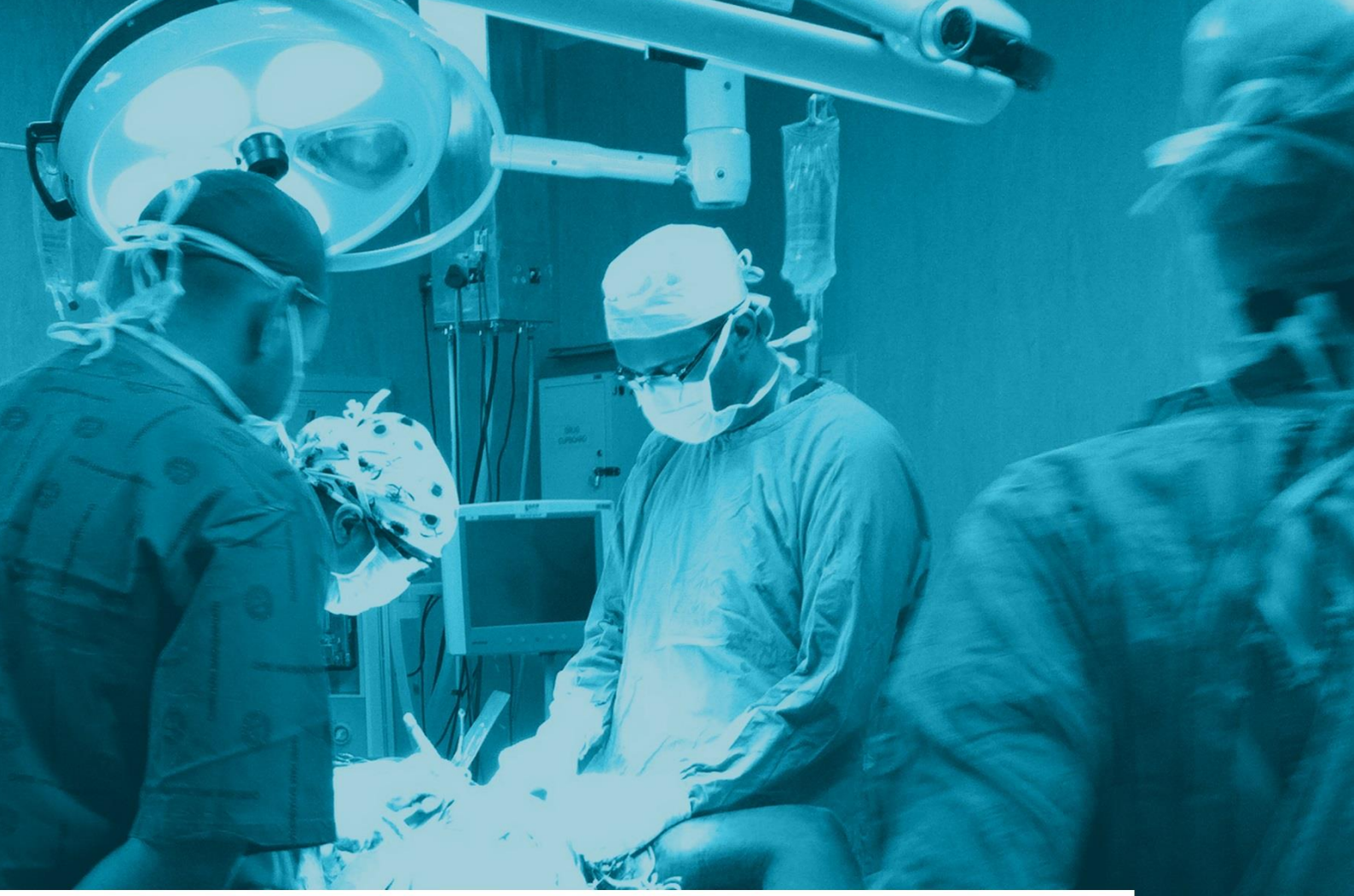

Trauma Systems in England

A strategy for Major Trauma Workforce Generation and Sustainability

March 2014

Royal College of Surgeons of England Briefing Note.

