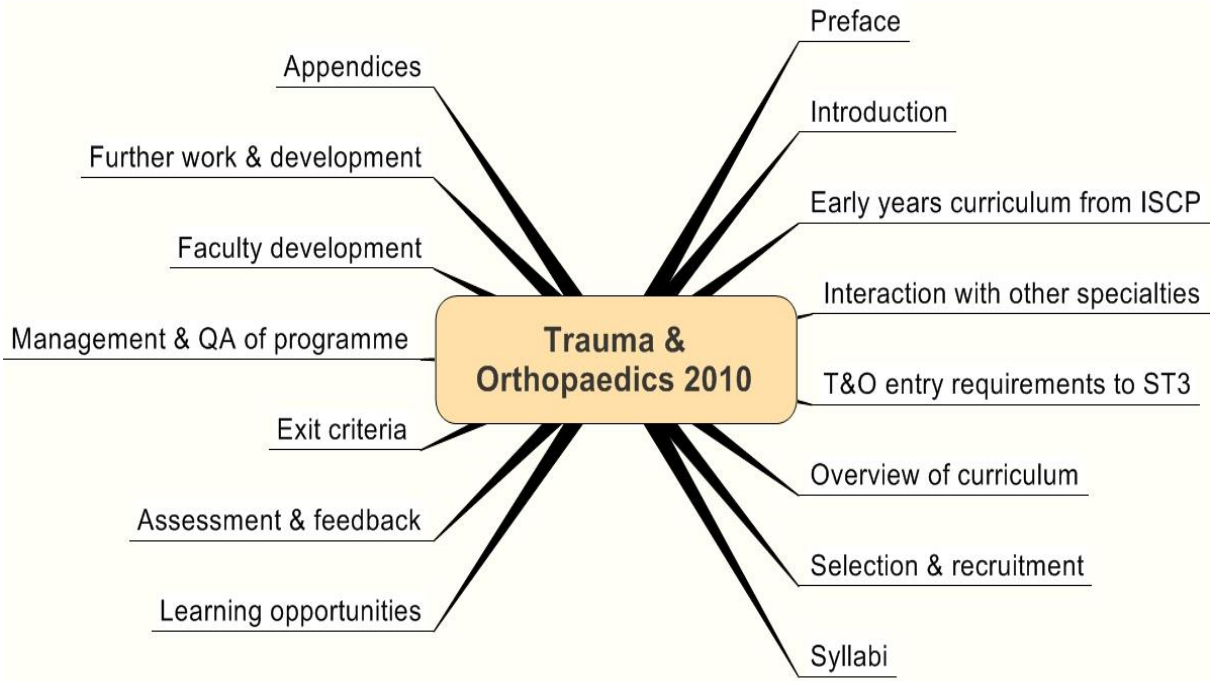
Specialist Training in Trauma and Orthopaedics 2010

Editors: David Pitts, Prof. Angus Wallace, Prof. Nick Clarke, Lester Sher, Mike Reed



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Authors & Editors 2006 edition

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British Orthopaedic Association (in particular for the provision of the Clinical Knowledge Syllabus)
OCAP Steering Group
British Orthopaedic Trainees Association
Trauma & Orthopaedic SAC
Intercollegiate Surgical Curriculum Project for material in the early years and Professional behaviour and leadership skills sections

Copyright

Questions, Comments, Updates

Questions and feedback are welcomed. They should be addressed in the first instance to David Pitts or Prof. Wallace via admin@ocap.org.uk

PMETB: What is a Curriculum?

A statement of the intended aims and objectives, content, experiences, outcomes and processes of an educational programme including:

- a description of the training structure [entry requirements, length and organisation of the programme including its flexibilities, and assessment system],
- a description of expected methods of learning, teaching, feedback and supervision

The curriculum should cover both generic professional and specialty specific areas.

TABLE OF CONTENTS

1. Preface to the 2010 curriculum

In September 2006 the first Trauma and Orthopaedic (T&O) competence based curriculum was approved by PMETB. Since that time there have been a number of changes that have impacted T&O, many of which are ongoing. Attempts are still being made to unify the OCAP and ISCP curricula together with their respective online delivery systems. It is because of these ongoing changes and uncertainties that T&O wish at this time to submit an interim curriculum. This document will be submitted, with PMETB's agreement, in 2009.

T&O is a large surgical specialty (approximately one third of the surgical workforce) and as such faces particular difficulties with short lead times for change. Discussions earlier in 2009 lead T&O to believe that its curriculum could be resubmitted without change. It became clear very recently that the T&O curriculum would have to be adapted to include the newly developed early years component of the ISCP curriculum. The final version of this curriculum was not received until September 4th 2009. A further final version was provided on September 16th. It is this version which has been included in our 2010 curriculum. A further final version was provided on September 20th but work was already underway on the previous version. This timetable has allowed only limited discussions with the BOA Training & Curriculum Committee. The SAC as a whole has yet to discuss the new curriculum as a whole.

In the attempt to provide PMETB with an updated curriculum in such a short time frame there has been no opportunity for wider discussion with either the T&O Specialist Advisory Committee or the Training and Curriculum Committee of the British Orthopaedic Association. Under these circumstances it is inevitable that there will be problems (heading style, inconsistencies or other typos) within the document, we apologise for this in advance.

The ISCP early years' material has been included without amendment except to delete syllabi relating to other specialties.

The Professional Behaviour and Leadership Skills syllabus of ISCP has also been included, replacing the previous syllabus adapted from Psychiatry in the 2006 curriculum.

Where possible we have included the ISCP material but have also tried to maintain the integrity of the T&O curriculum in such a way that trainers and trainees will continue to feel ownership of it and pride in it as they have in the past.

The 2006 T&O curriculum was produced in the climate of "run through" training being the future model. We now have the situation where numerous early years models have appeared. We hope that in our efforts to blend the best of the 2006 curriculum with newer elements there are no confusions or inconsistencies.

We remain of the view clearly enunciated in our 2006 submission that the principal focus for aspiring Trauma and Orthopaedic trainees in the early years of training should be traumatology. We likewise consider that those surgeons passing through our discipline en route to other specialty careers should take from our specialty insights into the care of the injured.

We anticipate that the next phase of our curricula development will be the clarification of syllabus, competencies and a guide to specialist practice. Successful completion of such modules would signify skills that might support a special interest practice.

2. Introduction

a) FOREWORD

What do we expect of the Trained Trauma and Orthopaedic Surgeon?

The Specialist Advisory Committee (SAC) in Trauma and Orthopaedic Surgery has already defined the Standard at which a surgeon would be assessed as having completed their training and at which they might be deemed ready for the award of the Certificate of Completion of Training (CCT).

> *"A surgeon with CCT will have been trained in the generality of Orthopaedics and Trauma when they have been assessed as having completed the competencies laid out in the Orthopaedic and Trauma curriculum. The syllabus is for the generality of Trauma and Orthopaedics and this will be assessed in the summative Intercollegiate Specialty Board Exam which trainees must have completed by the end of their training. This will form part of the trainee's portfolio which will also include workplace based assessments, the evidence of previous learning agreements and ARCP/RITA assessments. The Portfolio will be assessed in its entirety at the final ARCP/RITA G assessment prior to the recommendation of the award of the CCT.*
>
> *Towards the end of training in the generality of the discipline the overwhelming majority will have begun to develop a subspecialty interest prior to CCT. This will continue post CCT and is likely to be formally assessed in a subsequent peer review process.*
>
> *Such an individual will then be able to join and lead a multidisciplinary team which will receive, assess and definitively manage the majority of patients who need emergency treatments. They will provide a similar service for a range of common Orthopaedic conditions. In both Trauma and Orthopaedic services they will recognise the need to refer rarer and prescribed conditions for more specialised definitive management."*

PMETB presented the partners involved in the organisation and delivery of training with the challenge to develop and introduce a competency based curriculum in which the knowledge, attitudes and skills required for a trainee to be judged as worthy of a CCT are explicitly defined and assessed.

In this document we in Trauma and Orthopaedic surgery present our curriculum. The methods, syllabus and processes to deliver that curriculum are outlined together with assessment tools necessary to ensure that the trainees enrolled in T&O surgical training from 2007 onwards can demonstrate that "The Standard "has been achieved.

The Trainees in Trauma and Orthopaedics have been familiar for several years with the tools of competency assessment laid out in the Orthopaedic Competency Assessment Project. Those tried and tested tools have now been further developed and used to support the delivery and assessment of the syllabus. Trainees and Trainers alike should have confidence in processes involved and view the "New" Curriculum as an opportunity to further standardise training throughout the United Kingdom ensuring a very high quality of CCT recipient. This document is inevitably just the beginning of the next phase in Trauma and Orthopaedic education. We intend to build and strengthen the process of training and assessment as the lessons from the introduction of this new curriculum emerge.

