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Rahima Dawood Oration.

Surgical Competence: Assessing, Acquiring, Maintaining, and Restoring.

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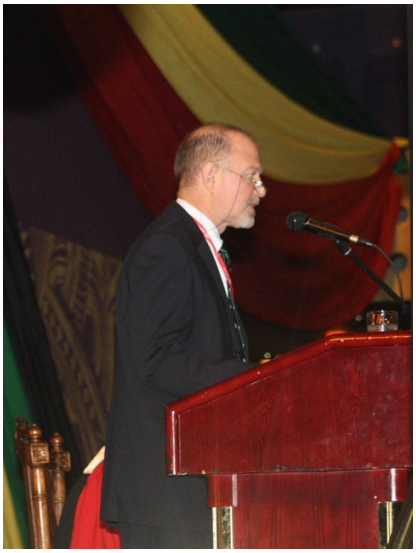

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Introduction

Acquisition and maintenance of a high level of surgical competence is a goal for every individual surgeon, every surgical institution, and of concern to every patient undergoing a surgical procedure, in all countries of the world. The ubiquitous nature of the subject matter makes it entirely appropriate to discuss in the African context where possibly the relative lack of resources to many surgeons, makes surgical competence all the more precious as a commodity, and potentially a more significant responsibility for a surgeon practising in such an environment. The Rahima Dawood oration was born out of the desire to pay tribute to the parents of the Foundations originator, - Dr Yusuf Kodwavwala, and this lecture aspires to share the global challenges faced by surgeons, surgical educators, and surgical colleges in relation to surgical competence, so that cross jurisdictional learning can take place. This lecture recognises that some challenges are continent and domain specific, but many of the solutions to the problems outlined, are likely to have more rather than less in common and be of potential interest to all.

Amongst the first set of challenges in considering surgical competence, are identifying it, defining it, and thereafter determining a scale extending from sufficiency through to excellence. In practice, competence is more easily identified by its absence rather than noted by its presence,-with the surgically incompetent being more conspicuous than their proficient counterparts. By contradistinction, the choice of any surgeon when faced with the need to identify a colleague to operate on any of their immediate family, - that process perhaps acts as

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a useful proxy of identifying those surgical attributes that are most valued by us. Whilst dexterity and precise surgical technique certainly feature in this list of desirable attributes, so do the skills of preoperative patient selection, intraoperative judgement, sound decision-making, communication and leadership. However, there is no easily identified metric that can be applied to that skill set nor a commonly used gauge which demonstrates how close to empty our skill set can become.

Whilst Africa faces the challenges of restricted resource availability, surgeons practising in countries in the northern hemisphere by contradistinction face a different form of challenge where a highly critical if not toxic climate of low tolerance of surgical failure, with judicial, societal, and media recriminations, result in the potential for - not only widespread litigation but more recent announcements such as in the UK where the Health Secretary declared a new offence of wilful mistreatment which will result in doctors, surgeons, and managers facing five years imprisonment if they neglect patients.

The stakes, therefore, for institutions such as surgical colleges could not be higher; if the assessment processes including examinations and conferment of fellowships and other credentials, result in that surgeon being deemed competent to progress to independent practice, then their liability for subsequent surgical misadventure, if that is deemed to be due to incompetent performance, may well be laid at the feet of the colleges who deemed this individual to be competent, rather than the singular responsibility of the surgeon who perpetrated the error. Additionally, an incessant preoccupation with surgical failure rather than celebration of surgical success may produce a series of unintended consequences with risk aversion being one such product. Whilst good patient selection and careful risk assessment is to be applauded, undue caution may result in incomplete or inadequate surgical care and that may result in a poorer outcome for the patient than would have been the case if courageous and confident actions had been applied. Moreover undue conservatism has potentially a negative impact upon the development and application of novel techniques and new technology if they have a relatively un-proven track record. That is likely to be to the detriment to the progress of surgical research and to finding new cures for those many surgical diseases and pathologies that remained resistant to current therapy.

It is against this backdrop therefore, that acquisition, maintenance, and retention of surgical competence become all the more important as a matter for scrutiny and study.