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ADVANCING SURGICAL STANDARDS

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SUMMARY

Trauma care is a multi-disciplinary care pathway, and surgeons frequently occupy a central role in the management of injured patients. The momentum generated by the recently established English Trauma Networks has seen improvement in the outcomes of the seriously injured, but the College believes that the sustainability and development of these networks is threatened by the lack of appropriate training pathways. Surgeons are well placed to provide leadership to the multi-disciplinary in-patient trauma team, to guarantee continuity-of-care and to assure a “whole patient” approach, but appropriate training paths are needed to endow the key skills required to run in-patient Trauma Services and lead Trauma Networks. Furthermore, whilst advances have been made with regard to defining trauma technical skill-sets, the training required to acquire such competencies is ill-defined or altogether absent, particularly with regard to the domains of general and vascular surgery. If the maturing trauma networks are to thrive, trauma-training opportunities and career paths for surgeons must be developed to ensure that patients obtain the fullest benefits of networked care.

INTRODUCTION

1. This paper sets out the vision of the College with regard to supporting the development of a cadre of surgeons who will lead and develop Major Trauma services in England. It explains what is meant by the term "Trauma Surgeon" and discusses different training requirements, and how patients should benefit. It is written for the benefit of commissioners, hospital trusts, educational bodies, trauma practitioners and patients.

TRAUMA SERVICES IN ENGLAND

2. In England, patients who are seriously injured are treated by integrated trauma networks comprising Ambulances Services, Trauma Units (TUs) and Major Trauma Centres (MTCs)[1]. These services are bound by protocols governing arrangements for triage, transfer, and treatment, backed by governance and benchmarking processes, to ensure that the right patient gets to the right hospital at the right time. Trauma Networks have improved outcomes for trauma patients across the country, but have only been established for 2 years, and are still fragile [2]. Care for an individual patient treated in a Trauma Network is often delivered across multiple clinical departments at multiple different locations, with each phase of treatment crucial to the wellbeing of the patient. Co-ordination of trauma care, management of the network that provides it, and correction of any deficiency, is a function as vital as surgical skill in determining the best possible patient outcome.

[1] MTCs are commissioned by NHS England Specialist Commissioning, with TUs commissioned by local Clinical Commissioning Groups (CCGs)

[2] Analysis of outcome data from the Trauma Audit and Research Network suggests that patient survival has improved by 40% since the NHS implemented regional trauma networks - Professor Chris Moran, National Clinical Director for Trauma. Major Trauma Forum Meeting, Nottingham, 29 January 2014 *and* NHS England. Independent review of major trauma networks reveals increase in patient survival rates; Available from: http://www.england.nhs.uk/2013/06/25/incr-pati-survi-rts/. Accessed 19 November 2013.

THE CURRENT ROLE OF SURGEONS IN THE CARE OF THE INJURED PATIENT

3. Surgeons have always played a significant role in the assessment and initial management of seriously injured patients, and almost all injured patients are admitted under the care of a named surgeon – irrespective of the need for a surgical intervention or not. General surgeons, neurosurgeons, vascular surgeons and orthopaedic surgeons may contribute to the early surgical stabilisation of patients, with other specialties such as plastic surgery, urology and maxillo-facial surgery playing a later, reconstructive role. The reception and stabilisation of patients is a critical function in ensuring survival, and requires a suite of leadership, decision-making, team-working and technical skills, carefully synchronised and orchestrated in order to ensure that the correct treatment is deployed at the right time. Continuity of care, and oversight of the patient's journey from admission through to discharge and subsequent rehabilitation, is an important attribute of successful pathways of trauma care.

4. Trauma haemorrhage remains the second most common cause of death in trauma patients, second to brain injury[3]. In a few MTCs, resuscitative surgery- aimed at salvaging life in the most severely injured patients – will be conducted by surgeons who have received specific fellowship-level training to do this. However, most centres rely on surgeons who have not received such training, but who may (or may not) have undergone a two-day Damage Control Surgery (DCS) skills course teaching haemorrhage control techniques[4]. DCS-trained surgeons are capable of delivering the initial bout of surgical resuscitation and stabilisation, but the treatment of ongoing issues and complications is not a feature of such training and may be especially challenging to manage[5].