For the future we hope that all concerned, especially the Public and Patients, will welcome this initiative as being in the best interests of those receiving Trauma and Orthopaedic care and ensure that only those appropriately supervised and trained surgeons deliver that care throughout the UK.

Clare Marx, Tony Banks, Lester Sher, David Rowley, David Pitts
September 2006

b) SCOPE & PURPOSE

Purpose

This Curriculum is produced to guide Orthopaedic training in the UK by providing accessible information for both the trainee and the trainer, who are seen as its primary audience. The Curriculum aims to make the links between the surgical education process as a whole and assessment processes in particular absolutely clear. It is written bearing in mind that all of its proposals must be feasible in the present workplace not just in an aspirational future. Although the Curriculum is a technical document written primarily for a professional orthopaedic audience it also seeks to provide transparent guidance for all, in particular the general public and patients.

Target Audience

There are a number of Stakeholders for whom this document has been created:

- Validating bodies
- Collaborating groups
- Training Programme Directors
- Trainers
- Trainees
- Employers

It is written for a professional audience, accessible to the general public / anyone who has a role in T & O Training.

Guiding Principles

During the development of the Orthopaedic Competence Assessment Project (OCAP, see historical overview Section 2-5) tools and methodology in T&O initial interviews with trainers and trainees gave rise to a series of guiding principles. These principles informed the OCAP programme and have now been adopted to underpin the design process of the new orthopaedic curriculum.

- A radical alternative

“A problem cannot be solved by the same technology used to create it” (Einstein).

In the current surgical training environment there have already been major changes that radically affect the amount of time and resources available. Designing a curriculum that merely revised the existing paperwork was never an option. It was clearly necessary from the beginning to provide a clear structure to what, in many cases, was an unstructured activity.

In designing the materials and delivering the curriculum we have tried to learn from our experience and that of others. Historically we observed in the JCHST Competence Working Party that there were difficulties moving forward that were attributable as much to change management and innovation issues as to the actual content of the assessment task. The curriculum has been designed with the intention of gaining as much support from the Orthopaedic community as possible in order to facilitate the innovation process.

- Competence focused

The acquisition of operating experience is an important factor in surgical training and so any curriculum to be used “in the workplace” should be competence focused. Competence may be defined simply as

"… an individual's ability to perform in the workplace to the required standard … competences are the descriptions of the constituent parts of performance which answer the question 'what do people have to do to be effective in various parts of their job?'"[1]

There are debates about the nature or meaning of the word competence. One conceptual standpoint states that a competence is simply a demonstrable ability to do something, using directly observable performance as evidence. Another understands competence as being a: **'**holistic integration of understandings, abilities and professional judgments, where 'competence' is not necessarily directly observable, rather it is inferred from performance[2,].

The integration of these two aspects acknowledges a much greater level of complexity within surgical competencies and avoids the problem that individuals may well be able to demonstrate that they can 'do' something, but that does not necessarily mean that they understand what they are doing or why until they give evidence for it.

Within our particular competence model we must look not only for the three key domains i.e. knowledge, skills and attitudes, but also for the unique combination of those domains in areas such as professional judgement. The development of professional judgment is a key outcome of surgical training, and allowance must be made to maintain the dynamic tension between the separate aspects of competence in an attempt to allow a clear assessment of whether a trainee possesses sufficient competence in individual skill areas to prove competence in professional judgement.[3]

Flexible and easy (intuitive) to use

Each programme, and every trainer, will wish to retain a degree of individuality, whether of organization (4, 6 or 8 month attachments) or specialty selection. It is intended that the curriculum design will be able to recognise this, whilst providing a consistency of standard and outcome.

Able to adapt to new developments (open architecture)

The curriculum should not be such a 'finished product' that it cannot benefit from work that will not reach maturity before it is already in use. Many innovations, especially in social technology settings, have a lengthy gestation period. From the beginning, every effort has been made to ensure that the curriculum's architecture is sufficiently open to allow synergy with new developments. A full integration of the orthopaedic curriculum with the orthopaedic e-logbook, for example, is work in progress.

Adaptable to a variety of contexts

Each programme delivers its orthopaedic service (and training) in an entirely different "geography". If trainees are to be taught in the work place then the curriculum tools must in some way take into account this difference between the work places in which they are being assessed. These workplaces differ not only in the facilities for education but also in the length of attachments, frequency of supervised sessions and attitudes to training and teaching (naturally some of these factors vary within each centre and between trainers). T & O has tried to limit the effect of these differences by creating a "delivery mechanism" (from the OCAP) which is currently facilitating the implementation of the curriculum.

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[1] Standards in Competence Framework, UK Cabinet publication
[2] Michael Eraut. Developing Professional Knowledge and Competence. Falmer. 1994:172-181
[3] these notes on competence are adapted from work originally written by D. Pitts for the ISCP in consultation with Danae Goodsman

One element of the trainee's portfolio

Much surgical training happens in midst of service delivery and is therefore subservient to the needs of the patient. This may severely limit the window of opportunity during which skills may be observed, articulated and evaluated. The hospital environment, where many trainers do not have their own office space and distractions abound, is hostile to finding time and space to meet and talk. Most surgeons join the profession to perform surgery. They acknowledge the need to train but appreciate the evaluation of training to be part and parcel of service delivery.

With these factors in mind we have tried (within the curriculum) to keep materials and systems straightforward and sympathetic to the paucity of time in rapidly changing settings within which to learn complex concepts and tools.

Driven by the trainee

We have put responsibility into the hands of those who hold largest stake in seeing training happen – the trainees themselves! The T&O curriculum requires (and enables) the trainee to take the initiative and responsibility for their own training. The trainer is still the senior partner in the enterprise but the curriculum (through OCAP) provides tools to guide the trainee in getting the best from their trainer in a mutually supportive and mature relationship.

Useable, valid and reliable

From the beginning we have borne in mind that the materials need to satisfy these three criteria. All are thorny issues made more complex in a setting where service, which quite rightly has the patient as its focus, is the primary learning environment.

Validity

Questions of validity (truth) may be addressed in several different ways. Does the implementation of the whole system make a valid improvement in the outcomes of training? Are the index procedures selected for assessments a valid choice? Is the internal structure of each assessment valid in terms of the measures of performance it proposes?

A major problem in this area is the lack of previous measures of training effectiveness. The OCAP process came into being because there was no objective measurement of surgical competence at present. It is impossible to make comparison with anything other than examination results, which only measure a limited area of intellectual competence. Validity remains the key however, and extensive efforts have been made to find answers in this area, not only by detailed validation of index procedures and Procedure Based Assessments but also by keeping the Curriculum in such close proximity to the workplace that face validity is maximised.

Reliability

The curriculum should be understood by all (or most) in the same way. Efforts have been made to base the curriculum firmly in accepted practice so that a firm foundation of agreement can be laid for the future. Trainers will have to demonstrate competence in the use of the curriculum over time.

Usability

The circumstances in which the curriculum will be used dictate that this area is of primary concern. "It might be valid and reliable but can you use it in a practical situation?" Efforts have been made to ensure that the curriculum can be used in real life contexts within the constraints of time, user skills and attitudes.

Holistic in approach

The Competence Working Party guidelines, resonating with PMETB's own later guidance incorporated "generic skills" such as communication and teamwork into our thinking from the start. It was clear from conversations with training directors that many problems encountered amongst trainees had their roots in the area of personal effectiveness. In the past many of these problems were not identified until year 3 or 4 of training but it is desirable that they are recognised at a much earlier stage in order to ensure a solution. This also raised the problem of the trainers' ability in this area. For this reason materials have been included that will help both sides to develop their awareness and competence in these vital skills.

Formative and summative

The notion of a summative assessment where a trainer (possibly external) observes a trainee's performance in a pass/fail scenario was rejected at an early stage after two pilots. On one hand there seemed to be insurmountable logistic and resource problems but more importantly training in the workplace is an ongoing activity and assessment should resonate with its formative nature. It was decided that all workplace assessments should be formative, giving feedback to the trainee to inform and guide their future performance. It was noted, however, that such assessments would, as a whole, be a useful summary of the trainee's ability to learn and progress. The successful completion of a PBA for example is not seen as a license to operate in that procedure but as a single component of a wider assessment of the trainee's ability to learn operative procedures and perform them on a variety of patients with differing degrees of severity and complexity in their condition.

Electronic application

It has been clear from the beginning that to gather data from a workplace based curriculum requires electronic application to facilitate this. Sadly the levels of IT "literacy" encountered in OCAP pilots were highly variable and, more importantly, access to IT resources in NHS Trusts is extremely patchy (according to 2006 OCAP data). We have therefore sought to demonstrate the possibility of an easy transfer to a digital system whilst maintaining a paper-based system as the primary resource in these early stages while agreements are reached.

c) DEVELOPMENT PROCESS FOR THE ORTHOPAEDIC CURRICULUM

Creation of the new Orthopaedic Curriculum could legitimately be seen as evolutionary based on consensus within the profession. The present work builds on substantial foundations laid over a period of years by a variety of individuals.