Measuring Surgical Competence

It is self-evident that good surgical technique equates with good outcome but that presumption lacks objective support because of the many other influences that accompany the delivery of care and thus influence surgical outcomes. Preoperative management with appropriate selection processes and timings, post-operative therapy and intraoperative adjuncts and treatments (antibiotic delivery, prophylaxis against venous thromboembolism, etc) and much more constitute a suite of items that make the unique impact of surgical technique difficult to identify amidst these many confounding variables. However, a linear relationship between complication rates and surgical skill rating has been clearly identified in recent studies from Ann Arbor University, Michigan[1], where the assessment of the video recording of gastric bypass procedures by 20 different surgeons resulted in a very direct inverse linear relationship between risk-adjusted complication rates (which accommodated comorbidity) with the rating of surgical skill that evaluated movement, tempo, exposure, tissue handling, and other aspects of intraoperative technical performance. That study also demonstrated a relationship between

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surgical skill and even medical complications (chest infection etc) which were presumed to be operative time-dependent and to be important in these complex and unfit patients. Being a good technician is therefore good for your surgical complication rate and an essential competence.

That same linear relationship was also shown to exist between hospital mortality and the number of doctors within each of the hospital studied facing sanctions and warnings initiated by the medical regulator (General Medical Council)[2]; this study showed the size of hospital not to have any significant impact but the greater the number of sanctions and warnings against doctors within any individual hospital, the greater the mortality rate for each hospital. So competence in technique, although hugely important, is not in itself a factor that alone will assure good patient outcome and hence other professional attributes play a hugely important part .

Add to that the observation that the implementation of checklists[3], which of themselves, make no change to the skill set of any individual practitioner in the operating theatre, and yet when properly applied the checklist results in reduced morbidity and mortality, and we are now facing a more complex picture when attempting to isolate those components that actually result in surgical competence.

Acquisition of Surgical Competence

The bipartite journey of undergraduate and postgraduate training starts with a rigorous selection into medical school and this is placed against the context of a high number of school leavers in the United Kingdom entering tertiary education. (Figure 1). Successful entry into medical school however is even more restrictive with approximately 9 to 10 applicants, all of whom are eligible on the basis of their academic achievements, competing for one place (Table 1.) .

Specialty choice five years later at exit from medical school, shows surgery to remain a moderately popular choice for many, especially males, and especially males who have taken an intercalated degree during their undergraduate course[4]. A highly competitive national selection process at undergraduate graduation permits entry into core surgical training which itself follows the completion of a two-year foundation attachment where the doctor completes an internship in six different medical specialties each occupying four months. Core training lasts for two years (with the exception of neurosurgery and otolaryngology where there are run through programs featuring direct entry into the specialty after foundation year 2).

Assessment to proceed after core training into specialty training (specialty registrars) is made by a combination of workplace-based assessments and the successful completion of the intercollegiate MRCS (membership of the Royal Colleges of Surgeons) examination. Competitive entry features once again in this passage into specialty training. Specialty training lasts approximately 6 years and is marked again by successful completion of work place-based assessments and then success in the Intercollegiate Specialty Fellowship Examination in whichever of the 10 specialties the training is entered.

The total time in training of fifteen years (five undergraduate years , two foundation, two core and six specialty years) should provide ample opportunity to meet the needs of the surgical career . However, whilst success rates in the specialty fellowship examination (exit examination) are high for UK-based candidates (approximately 85% success rate) they are by

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contradistinction significantly lower in those candidates who enter the training mechanism through alternative routes and are usually non-UK based.

The differential pass rate in the second part of the specialty board examination is considerable with only 35% of non-UK trainees finding success. This difference is worthy of interrogation. Identifying the features that allow a group of highly selected highly committed and able doctors (prerequisites for successful passage through surgical training) to either pass or fail at the final summative assessment would allow better identification of those areas that need investment in training and education by surgical colleges for different cohorts of surgical trainees.