5. In terms of post DCS management, there is substantial variation both within and between trauma networks as to the interest amongst surgeons in playing a central part in the onward care of the patient beyond the technical confines of their specialty. The service specification for Trauma Networks includes provision for a Major Trauma

[3] Royal College of Surgeons of England, British Orthopaedic Association. Better care for the severely injured. London: RCSE; 2003.

[4] General Surgical DCS courses include the Definitive Surgical Trauma Skills Course (DSTS) run by the Royal College of Surgeons of England, Definitive Surgical Trauma Care Course (DSTC) administered by the International Association of Trauma and Surgical Intensive Care. Orthopaedic DCS courses include the Damage Control and Orthopaedic Trauma Skills course run by the RCS (England). DCS is a suite of surgical techniques aimed at stopping haemorrhage and controlling contamination in order to restore the patient's physiology, with deferral of definitive repair of tissues until such time that the patient has been stabilised. DCS courses are considered an essential supplement to the generic Advanced Trauma Life Support (ATLS) course, which deals only with initial (Emergency Department) reception, team-based assessment and critical interventions.

[5] In a 2013 UK-wide survey of 368 general surgeons, training in operative trauma and trauma systems management was declared to be inadequate in 88% and 87% of respondents respectively. Preparedness for Trauma Surgery - where are the training gaps? A UK-wide survey of the ASGBI membership. Froghi F, Twaij A, Tai N. Association of Trauma and Military Surgeons, Harrogate, April 2014.

Service that takes ownership of all admitted trauma patients and co-ordinates ongoing care in a comprehensive and holistic manner. Not all MTCs have developed such a service, and fewer still have a surgically constituted service[6]. Similarly, all MTCs have a Trauma Director but few are surgeons, with the bulk being Emergency Medicine specialists.

6. MTC Trauma Services represent the organisational infrastructure that assures holistic and end-to-end care for the individual patient – a goal that is often inadvertently risked by the competing demands of the multiple teams of specialists required to address all aspects of the patient's injuries. Governance, quality improvement, educational programmes, budgetary responsibility, research and network functions are also part of the role of MTC Trauma Services and constitute the systems of care essential for network viability.

[6] Thirteen of the 22 English MTCs have a dedicated major trauma services or trauma surgery service, and a further five are currently developing such a service (February 2014). In seven of these 17 centres, the service is or will be provided by orthopaedic surgeons, in two by emergency medicine departments, in another two by general or vascular surgeons, and in six by a multidisciplinary group of consultants. A Survey of Major Trauma Centre Staffing in England. Jansen J, Morrison J, Tai N, Midwinter M. Submitted for publication.

WHAT IS A TRAUMA SURGEON?

7. In countries with a high rate of penetrating trauma - such as the United States and South Africa, the archetype of the Trauma Surgeon is a surgically trained doctor who takes responsibility for in-patients with major injury. In these countries Trauma Services are usually staffed by such individuals, who will have a general surgical training augmented by some other form of *bona fide* fellowship period that equips them with a wide range of surgical and critical care skills. Trauma Surgeons in the US and South Africa are a discrete, well regulated and appropriately acknowledged cadre who supervise and deliver surgical resuscitation, performing haemorrhage and damage control surgery within the torso and adjacent structures, and caring for the patient within the intensive care unit and ward environment. Trauma system leadership positions are near-exclusively filled by trauma surgeons.

8. In countries with a lower overall rate of trauma and a much lower rate of penetrating trauma, general surgical intervention (laparotomy, thoracotomy) is infrequently required and the landscape of service provision is different. In Australia, some trauma systems are led by US-SA style trauma surgeons and others are not. In continental Europe, damage control and orthopaedic (fracture fixation) interventions may be delivered by a trauma surgeon trained in both general and orthopaedic surgery[7]. Responsibility for orthopaedic and general surgical operative care compensates for the relative paucity of cases requiring abdominal or chest surgery, but at the potential cost of professional and personal sustainability, and has not found favour in UK surgical practice.