- **Pre 2001**

At this point the orthopaedic curriculum documents were in the form of the BOA's "blue book", syllabus of Clinical Knowledge which has formed the foundation for the present Applied Clinical Knowledge syllabus. This was agreed after extensive consultations by the Education Committee of the BOA in partnership with the Specialist Associations. At this point a number of experiments were already underway on the use of Learning Outcomes and development of Learning Agreements although very little had been produced in a coordinated form. Experimental developments in competence assessment had been undertaken as early as 1994 (Pitts, Ross 1994) and in the latter part of this period, following on from the Bristol enquiry, the JCHST formed a Competence Working Party under the Chairmanship of Professor Galasko.

- **2001 – 2006**

The *JCHST Competence Assessment Working Party* met for a three year period under the chairmanship of Prof Galasko. Its recommendations were accepted in 2002:

1. That surgical competencies should include the following:
   a) Generic or transferable
   - Communication skills
   - Teaching / learning skills
   - Personal effectiveness
   - Management skills

   b) Clinical
   - Knowledge of basic sciences
   - Knowledge of theoretical clinical sciences
   - Knowledge of clinical skills
   - Decision-making
   - Surgical skills
   - Post-operative management
   - Research
2. That all trainees should be assessed by means of a portfolio containing the following elements:
   - Learning agreements, which should be drawn up by trainers and trainees, which pay due deference to the experience of the trainees and the facilities available from the training
   - A research portfolio which should follow the current JCHST guidelines dealing with personal research, assessment of the research of others and evidence of audit
   - An operative log book which should demonstrate learning through reflection on complications experienced
   - An accumulation of performance-based objective assessments derived from ward, clinic and operative exposure concentrating on the most common operations performed
   - A reflective diary of meetings attended and locally delivered educational events
   - A competence map linking the methods of delivery, assessment and curriculum content, to ensure no serious gaps

3. That a number of experiments should be encouraged in order to develop materials to support the portfolio process.

The *Orthopaedic Competence Assessment Project* was established in December 2002 through industrial sponsorship with the aim to

"Improve the quality of Higher Surgical Training in orthopaedics through the introduction of a competence based portfolio of coaching and assessment tools".

The project brought together materials (and expertise) already in various stages of development and implementation, assembling them as a coherent whole in order to further develop both the materials and the skills needed to use them effectively. The project team, working together with the British Orthopaedic Association and the T & O Specialist Advisory Committee, has now produced a competence based portfolio of educational tools which have been piloted and validated. This body of work has formed the basis of orthopaedic higher surgical training UK-wide since August 2005

The *Intercollegiate Surgical Curriculum Project* (ICSP) began its work in 2003, and since then, the Department of Health has funded two subsequent ISCP project phases, including, a national pilot of the changes proposed – which commenced in September 2005. Orthopaedics has contributed extensively to this project whenever the opportunity has arisen and the Procedure Based Assessment tools originally developed in orthopaedics have formed the model for all specialties. By Spring 2006 the ISCP had failed to deliver a usable curriculum for T & O, which created the need to produce the September 2006 curriculum.

- **2006**

An editorial group was convened by the Chair of the Orthopaedic SAC to draw together the work that had been done through both OCAP and the BOA to create a fit for purpose Orthopaedic Curriculum to be submitted for PMETB approval. This working group drew together material from a number of sources to create the 2006

document which formed a focus for considerable discussion, debate and refinement following its approval by PMETB.

- **2006-2010**

Despite many attempts at dialogue the relationship between the ISCP and T& O has still to reach a satisfactory conclusion. The most recent set of discussions are underway to resolve differences and unify the two systems but funding for T&O's curriculum (OCAP) still remains spasmodic with the BOA being the most consistent means of ongoing support.

It is still hoped that the appropriate funding will be identified for the Orthopaedic Curriculum to be regularly reviewed through a specially created sub-committee of the SAC. This group will review material and debate on an ongoing basis throughout the year with a yearly face to face meeting at which amendments to the Curriculum will be ratified and a new document issued if necessary. Membership of this group will be decided by the Orthopaedic SAC and will include representatives from the BOA and the British Orthopaedic Trainees Association as well as a lay member.

This 2010 curriculum has been produced as an attempt to begin to bridge the gap and may hopefully provide a platform for further collaboration.

3. Early years curriculum from ISCP

A curriculum for the early years of surgical training

d) PREFACE

This is a competence based curriculum. Its focus is on the trainee's ability to demonstrate knowledge, skills and professional behaviours that they have acquired in their training (specified in the syllabus) through observable behaviours. It is not time-defined and allows these competences to be acquired in different time frames in some training programmes than in others, depending upon the structure of that programme. There are certain milestones or competency points which allow trainees to benchmark their progress. A critical competency point is ST3 at which point, in practice, trainees will make a clear commitment to one of the nine SAC defined disciplines of surgery.

This document contains the curriculum which must be completed in order to meet the entry requirements of ST3 irrespective of the training route followed. The document contains, amongst other things, the syllabus of the core skills, knowledge and professional behaviours which that are required of successful candidates in the MRCS examination. In addition, this curriculum refers to other requirements and assessments demanded of surgeons wishing to proceed into ST3.

The syllabus is achievable via different training programmes which vary between Post Graduate Deaneries.

EARLY YEARS TRAINING AND THE CORE CURRICULUM –

e) OVERVIEW

Doctors who aspire to a career in surgery will choose, during their training, to specialise in one of the nine SAC defined surgical specialties, namely:-

- cardiothoracic,
- general surgery,
- neurosurgery,
- oro-maxillo-facial surgery (OMFS),
- otolaryngology,
- paediatric surgery,
- plastic surgery,
- trauma and orthopaedics (T&O)
- urology,

The curriculum for each of these specialties is competency based and the number of years taken to achieve the competencies is merely indicative. There are way points:

- entry to surgical training - CT1 or ST1
- entry to entirely specialised training - ST3
- exit at CCT within one of the nine defined surgical disciplines.

ST (Speciality Training) competencies refer to a type of training where the speciality element is integrated with the core element of skills, knowledge and professional behaviours from the start. CT (core or generic training) assumes trainees enter a period where they may be exposed to a variety of specialities which may or may not be directly relevant to their ultimate speciality choice. It is possible for any trainee to transfer from one to another speciality discipline of surgery provided they a) meet their educational milestones in the core and b) satisfy all the speciality requirements for ST entry in the specialty of their choice. The different training schemes offered by the Post Graduate Deaneries meet different educational needs and permit trainees to make earlier or later final career choices based on ability and preference.

The start of ST3 is a key competency point when candidates demarcate their training from the more generic, to the more specialised route.

Currently all nine surgical specialties have separate curricula, which each envisage 7-8 indicative years of training from ST1/CT1. These curricula were conceived and written before 2007 within the context of 'run through' training as proposed by MMC. However, within the early years of training, much of the content of these different curricula is common. The intention of this document is to capture the commonalities and delineate the speciality differences laid down in the first two levels of competency defined as ST1 and ST2 in these speciality curricula.

It is important to emphasise that it is essential that candidates must achieve both core and specialty specific competencies to be eligible to compete at the ST specialist entry competency level. The core competencies reflect the competencies that ALL surgeons must demonstrate, while the specialty specific competencies reflect the early competencies relevant to an individual specialty.

f) PURPOSES

The purposes of early year's surgical training are:-

1. To provide a broad based initial training in surgery with attainment of core knowledge, skills and professional behaviours relevant to the practice of surgery in any specialist surgical discipline. This is defined within the core syllabus (which is also the syllabus of the MRCS).

2. In addition it will provide early speciality training such that candidates can select one on the nine surgical speciality options and demonstrate that they have the knowledge, skills and professional behaviours to enter specialty training at ST3 entry level (see below) in that surgical specialty. The specialty specific elements are laid out in the specialty specific curricula, and for convenience abstracted in this document. These speciality elements (except in otolaryngology – see 3) are NOT tested in the MRCS but through WPBAs in the first instance, and subsequently through the Intercollegiate Specialty FRCS examinations, which are taken towards the end of specialty training.

Additionally candidates will be continuously assessed on the contents of the core curriculum and their speciality specific slots through workplace based assessments (WPBA) and structured reports from Assigned Educational Supervisors which in turn contribute to the Annual Assessment of Competency Progression (ARCP); this includes the competencies expected of all doctors including surgeons to meet their obligations under Good Medical Practice (GMP) in order to remain licensed to practice.

CANDIDATES WHO WILL BECOME SURGICAL TRAINEES

Candidates will be selected after completion of Foundation competencies or their equivalents into either run through ST1 or generic/themed CT1 posts. They will then have to achieve agreed milestones in terms of College examinations and local ARCP arrangements in Deaneries which will include the described work place based assessments. Entry to ST3 will only proceed if the competencies described in this document are achieved, irrespective of the training system, be it run through or generic/themed training.