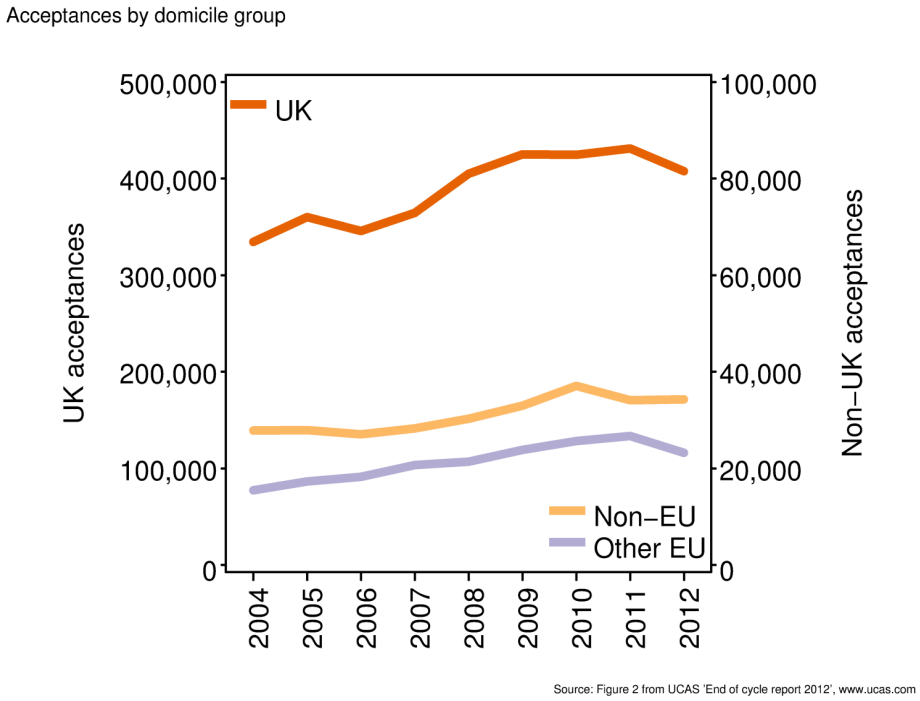

Figure 1. UK University acceptances 2004-2012

Table 1. Application Data from a Sample of UK Medical Schools,

University	places	applicants	interviews	Applicants per place
Aberdeen	162 (13)	1389	600	9
Edinburgh	202 (16)	2425	-	11
Imperial	265 (25)	>2000	600	8
Oxford	152	1250	425	8

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Maintaining and growing competence

Completion of training may be followed by entry into a sub-specialty Fellowship program and subspecialisation is a trend that has been present for some while and is a trend that is on the increase. This has been considered by some as detrimental to the provision of services since they feel that the generality of surgery has been compromised and in particular the ability for common, nonspecialist, and emergency conditions to be dealt with effectively by a workforce which is well versed in the generality of surgery to respond to the needs of the community, is becoming limited. While the linear volume/outcome relationship which pertains to oesophageal, pancreatic, and aortic surgery is well recognised, the exposure requirements for maintenance of skills for many other forms of surgical practice suggest that modest number are needed in order to maintain and preserve skills. Identification of the quality of surgical performance is being conveyed in a number of ways not least of which is the publication of mortality data in some specialties (notably cardiac and vascular,) and nationwide comparative performance data is available through a number of datasets that are held either by departments of health within government or by bodies designed to oversee quality improvement initiatives (e.g. Dr Foster – www.drfosterintelligence.co.uk). Whilst originally many of these datasets pertained to outcomes held at hospital level, increasingly surgeon specific outcome data is available for analysis.

Assessment of competence after completion of training has been lacking with most surgeons obtaining a fellowship not being held to account by any formal process for the remainder of their career and in the United Kingdom, for the first time since the inception of the Medical Register by the General Medical Council in 1858, a new process of competence assurance has been established and initiated in December 2012. This process runs a five-year cycle, with each year requiring an appraisal of every doctor in the United Kingdom (234,000) by a trained appraiser (usually a doctor in the same specialty who has undergone specific training in a national programme). The summation of five years worth of annual appraisal will allow a senior doctor in the hospital (Responsible Officer) to make a recommendation to the General Medical Council as to whether or not the doctor should retain their licence to practice (a licence to practice is required within the United Kingdom to be able to treat patients in any capacity. It is a UK specific and has no relevance in other countries). This process is termed revalidation, and has become a legislative requirement for clinical practice in the United Kingdom. The component parts of the annual appraisal include personal demographic data, an outline of the entire scope of your work, probity and health statements, as well as supporting information to indicate that you have remained up-to-date. This requires a description of the CPD undertaken each year which is recorded against the categories of clinical, academic, and professional development . A minimum of 50 hours per year is required to satisfy the needs of revalidation but more importantly than the actual time spent, a commentary on how that time influences patient care and clinical practice is required through a reflective journal.