9. In the UK, there is no recognised sub-specialty of general surgical Trauma Surgery and no agreed definition of what constitutes a Trauma Surgeon amongst the surgical specialty organisations. Reasons for this may include the low incidence of trauma, the historic lack of trauma care regionalisation, lack of training infrastructure and professional opportunities, and organisational bias toward elective sub-specialisation[8].

10. In most hospitals, Emergency Medicine specialists lead trauma resuscitation teams, with surgical specialists brought in to offer technical advice and specialist surgical intervention as required. The GMC recognised specialty of Trauma and Orthopaedic Surgery pertains to orthopaedic surgeons trained to manage musculo-skeletal injury

[7] Leppäniemi A. A survey on trauma systems and education in Europe. European Journal of Trauma and Emergency Surgery 2008;34:577-81

[8] Tai NRM, Ryan JM, Brooks AJ. The neglect of trauma surgery. British Medical Journal 2006;332(7545):805.

and fragility fractures as part of their general spectrum of practice rather than the care of polytrauma patients. A smaller subset of Trauma and Orthopaedic Surgeons have gained additional training in orthopaedic trauma management, along Specialist Advisory Committee defined training paths, in order to manage complex injuries to the bony pelvis and long bones. Some of these surgeons have been responsible for setting up and administering major trauma services in their own trusts, and have been referred to as Trauma Surgeons.

11. The terminology should not be allowed to get in the way of what is required within English MTCs. Specifically, a Trauma Surgeon should be considered as a surgeon who is trained to care for patients with major trauma, who leads or contributes to the MTC Trauma Services, and who participate in and set standards for resuscitative and/or reconstructive surgery in patients with severe injury.

TRAUMA SURGERY AND MAJOR TRAUMA SERVICES – THE VISION THAT THE COLLEGE WISHES TO PROMOTE:

12. The surgical workforce is a key resource for safe delivery of trauma care beyond the operating theatre and throughout the patient pathway. Recognising this premise, there are two clear areas that the College wishes to underline as areas for improvement, both of which will assure the care of trauma patients and contribute to improved outcomes.

TRAUMA SURGERY

13. Complex polytrauma patients, presenting with life-threatening injury, constitute the sickest and most vulnerable group of injured patients that MTCs are expected to treat. The care of these patients should be co-ordinated, managed, operated upon if necessary (and re-operated upon if required) by surgeons who have undergone *defined training* for this task.

14. Specified training paths to develop a cadre of surgeons able to deliver these skills should be developed. The advanced trauma skills - required of General and Vascular Surgeons expected to deliver a service in MTCs - have been comprehensively codified in the 2013 version of the Inter-Collegiate Surgical Curriculum [9]. Now that trauma care has regionalised in England, opportunities to exploit the greater concentration of trauma cases for training purposes have never been more prevalent, and an appropriate training framework should be set out to accomplish this and prevent the need to undertake overseas trauma fellowships [10]. A small number of MTCs in London and other major conurbations cater to a higher proportion of penetrating trauma patients, offering a bespoke and readily exploitable training environment.

[9] https://www.iscp.ac.uk/surgical/syllabus.aspx

[10] The small number of trauma-trained general or vascular surgeons leading three of the 22 MTCs in the England obtained their experience *ad hoc* in overseas centres in North America, South Africa and Australia.

THE MAJOR TRAUMA SERVICE

15. Sustainability – and specifically the leadership and staffing of trauma services - is recognised as a chief concern amongst Major Trauma Network directors[11]. The establishment of surgically-staffed Major Trauma Services within MTCs *is important for the development and sustainability* of in-patient trauma care.

16. The arguments in favour of placing surgeons at the heart of the answer to sustainability are clear. Firstly, major trauma patients require Continuity of Care throughout their hospital stay and onward treatment - a fundamental attribute of British surgical practice. Secondly, basing the Trauma Service around a trauma-trained consultant surgeon "core" endows the Service with the requisite authority and surgical knowledge to facilitate early and follow-on decision-making, surgical prioritisation, and other disposition functions essential to keeping the patient moving along the correct treatment pathway. Thirdly, modern surgical practice embodies the attributes of multi-disciplinary team-based-working, pro-active case-management, patient-centred, transparent measurement of outcomes, and quality improvement – characteristics generic to contemporary cardiac, cancer and vascular networks, which are also non-discretionary functions of good trauma care.