ENTRY REQUIREMENTS

The specifications required of a person wishing to enter surgical training are laid out below.

Person Specification

Application to enter Specialty Training at ST1/CT1 in any discipline

	Essential	When Evaluated[4]
Qualifications	MBBS or equivalent medical qualification	Application form
Eligibility	Eligible for full registration with the GMC at time of appointment Eligibility to work in the UK Evidence of achievement of Foundation competences by time of appointment in line with GMC standards/ Good Medical Practice	Application form Application form Interview/Selection centre[5]
	Is up to date and fit to practise safely	Application form References
	All applicants to have demonstrable skills in written and spoken English adequate to enable effective communication about medical topics with patients and colleagues demonstrated by one of the following: a) that applicants have undertaken undergraduate medical training in English; or b) have the following scores in the academic international English Language Testing System (IELTS) – Overall 7, Speaking 7, Listening 6, Reading 6, Writing 6. If applicants believe they have adequate communication skills but do not fit into one of these examples they must provide supporting evidence	Application form Interview/Selection centre
	Meets professional health requirements (in line with GMC standards/Good Medical Practice)	Application form Pre-employment health screening
Fitness To Practise	Ability to provide a complete employment history No more than 51 weeks in surgery (not including Foundation modules),	Application form
Language Skills	ALL sections of application form completed FULLY according to written guidelines	Application form
Health	Be able to practice as laid out in maintaining good health in GMP	

g) THE TRAINING PATHWAY

From the trainee's perspective, he or she will be able to undertake surgical training via differing routes depending on which training scheme they choose or are selected for, within a School of Surgery in one of the Postgraduate Deaneries in the United Kingdom.

1. For those trainees who are certain of their specialty choice, and who choose to enter "run through" training, competitive entry into ST1 will be possible with run through training in their chosen specialty to CCT, where this is offered by the specialty. This is currently the only route by which trainees can undertake training in neurosurgery (Their early years training programme must ensure they have sufficient exposure to the generality of surgery to address the demands of sitting the MRCS). Such a route still demands that in addition

[4] 'when evaluated' is indicative, but may be carried out at any time throughout the selection process

[5] A selection centre is a process not a place. It involves a number of selection activities that may be delivered within the Unit of Application.

to speciality specific competencies, the core competencies common to all surgeons are attained before entering ST3 and these will be assessed through the MRCS, WPBAs and satisfactory ARCPs.

2. For those trainees who are either uncertain of their chosen specialty, or who are unable to gain entry to run-through training, a period of generic surgical training will be necessary. During this period they will attain core surgical knowledge, skills and professional behaviours, while sampling a number of surgical specialties and making a decision as to their preferred specialty or specialties. It will be necessary in addition to attaining core competencies to ensure that they “top up” their speciality specific competencies to make them eligible to enter ST3 in their chosen speciality. They will then seek to enter specialty training at the entry ST3 level by competitive entry. Open competition will test candidates against SAC defined competencies for an entry ST3 trainee.

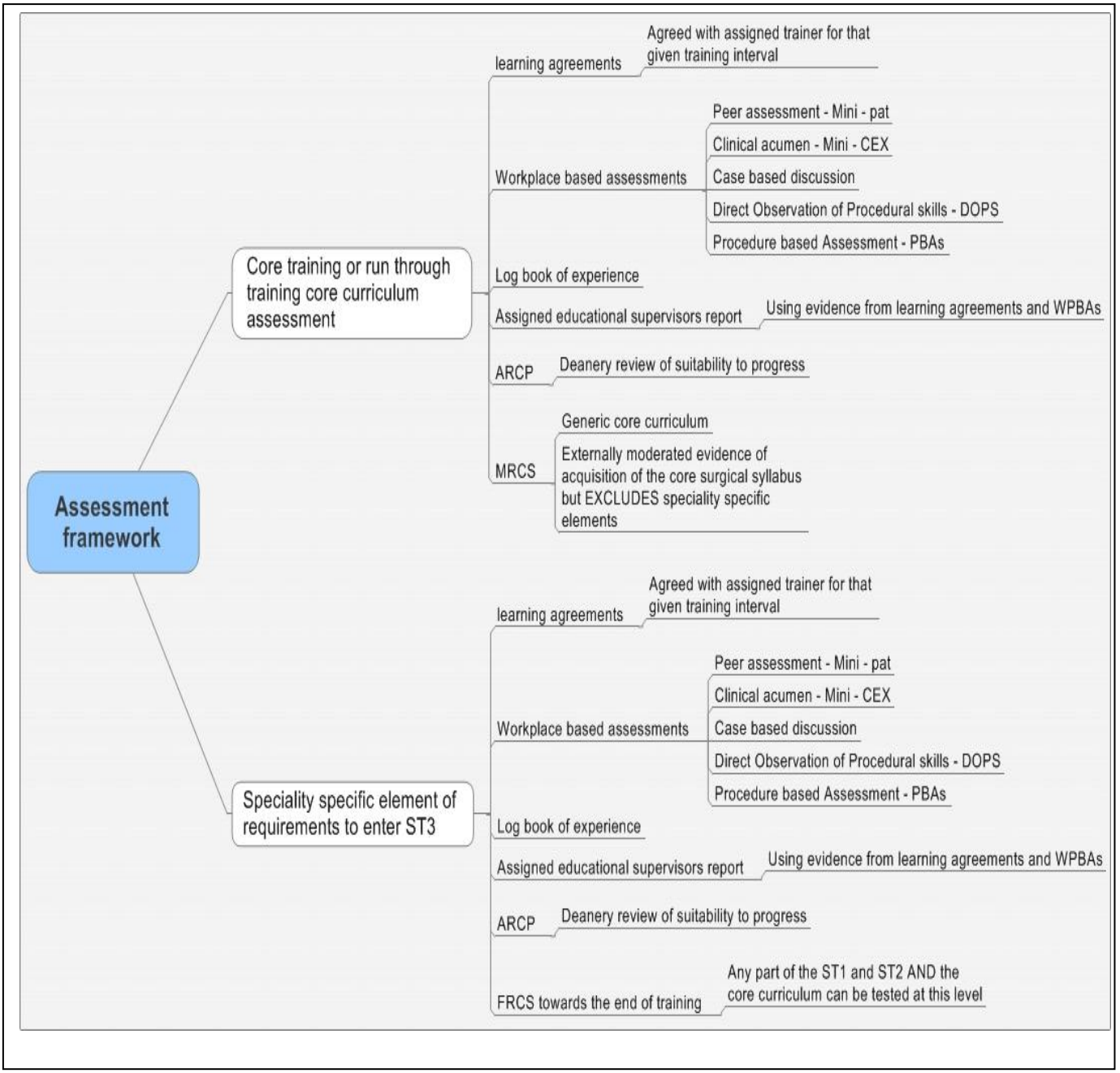
This model has a number of possible variants. It might be possible to teach core completely within a generic programme followed by speciality top up training later on in order to reach speciality entry ST3 level. Another variant would organise generic training along a theme which supports both core and an element of speciality specific competencies contiguously. In these situations many trainees may pass straight from CT2 to ST3 in their chosen discipline if selected. In practice, it is envisaged that generic surgical training will run over an indicative timescale of up to 3 years (CT1-3) with many exiting at CT2 and others at CT3..

3. Some early years trainees may wish to pursue an academic surgical career and will devote a significant proportion or their time to additional academic pursuits including research and teaching. For the majority this will lead (later in specialised training) to a period of time in dedicated research, resulting in the award of a higher degree in a scientific area related to their chosen specialty. For others who wish to revert to full time clinical training, this will also be possible, providing that the relevant clinical competencies are achieved.

This variety of routes to learning and training are desirable as this will cater for a diversity of wants and needs of potential surgeons of the future, through offering choice and flexibility. It also permits Schools and Deaneries to offer variety in their teaching and learning styles which will provide them with a unique imprimatur which will appeal to different trainees in different ways.

h) THE ASSESSMENT FRAMEWORK

This is detailed ina later section and shown diagrammatically in the diagram below.



i) OUTCOME

The outcome of early years training is to achieve the competencies required of surgeons entering ST3. These competencies include:

- Competence in the management of patients presenting with a range of symptoms and elective and emergency conditions as specified in the core syllabus for surgery.
- Competence in the management of patients presenting with an additional range of elective and emergency conditions, as specified by the specialty syllabus for levels ST1 and ST2.
- Professional competences as specified in the syllabus and derived from Good Medical Practice documents of General Medical Council of the UK.