Compliments and complaints are recorded and their management is discussed at appraisal, and once in the five-year cycle, multisource feedback is required from approximately 12 colleagues who are anonymous in the process; similarly feedback from 25 consecutive patients (random selection and not chosen by the appraisee) appears in the revalidation process. This process is an attempt at maintaining standards uniformly across the whole of medicine and has allowed surgical colleges the opportunity to act as standard setters in defining the proxies that can be used as a measure of surgical competence. The universal application as an obligatory

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mechanism in one nation is a first and perhaps demonstrates the way forward for other regions in the world in trying to harmonise standards of care across and between specialties.

Performance and Skill Degradation

There is a void in the surgical literature in relation to the potential for loss of skills as part of the ageing process. This possibly derives from the fact that those best placed to make commentary, may view it with a conflict of interest but there are data emerging from the United Kingdom which points to a tendency to a loss of competence in the latter stages of the surgical and indeed a medical career [5]. Indeed, the number of referrals to the National Clinical Assessment Service (an agency established to investigate poor performance in doctors) on account of conduct issues and clinical performance shows a steep rise after the age of 60 years[6]. The causes for this are unclear but perhaps a reluctance to change practice and modify with passage of time may result in intransigent positions and refractory attitudes which brings senior colleagues into conflict with others in the workplace.

There are many factors that may disable a surgeon's performance and day-to-day variation can be produced by illness, medication, stress, fatigue and even challenges to one's composure brought about by aggression and confrontation. These little- studied areas comprise human performance limitation which in turn feature in the socio-technological science of human factors. The study of human factors in the operating theatre is a novel area of interest and one which is being actively explored by the Royal College of Surgeons of Edinburgh in conjunction with the University of Aberdeen in Scotland. Poor and challenging conduct and behaviours as well as exemplary codes of conduct, can now be rated using the NOTSS taxonomy (Non-Technical Skills for Surgeons)[7] where skill categories include situation awareness, decision-making, teamwork and communication, leadership,-all essential ingredients of sound intraoperative performance. This program is now being taken up in a range of countries including the performance assessment framework of the Royal College of Australasia and is in the early phases of implementation in the USA.

Conclusion

Surgical competence is therefore something of a mosaic which is constructed by numerous interdependent pieces of skills, behaviours and attitudes, as well as thinking processes and a facility for accommodating the unexpected. Diligence, vigilance, intelligence and resilience are competencies which need to be built, nurtured and retained throughout a surgical career. Our current mechanisms for evaluating these areas are incomplete and it is important that as surgical educators, colleges continue to look carefully at the needs of the fellows and members so that the delivery of patient care can be met with both surgical precision but at the same time with commitment, responsibility and compassion. It is upon these pillars that surgical fellows will be best placed to meet the challenges, some of which may be unique to their domains but at the same time contribute and commit to COSECSA to ensure that your College has a bright and dynamic future producing the generations of African surgeons to come.

References

1. Birkmeyer JD, Finks JF, O'Reilly A, et al. Surgical skill and complication rates after Bariatric Surgery. NEJM, 2013; 369: 1434-42
2. The state of medical education and practice in the UK. General Medical Council. London UK www.gmc-uk.org/somep2013.
3. Haynes AB, Weiser TG, Berry WR, Lipsitz SR, Breizat A-HS, Dellinger EP, et al. A

Surgical Safety Checklist to Reduce Morbidity and Mortality in a Global Population. N. Engl. J. Med. 2009 Jan 29;360(5):491–9.

4. Goldacre MJ, Davidson JM, Lambert TW. Career preferences of graduate and non-graduate entrants to medical schools in the UK. Medical Education.2007;41:349-361
5. Donaldson LJ, Panesar SS, McAvoy PA.et al.Identification of poor performance in a national medical workforce over 11 years: an observational study. BMJ Qual Saf. 2013 ; 0 : 1-6. Doi 10.1136/bmjqs-2013-002054
6. National Clinical Assessment Service. NCS Casework, the first eight years. London : NCAS, 2009. http://www.ncas.nhs.uk/publications
7. Yule S, Flin R, Maran N, Rowley D, Youngson G, Paterson-Brown S. Surgeons' Non-technical Skills in the Operating Room: Reliability Testing of the NOTSS Behavior Rating System. World J Surg. 2008 Feb 8;32(4):548–56.