoring outcomes. New modalities of training, such as tele-mentoring, could likely bring maximal benefit when co-ordinated in the context of link partnerships over time. Traditional educational models such as workshops and skills courses can be effective when focussed on specific and well-planned local objectives.

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Longitudinal links between institutions are most likely to allow effective ongoing mutual educational benefit and encourage research opportunities.

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