Having met the outcomes of this curriculum a surgical trainee will be able to

- Perform as a member of the team caring for surgical patients.
- Receive patients as emergencies and review patients in clinics and initiate management and diagnostic processes based on a reasonable differential diagnosis.
- Manage the perioperative care of their patients and recognise common complications and either be able to deal with them or know to whom to refer.
- Be safe and useful assistant in the operating room
- Perform some simple procedures under minimal supervision and perform more complex procedures under direct supervision

Guidance regarding the requirement for MRCS and the ARCP Outcome

Core programmes

Trainees without the MRCS are not eligible for ST3 irrespective of their overall ARCP performance.
If trainees reach the end of CT2 without the MRCS, they cannot proceed unconditionally to CT3.

Trainees who have already made 4 attempts at MRCS Part B (OSCE) will fail their CT2 ARCP and will have to leave the programme (*ARCP recommendation 4 shown below*).

If trainees at CT2 have MRCS Part B (OSCE) attempts remaining the choices to be made are:

a.) If they have met all their other educational milestones except MRCS, they could carry the requirement to pass MRCS to CT3. They must use every opportunity to pass the MRCS in that year i.e. use up their remaining opportunities. Failure to pass the MRCS during this period would result in failing the CT3 ARCP (*Recommendation 4*).

b.) If they have made reasonable progress in their other educational milestones but have other identified weaknesses, they could repeat CT2[1] (*ARCP Recommendation 3)* but must use every opportunity to pass the MRCS. Failure in the MRCS after repeating CT2 would be a failing of the CT2 ARCP (*Recommendation 4*).

c.) At any time a candidate with significant weaknesses should consider leaving the programme after appropriate counselling.

Run through programmes

Trainees without the MRCS are not eligible to proceed to ST3 irrespective of their overall ARCP performance.

Trainees who have already made 4 attempts at MRCS Part B by the time they finish ST2 will fail their ST2 ARCP (*Recommendation 4*) and will have to leave the programme. If they have MRCS Part B (OSCE) attempts remaining, trainees at the end of ST2 without the MRCS may repeat ST2 (*ARCP Recommendation 3)* and use up all their remaining attempts at MRCS.

[1] **Note**: Candidates repeating a year in the core or run through route will have used up their permissible year of remediation laid out in the Gold Guide (http://www.mmc.nhs.uk/pdf/Gold%20Guide%202008%20-%20FINAL.pdf). This means that if they proceed to ST3 they will have no further opportunity to repeat a year, unless their circumstances are exceptional.]

ARCP Outcomes

1. Trainee is achieving progress and competencies at the expected rate
2. Development of specific competencies required – additional training time not required
3. Inadequate progress by the trainee – additional training time required
4. Released from training programme with our without specified competencies
5. Incomplete evidence presented – additional training time may be required
6. Gained all required competencies; will be recommended as having completed the training programme and for an award of a CCT or CESR

Moving from one discipline of surgery to another

In the early years it is possible that a trainee who had started to develop a portfolio consistent with a particular specialist discipline might wish to move to another. One of the strengths of the flexible early years is that it will be possible, depending on the local circumstances to make such changes with an identification of suitable educational credits that may be transferred. This is strictly conditional on a trainee achieving the educational milestones so far agreed for them. Moving from one discipline to another because of the need to remediate in the original discipline would not normally be permitted. All generic credits, for example, possession of the MRCS would be transferable. Those leaving ENT however could not use the DOHNS examination as equivalent to the generic MRCS and for those wishing to enter ENT would be required to sit the part 2 DOHNS examination.
In order to be eligible to move from one discipline to another the following conditions therefore apply:-

1. They would need to achieve a satisfactory outcome in their ARCPs up to that point including all relevant WPBAs.

2. They would have to fulfil the minimum period in the new speciality of their choice in order to progress to ST3 in that discipline

3. They would have to obtain their new position either through open competition in the annual selection round or by an agreed local School or Deanery arrangement should an appropriate vacancy arise. Their right to move would be limited by the particular circumstances appertaining at the time – in particular availability of training positions in their chosen new discipline.

4. They must pass the MRCS (or DOHNS) examination.

The process in practice would be subject to local negotiations between heads of training and designated training supervisors and the trainee making the request. If the decision to change theme in core programmes occurs early then the effective increase in training time may be minimal. If the decision occurs later or during run through then more time spent in the early years is almost inevitable. The progression to ST3 is in essence competency dependant and this means having the appropriate educational credits whatever time that takes. Those spending longer having made a change may be subject to limitations on any subsequent period required for remediation, although this ultimately would be a Deanery decision.

A SUMMARY OF THE KEY SYLLABUS MODULES IN THE CORE CURRICULUM THAT ARE REQUIRED OF ALL SURGICAL TRAINEES PRIOR TO ENTRY INTO ST3.

All of this material will be tested in the MRCS but may also be tested in the workplace.

1. **Basic Science Knowledge relevant to surgical practice**
    - Anatomy
    - Physiology
    - Pharmacology - in particular safe prescribing
    - Pathological principles underlying system specific pathology
    - Microbiology
    - Diagnostic and interventional radiology

These can all be contextualised within the list of presenting symptoms and conditions outlined in module 2.

2. **Common surgical conditions**
    - To assess and initiate investigation and management of common surgical conditions which may confront any patient whilst under the care of surgeons, irrespective of their speciality.
    - To have sufficient understanding of these conditions so as to know what and to whom to refer in a way that an insightful discussion may take place with colleagues whom will be involved in the definitive management of these conditions.
    - This defines the scope and depth of the topics in the generality of clinical surgery required of any surgeon irrespective of their ST3 defined speciality.

Basic surgical skills

- To prepare oneself for surgery
- To safely administer appropriate local anaesthetic agents
- To handle surgical instruments safely
- To handle tissues safely
- To incise and close superficial tissues accurately
- To tie secure knots
- To safely use surgical diathermy
- To achieve haemostasis of superficial vessels.
- To use a suitable surgical drain appropriately.
- To assist helpfully, even when the operation is not familiar.
- To understand the principles of anastomosis
- To understand the principles of endoscopy

The principles of assessment and management of the surgical patient

- To assess the surgical patient.
- To elicit a history that is relevant, concise, accurate and appropriate to the patient's problem.
- To produce timely, complete and legible clinical records.
- To assess the patient adequately prior to operation and manage any pre-operative problems appropriately.
- To propose and initiate surgical or non-surgical management as appropriate.
- To take informed consent for straightforward cases.

Peri-operative care of the surgical patient

- To manage patient care in the peri-operative period.
- To assess and manage preoperative risk.
- To take part in the conduct of safe surgery in the operating theatre environment.
- To assess and manage bleeding including the use of blood products.
- To care for the patient in the post-operative period including the assessment of common complications.
- To assess, plan and manage post-operative fluid balance
- To assess and plan perioperative nutritional management.

Assessment and early treatment of the patient with trauma

- To safely assess the multiply injured patient.
- To safely assess and initiate management of patients with
- traumatic skin and soft tissue injury
- chest trauma
- a head injury
- a spinal cord injury
- abdominal and urogenital trauma
- vascular trauma
- a single or multiple fractures or dislocations
- burns

Surgical care of the paediatric patient

- To assess and manage children with surgical problems, understanding the similarities and differences from adult surgical patients.
- To understand common issues of child protection and to take action as appropriate.

Management of the dying patient

- To manage the dying patient appropriately.
- To understand consent and ethical issues in patients certified DNAR (do not attempt resuscitation)
- To manage the dying patient in consultation with the palliative care team.

Organ and tissue transplantation

- To understand the principles of organ and tissue transplantation.
- To assess brain stem death and understand its relevance to continued life support and organ donation.

Professional behaviour

- To provide good clinical care
- To be a good communicator
- To teach and to train
- To keep up to date and know how to analyse data
- To understand and manage people and resources within the health environment
- To promote good Health
- To understand the ethical and legal obligations of a surgeon

THE DETAILED MODULES OF THE CORE SURGICAL SYLLABUS FOR ALL SURGICAL TRAINEES REQUIRED FOR ENTRY INTO ST3

The scope of competence is defined by the list of subjects and topics outlined above. The following panels detail the subjects and topics. The topic list in Module 2 can be cross referenced to any of the other Modules. In particular cross referencing Module 2 with Modules 1 and 4 may be viewed as a blueprint which will be available on the web site.

As has been noted earlier; although the detail of these modules is phrased in terms of knowledge and skill this curriculum is competence based. It is the practical utilisation of knowledge and skill evidenced in behaviour which is the focus. Possession of any knowledge or skill element is insufficient if it is not demonstrated satisfactorily in a professional context.

The appropriate depth and level of knowledge required can be found in exemplar texts tabulated below. We expect candidates to have mastery at the depth within the texts and to be able to make use of that knowledge in the context of surgical practice defined in the Core Surgical Curriculum above.

We desire a professional approach from surgical trainees who will be expected to have a deep understanding of the subjects, to the minimum standard outlaid below. It is expected that candidates will read beyond the texts below and to make critical use, where appropriate of original literature and peer scrutinised review articles in the related scientific and clinical literature such that they can aspire to an excellent standard in surgical practice.