17. Patients managed by surgically-constituted Major Trauma Services benefit accordingly, with MTCs benefitting from earlier and appropriate onward patient movement, facilitated by timely and regular review by surgeons trained in the continuing care of trauma patients.

18. The constitution of the surgical MTC Major Trauma Service will vary according to local trauma epidemiology and patient presentation. MTCs dealing with a higher volume of shocked patients will incline toward a service based upon trauma-trained general or vascular surgeons; whereas lower-volume centres seeing fewer patients requiring control of haemorrhage may benefit from an orthopaedic bias. No single model will suit all contexts and the spine of the Trauma Service may be composed of trauma-trained general, orthopaedic or reconstructive surgeons as appropriately determined by local factors.

19. All models will require Trauma Service surgeons to sufficiently understand the imperatives and principles underlying resuscitative and reconstructive trauma surgery such that they are confident in leading the patient along the best management

[11] NHS England MajorTrauma Forum Meeting, Nottingham, 29 January 2014.

trajectory, by anticipating what is required and ensuring that this is delivered in a timely fashion by harnessing the requisite interventions from all parts of the multi-disciplinary team.

20. MTC Trauma Service surgeons should be trained in order to deliver this service, including network administration skills, irrespective of base specialty (genera/trauma surgeon, orthopaedics or otherwise), and specified training paths to develop a cadre of surgeons able to deliver these services should be developed.

NEXT STEPS

21. The work done to Regionalise Major Trauma in England represents a great improvement on previous arrangements for care of the seriously injured, but must be secured and developed. Purposefully training surgeons to take on trauma-specific roles will help consolidate and develop what has been achieved to date

22. Specifically, the vision that the College wishes to develop includes:

- The development of suitable training programme for trainees in general and vascular surgeons wishing to become competent in damage control and definitive trauma surgery.
    - Delivers the technical and non-technical skill-set as defined in ISCP (General and Vascular Surgery) 2013 (Competencies for surgeons working within English Major Trauma Centres), including multi-cavity and extremity haemorrhage control skills.
    - Consistent with future training objectives as set out in “The Shape of Training”.
    - Supplementary, but complementary to elective training schedules.
    - Designed to endow the skill-set to
        - Manage patients both during and beyond the initial 24 hr stabilisation period, and to lead and co-ordinate the multi-disciplinary team response until patient discharge.
        - To effectively contribute to the clinical management of the Major Trauma Centre and Trauma network.

- The development of defined training opportunities for trainees from any acute surgical specialty to lead MTC Trauma Services in England.
    - Consistent with future training objectives as set out in “The Shape of Training”.
    - Supplementary, but complementary to elective training schedules.
    - Designed to endow the skill-set to
        - Lead and co-ordinate the multi-disciplinary team response until patient discharge.

- Effectively contribute to the clinical management of the Major Trauma Centre and Trauma network.

23. A purposeful and renewed engagement with all relevant stakeholders in order to promote the vision of surgically-led major trauma services, including *employers* (Hospital Trusts hosting MTCs), *standard setters* (Specialist Commissioning Trauma Clinical Reference Group and the National Institute for Care and Health Excellence - which is currently examining the role of MTC Trauma Service), and *training authorities* (Joint Committee on Higher Surgical Training Specialist Advisory Committees, Schools of Surgery) in order to promote the benefits of surgically-led MTCs, training outputs and career paths, and to develop these accordingly.

CONCLUSION

24. Major trauma is a disease that profoundly affects patient physiology and anatomy, which almost always involves surgical decision-making and management, even if no surgical intervention is required. There is a ready opportunity for the College to build on the nascent success of trauma regionalisation in England by supporting a view that promotes and develops trauma surgical training pathways, equipping surgeons to surgically resuscitate and care for patients concentrated in to 22 major trauma centres. By embedding trauma-trained surgeons in to the Major Trauma Services of these MTCs the quality of care experienced by patients can be sustained and improved.