The texts are not recommended as the sole source within their subject matter and there are alternative textbooks and web information which may better suit an individual's learning style. Over time it will be important for associated curriculum management systems to provide an expanded and critically reviewed list of supporting educational material.

Topic	Possible Textbooks or other Educational Sources
Anatomy	**Last's Anatomy: Regional and Applied (MRCS Study Guides)** by R.J. Last and Chummy S Netter's Atlas of Human Anatomy 4th Edition Saunders-Elsevier ISBN-13-978-1-4160-3385-1
Physiology	**Ganong's Review of Medical Physiology, 23rd Edition (Lange Basic Science)**
Pathology	**Robbins Basic Pathology: With STUDENT CONSULT Online Access** by Vinay Kumar MBBS MD FRCPath, Abul K. Abbas MBBS, Nelson Fausto MD, and Richard Mitchell MD PhD
Pharmacology	**Principles and Practice of Surgery: With STUDENT CONSULT Online Access** by O. James Garden MB ChB MD FRCS(Glasgow) FRCS(Edinburgh) FRCP (Edinburgh) FRACS(Hon) FRCSC(Hon) Professor **Bailey and Love's Short Practice of Surgery 25th Edition** by Norman S. Williams (Editor), Christopher J.K. Bulstrode (Editor), P. Ronan O'Connell (Editor)
Microbiology	**Principles and Practice of Surgery: With STUDENT CONSULT Online Access** by O. James Garden MB ChB MD FRCS(Glasgow) FRCS(Edinburgh) FRCP (Edinburgh) FRACS(Hon) FRCSC(Hon) Professor **Bailey and Love's Short Practice of Surgery 25th Edition** by Norman S. Williams (Editor), Christopher J.K. Bulstrode (Editor), P. Ronan O'Connell (Editor)
Radiology	**Principles and Practice of Surgery: With STUDENT CONSULT Online Access** by O. James Garden MB ChB MD FRCS(Glasgow) FRCS(Edinburgh) FRCP (Edinburgh) FRACS(Hon) FRCSC(Hon) Professor

	Bailey and Love's Short Practice of Surgery 25th Edition by Norman S. Williams (Editor), Christopher J.K. Bulstrode (Editor), P. Ronan O'Connell (Editor)
Common surgical conditions	**Principles and Practice of Surgery: With STUDENT CONSULT Online Access** by O. James Garden MB ChB MD FRCS(Glasgow) FRCS(Edinburgh) FRCP (Edinburgh) FRACS(Hon) FRCSC(Hon) Professor, Andrew W. Bradbury BSc MB ChB MD MBA FRCSEd Professor, John L. R. Forsythe MD FRCS(Ed) FRCS, and Rowan W Parks **Bailey and Love's Short Practice of Surgery 25th Edition** by Norman S. Williams (Editor), Christopher J.K. Bulstrode (Editor), P. Ronan O'Connell (Editor)
Surgical Skills	Basic surgical skills course and curriculum
Peri-operative care including critical care	ATLS course CriSP course **Principles and Practice of Surgery: With STUDENT CONSULT Online Access** by O. James Garden MB ChB MD FRCS(Glasgow) FRCS(Edinburgh) FRCP (Edinburgh) FRACS(Hon) FRCSC(Hon) Professor **Bailey and Love's Short Practice of Surgery 25th Edition** by Norman S. Williams (Editor), Christopher J.K. Bulstrode (Editor), P. Ronan O'Connell (Editor)
Surgical care of children	**Principles and Practice of Surgery: With STUDENT CONSULT Online Access** by O. James Garden MB ChB MD FRCS(Glasgow) FRCS(Edinburgh) FRCP (Edinburgh) FRACS(Hon) FRCSC(Hon) Professor **Bailey and Love's Short Practice of Surgery 25th Edition** by Norman S. Williams (Editor), Christopher J.K. Bulstrode (Editor), P. Ronan O'Connell (Editor)
Care of the dying	**Principles and Practice of Surgery: With STUDENT CONSULT Online Access** by O. James Garden MB ChB MD FRCS(Glasgow) FRCS(Edinburgh) FRCP (Edinburgh) FRACS(Hon) FRCSC(Hon) Professor **Bailey and Love's Short Practice of Surgery 25th Edition** by Norman S. Williams (Editor), Christopher J.K. Bulstrode (Editor), P. Ronan O'Connell (Editor)
Organ transplantation	**Principles and Practice of Surgery: With STUDENT CONSULT Online Access** by O. James Garden MB ChB MD FRCS(Glasgow) FRCS(Edinburgh) FRCP (Edinburgh) FRACS(Hon) FRCSC(Hon) Professor **Bailey and Love's Short Practice of Surgery 25th Edition** by Norman S. Williams (Editor), Christopher J.K. Bulstrode (Editor), P. Ronan O'Connell (Editor)

Module 1	**Basic sciences**
Objective	• To acquire and demonstrate underpinning basic science knowledge appropriate for the practice of surgery, including:- • Applied anatomy: Knowledge of anatomy appropriate for surgery • Physiology: Knowledge of physiology relevant to surgical practice • Pharmacology: Knowledge of pharmacology relevant to surgical practice centred around safe prescribing of common drugs • Pathology: Knowledge of pathological principles underlying system specific pathology • Microbiology: Knowledge of microbiology relevant to surgical practice Imaging: • Knowledge of the principles, strengths and weaknesses of various diagnostic and interventional imaging methods

Module 1	Basic sciences
Knowledge	Applied anatomy: • Development and embryology • Gross and microscopic anatomy of the organs and other structures • Surface anatomy • Imaging anatomy This will include anatomy of thorax, abdomen, pelvis, perineum, limbs, spine, head and neck as appropriate for surgical operations that the trainee will be involved with during core training (see Module 2). Physiology: General physiological principles including: • Homeostasis • Thermoregulation • Metabolic pathways and abnormalities • Blood loss and hypovolaemic shock • Sepsis and septic shock • Fluid balance and fluid replacement therapy • Acid base balance • Bleeding and coagulation • Nutrition This will include the physiology of specific organ systems relevant to surgical care including the cardiovascular, respiratory, gastrointestinal, urinary, endocrine and neurological systems. Pharmacology: • The pharmacology and safe prescribing of drugs used in the treatment of surgical diseases including analgesics, antibiotics, cardiovascular drugs, antiepileptic, anticoagulants, respiratory drugs, renal drugs, drugs used for the management of endocrine disorders (including diabetes) and local anaesthetics. • The principles of general anaesthesia • The principles of drugs used in the treatment of common malignancies Pathology: General pathological principles including: • Inflammation • Wound healing • Cellular injury • Tissue death including necrosis and apoptosis • Vascular disorders • Disorders of growth, differentiation and morphogenesis • Surgical immunology • Surgical haematology • Surgical biochemistry • Pathology of neoplasia • Classification of tumours • Tumour development and growth including metastasis • Principles of staging and grading of cancers • Principles of cancer therapy including surgery, radiotherapy, chemotherapy, immunotherapy and hormone therapy • Principles of cancer registration • Principles of cancer screening • The pathology of specific organ systems relevant to surgical care including cardiovascular pathology, respiratory pathology, gastrointestinal pathology, genitourinary disease, breast, exocrine and endocrine pathology, central and peripheral, neurological systems, skin, lymphoreticular and musculoskeletal

Module 1	Basic sciences
	systems Microbiology: • Surgically important micro organisms including blood borne viruses • Soft tissue infections including cellulitis, abscesses, necrotising fasciitis, gangrene • Sources of infection • Sepsis and septic shock • Asepsis and antisepsis • Principles of disinfection and sterilisation • Antibiotics including prophylaxis and resistance • Principles of high risk patient management • Hospital acquired infections Imaging: • Principles of diagnostic and interventional imaging including x-rays, ultrasound, CT, MRI. PET, radiounucleotide scanning

Module 2	Common Surgical Conditions	
Objective	This section assumes that candidates have general medical competencies consistent with a doctor leaving Foundation in the UK. It also assumes an ongoing commitment to keeping these skills and knowledge up to date as laid out in GMP. It is predicated on the value that surgeons are doctors who carry our surgery and require competencies. To demonstrate understanding of the relevant basic scientific principles for each of these surgical conditions and to be able to provide the relevant clinical care as defined in modules assessment and management as defined in Modules 1 and 4.	
Topics	Presenting symptoms or syndromes • Abdominal pain • Abdominal swelling • Change in bowel habit • Gastrointestinal haemorrhage • Rectal bleeding • Dysphagia • Dyspepsia • Jaundice	To include the following conditions • Appendicitis • Gastrointestinal malignancy • Inflammatory bowel disease • Diverticular disease • Intestinal obstruction • Adhesions • Abdominal hernias • Peritonitis • Intestinal perforation • Benign oesophageal disease • Peptic ulcer disease • Benign and malignant hepatic, gall bladder and pancreatic disease • Haemorrhoids and perianal disease • Abdominal wall stomata
	Breast disease • Breast lumps and nipple discharge • Acute Breast pain	To include the following conditions • Benign and malignant breast lumps • Mastitis and breast abscess
	Peripheral vascular disease Presenting symptoms or syndrome • Chronic and acute limb ischaemia • Aneurismal disease • Transient ischaemic attacks • Varicose veins • Leg ulceration	To include the following conditions • Atherosclerotic arterial disease • Embolic and thrombotic arterial disease • Venous insufficiency • Diabetic ulceration

Module 2	Common Surgical Conditions	
	Cardiovascular and pulmonary disease	To include the following conditions • Coronary heart disease • Bronchial carcinoma • Obstructive airways disease • Space occupying lesions of the chest
	Genitourinary disease Presenting symptoms or syndrome • Loin pain • Haematuria • Lower urinary tract symptoms • Urinary retention • Renal failure • Scrotal swellings • Testicular pain	To include the following conditions • Genitourinary malignancy • Urinary calculus disease • Urinary tract infection • Benign prostatic hyperplasia • Obstructive uropathy
	Trauma and orthopaedics Presenting symptoms or syndrome • Traumatic limb and joint pain and deformity • Chronic limb and joint pain and deformity • Back pain	To include the following conditions • Simple fractures and joint dislocations • Fractures around the hip and ankle • Basic principles of Degenerative joint disease • Basic principles of inflammatory joint disease including bone and joint infection • Compartment syndrome • Spinal nerve root entrapment and spinal cord compression • Metastatic bone cancer • Common peripheral neuropathies and nerve injuries
	Disease of the Skin, Head and Neck Presenting symptoms or syndrome • Lumps in the neck • Epistaxis • Upper airway obstructions	To include the following conditions • Benign and malignant skin lesions • Benign and malignant lesions of the mouth and tongue
	Neurology and Neurosurgery Presenting symptoms or syndrome • Headache • Facial pain • Coma	To include the following conditions • Space occupying lesions from bleeding and tumour
	Endocrine Presenting symptoms or syndrome • Lumps in the neck • Acute endocrine crises	To include the following conditions • Thyroid and parathyroid disease • Adrenal gland disease • Diabetes

Module 3	Basic surgical skills
Objective	• Preparation of the surgeon for surgery • Safe administration of appropriate local anaesthetic agents • Acquisition of basic surgical skills in instrument and tissue handling. • Understanding of the formation and healing of surgical wounds • Incise superficial tissues accurately with suitable instruments. • Close superficial tissues accurately. • Tie secure knots. • Safely use surgical diathermy • Achieve haemostasis of superficial vessels. • Use suitable methods of retraction.

Module 3	Basic surgical skills
	• Knowledge of when to use a drain and which to choose. • Handle tissues gently with appropriate instruments. • Assist helpfully, even when the operation is not familiar. • Understand the principles of anastomosis • Understand the principles of endoscopy

Knowledge	Principles of safe surgery
	• Preparation of the surgeon for surgery
	• Principles of hand washing, scrubbing and gowning
	• Immunisation protocols for surgeons and patients
	
	Administration of local anaesthesia
	• Choice of anaesthetic agent
	• Safe practise
	
	Surgical wounds
	• Classification of surgical wounds
	• Principles of wound management
	• Pathophysiology of wound healing
	• Scars and contractures
	• Incision of skin and subcutaneous tissue:
	  o Langer's lines
	  o Choice of instrument
	  o Safe practice
	• Closure of skin and subcutaneous tissue:
	  o Options for closure
	  o Suture and needle choice
	• Safe practice
	• Knot tying
	  o Range and choice of material for suture and ligation
	  o Safe application of knots for surgical sutures and ligatures
	• Haemostasis:
	  o Surgical techniques
	  o Principles of diathermy
	• Tissue handling and retraction:
	  o Choice of instruments
	• Biopsy techniques including fine needle aspiration cytology
	• Use of drains:
	  o Indications
	  o Types
	  o Management/removal
	• Principles of anastomosis
	• Principles of surgical endoscopy

Clinical Skills	Preparation of the surgeon for surgery • Effective and safe hand washing, gloving and gowning • Administration of local anaesthesia • Accurate and safe administration of local anaesthetic agent Preparation of a patient for surgery • Creation of a sterile field • Antisepsis • Draping
Technical Skills and Procedures	Preparation of the surgeon for surgery • Effective and safe hand washing, gloving and gowning Administration of local anaesthesia • Accurate and safe administration of local anaesthetic agent • Incision of skin and subcutaneous tissue: o Ability to use scalpel, diathermy and scissors

Module 3	Basic surgical skills

	• Closure of skin and subcutaneous tissue:
	  ○ Accurate and tension free apposition of wound edges
	• Knot tying:
	  ○ Single handed
	  ○ Double handed
	  ○ Instrument
	  ○ Superficial
	  ○ Deep
	• Haemostasis:
	  ○ Control of bleeding vessel (superficial)
	  ○ Diathermy
	  ○ Suture ligation
	  ○ Tie ligation
	  ○ Clip application
	  ○ Transfixion suture
	• Tissue retraction:
	• Tissue forceps
	• Placement of wound retractors
	• Use of drains:
	  ○ Insertion
	  ○ Fixation
	  ○ Removal
	• Tissue handling:
	• Appropriate application of instruments and respect for tissues
	• Biopsy techniques
	• Skill as assistant:
	• Anticipation of needs of surgeon when assisting

Module 4	The assessment and management of the surgical patient
Objective	To demonstrate the relevant knowledge, skills and attitudes in assessing the patient and manage the patient, and propose surgical or non-surgical management.
Knowledge	The knowledge relevant to this section will be variable from patient to patient and is covered within the rest of the syllabus – see common surgical conditions in particular (Module 2). As a trainee develops an interest in a particular speciality then the principles of history taking and examination may be increasingly applied in that context.
Clinical Skills	• Surgical history and examination (elective and emergency) • Construct a differential diagnosis • Plan investigations • Clinical decision making • Team working and planning • Case work up and evaluation; risk management • Active participation in clinical audit events • Appropriate prescribing • Taking consent for intermediate level intervention; emergency and elective • Written clinical communication skills • Interactive clinical communication skills: patients • Interactive clinical communication skills: colleagues

Module 5	Peri-operative care
Objective	To assess and manage preoperative risk To manage patient care in the peri-operative period To conduct safe surgery in the operating theatre environment

Module 5	Peri-operative care
	To assess and manage bleeding including the use of blood products To care for the patient in the post-operative period including the assessment of common complications To assess, plan and manage post-operative fluid balance To assess and plan perioperative nutritional management
Knowledge	Pre-operative assessment and management: • Cardiorespiratory physiology • Diabetes mellitus and other relevant endocrine disorders • Fluid balance and homeostasis • Renal failure • Pathophysiology of sepsis – prevention and prophylaxis • Thromboprophylaxis • Laboratory testing and imaging • Risk factors for surgery and scoring systems • Pre-medication and other preoperative prescribing • Principles of day surgery Intraoperative care: • Safety in theatre including patient positioning and avoidance of nerve injuries • Sharps safety • Diathermy, laser use • Infection risks • Radiation use and risks • Tourniquet use including indications, effects and complications • Principles of local, regional and general anaesthesia • Principles of invasive and non-invasive monitoring • Prevention of venous thrombosis • Surgery in hepatitis and HIV carriers • Fluid balance and homeostasis Post-operative care: • Post-operative monitoring • Cardiorespiratory physiology • Fluid balance and homeostasis • Diabetes mellitus and other relevant endocrine disorders • Renal failure • Pathophysiology of blood loss • Pathophysiology of sepsis including SIRS and shock • Multi-organ dysfunction syndrome • Post-operative complications in general • Methods of postoperative analgesia To assess and plan nutritional management • Post-operative nutrition • Effects of malnutrition, both excess and depletion • Metabolic response to injury • Methods of screening and assessment of nutritional status • Methods of enteral and parenteral nutrition Haemostasis and Blood Products: • Mechanism of haemostasis including the clotting cascade • Pathology of impaired haemostasis e.g. haemophilia, liver disease, massive haemorrhage • Components of blood • Alternatives to use of blood products • Principles of administration of blood products • Patient safety with respect to blood products Coagulation, deep vein thrombosis and embolism: • Clotting mechanism (Virchow Triad)

Module 5	Peri-operative care
	• Effect of surgery and trauma on coagulation • Tests for thrombophilia and other disorders of coagulation • Methods of investigation for suspected thromboembolic disease • Principles of treatment of venous thrombosis and pulmonary embolism including anticoagulation • Role of V/Q scanning, CTpulmonary angiography, D-dimer and thrombolysis • Place of pulmonary embolectomy • Prophylaxis of thromboembolism: • Risk classification and management of DVT • Knowledge of methods of prevention of DVT, mechanical and pharmacological Antibiotics: • Common pathogens in surgical patients • Antibiotic sensitivities • Antibiotic side-effects • Principles of prophylaxis and treatment Metabolic and endocrine disorders in relation perioperative management • Pathophysiology of thyroid hormone excess and deficiency and associated risks from surgery • Causes and effects of hypercalcaemia and hypocalcaemia • Complications of corticosteroid therapy • Causes and consequences of Steroid insufficiency • Complications of diabetes mellitus • Causes and effects of hyponatraemia • Causes and effects of hyperkalaemia and hypokalaemia
Clinical Skills	Pre-operative assessment and management: • History and examination of a patient from a medical and surgical standpoint • Interpretation of pre-operative investigations • Management of co morbidity • Resuscitation • Appropriate preoperative prescribing including premedication Intra-operative care: • Safe conduct of intraoperative care • Correct patient positioning • Avoidance of nerve injuries • Management of sharps injuries • Prevention of diathermy injury • Prevention of venous thrombosis Post-operative care: • Writing of operation records • Assessment and monitoring of patient's condition • Post-operative analgesia • Fluid and electrolyte management • Detection of impending organ failure • Initial management of organ failure • Principles and indications for Dialysis • Recognition, prevention and treatment of post-operative complications Haemostasis and Blood Products: • Recognition of conditions likely to lead to the diathesis • Recognition of abnormal bleeding during surgery • Appropriate use of blood products • Management of the complications of blood product transfusion Coagulation, deep vein thrombosis and embolism

Module 5	Peri-operative care
	• Recognition of patients at risk • Awareness and diagnosis of pulmonary embolism and DVT • Role of duplex scanning, venography and d-dimer measurement • Initiate and monitor treatment of venous thrombosis and pulmonary embolism • Initiation of prophylaxis Antibiotics: • Appropriate prescription of antibiotics Assess and plan preoperative nutritional management • Arrange access to suitable artificial nutritional support, preferably via a nutrition team including Dietary supplements, Enteral nutrition and Parenteral nutrition Metabolic and endocrine disorders • History and examination in patients with endocrine and electrolyte disorders • Investigation and management of thyrotoxicosis and hypothyroidism • Investigation and management of hypercalcaemia and hypocalcaemia • Peri-operative management of patients on steroid therapy • Peri-operative management of diabetic patients • Investigation and management of hyponatraemia • Investigation and management of hyperkalaemia and hypokalaemia
Technical Skills and Procedures	• Central venous line insertion • Urethral catheterisation

Module 6	Assessment and management of patients with trauma (including the multiply injured patient)
Objective	Assess and initiate management of patients with chest trauma • who have sustained a head injury • who have sustained a spinal cord injury • who have sustained abdominal and urogenital trauma • who have sustained vascular trauma • who have sustained a single or multiple fractures or dislocations • who have sustained traumatic skin and soft tissue injury • who have sustained burns • Safely assess the multiply injured patient. • Contextualise any combination of the above • Be able to prioritise management in such situation as defined by ATLS, APLS etc
Knowledge	General • Scoring systems for assessment of the injured patient • Major incident triage • Differences In children Shock • Pathogenesis of shock • Shock and cardiovascular physiology • Metabolic response to injury • Adult respiratory distress syndrome • Indications for using uncross matched blood Wounds and soft tissue injuries • Gunshot and blast injuries • Stab wounds • Human and animal bites • Nature and mechanism of soft tissue injury • Principles of management of soft tissue injuries

Module 6	Assessment and management of patients with trauma (including the multiply injured patient)
	• Principles of management of traumatic wounds • Compartment syndrome Burns • Classification of burns • Principle of management of burns Fractures • Classification of fractures • Pathophysiology of fractures • Principles of management of fractures • Complications of fractures • Joint injuries Organ specific trauma • Pathophysiology of thoracic trauma • Pneumothorax • Head injuries including traumatic intracranial haemorrhage and brain injury • Spinal cord injury • Peripheral nerve injuries • Blunt and penetrating abdominal trauma • Including spleen • Vascular injury including iatrogenic injuries and intravascular drug abuse • Crush injury • Principles of management of skin loss including use of skin grafts and skin flaps
Clinical Skills	General • History and examination • Investigation • Referral to appropriate surgical subspecialties • Resuscitation and early management of patient who has sustained thoracic, head, spinal, abdominal or limb injury according to ATLS and APLS guidelines • Resuscitation and early management of the multiply injured patient Specific problems • Management of the unconscious patient • Initial management of skin loss • Initial management of burns • Prevention and early management of the compartment syndrome
Technical Skills and Procedures	• Central venous line insertion • Chest drain insertion • Diagnostic peritoneal lavage • Urethral catheterisation • Suprapubic catheterisation

Module 7	Surgical care of the Paediatric patient
Objective	To assess and manage children with surgical problems, understanding the similarities and differences from adult surgical patients To understand the issues of child protection and to take action as appropriate
Knowledge	• Physiological and metabolic response to injury and surgery • Fluid and electrolyte balance • Thermoregulation Safe prescribing in children • Principles of vascular access in children • Working knowledge of trust and Local Safeguarding Children Boards (LSCBs) and Child

	Protection Procedures • Basic understanding of child protection law • Understanding of Children's rights • Working knowledge of types and categories of child maltreatment, presentations, signs and other features (primarily physical, emotional, sexual, neglect, professional) • Understanding of one personal role, responsibilities and appropriate referral patterns in child protection • Understanding of the challenges of working in partnership with children and families • Recognise the possibility of abuse or maltreatment • Recognise limitations of own knowledge and experience and seek appropriate expert advice • Urgently consult immediate senior in surgery to enable referral to paediatricians • Keep appropriate written documentation relating to child protection matters • Communicate effectively with those involved with child protection, including children and their families
Clinical Skills	• History and examination of the neonatal surgical patient • History and examination of paediatric surgical patient • Assessment of respiratory and cardiovascular status • Undertake consent for surgical procedures (appropriate to the level of training) in paediatric patients

Module 8	**Management of the dying patient**
Objective	Ability to manage the dying patient appropriately. To understand consent and ethical issues in patients certified DNAR (do not attempt resuscitation) Palliative Care: Good management of the dying patient in consultation with the palliative care team.
Knowledge	Palliative Care: • Care of the terminally ill • Appropriate use of analgesia, antiemetics and laxatives Principles of organ donation: • Circumstances in which consideration of organ donation is appropriate • Principles of brain death Understanding the role of the coroner and the certification of death
Clinical Skills	Palliative Care: • Symptom control in the terminally ill patient Principles of organ donation: • Assessment of brain stem death • Certification of death

Module 9	**Organ and Tissue transplantation**
Objective	To understand the principles of organ and tissue transplantation
Knowledge	• Principles of transplant immunology including tissue typing, acute, hyperactute and chronic rejection • Principles of immunosuppression • Tissue donation and procurement • Indications for whole organ transplantation

The Professional Behaviour and leadership elements are mapped to the leadership curriculum as laid out by the Academy of Medical Royal Colleges. The assessment of these areas is a thread running through the curriculum and this makes them common to all of the disciplines of surgery. For this reason, assessment techniques for this element of the curriculum are summarised in the final column.

Module 10	**Professional Behaviour and Leadership**	**Mapping to Leadership Curriculum**	**Assessment technique**
Category	***Good Clinical Care*** To include: • History taking • Physical examination • Time management and decision making • Clinical reasoning • Therapeutics and safe prescribing • Patient as a focus of clinical care • Patient safety • Infection control	**Area 4.1**	
Objective	To achieve an excellent level of care for the individual patient • To elicit a relevant focused history (See modules 2, 3, 4,5) • To perform focused, relevant and accurate clinical examination (See modules 2,3,4,5) • To formulate a diagnostic and therapeutic plan for a patient based upon the clinic findings (See modules 2,3,4,5) • To prioritise the diagnostic and therapeutic plan (See modules 2,3,4,5) • To communicate a diagnostic and therapeutic plan appropriately (See modules 2,3,4,5) To produce timely, complete and legible clinical records to include case-note records, handover notes, and operation notes To prescribe, review and monitor appropriate therapeutic interventions relevant to clinical practice including non – medication based therapeutic and preventative indications (See module 1,2,3,4,5) To prioritise and organise clinical and clerical duties in order to optimise patient care To make appropriate clinical and clerical decisions in order to optimise the effectiveness of the clinical team resource. To prioritise the patient's agenda encompassing their beliefs, concerns expectations and needs To prioritise and maximise patient safety: • To understand that patient safety depends on o The effective and efficient organisation of care		Mini CEX, CBD, Mini PAT, MRCS and Specialty FRCS

Module 10	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment technique
	○ Health care staff working well together ○ Safe systems, individual competency and safe practice • To understand the risks of treatments and to discuss these honestly and openly with patients • To systematic ways of assessing and minimising risk • To ensure that all staff are aware of risks and work together to minimise risk To manage and control infection in patients, including: • Controlling the risk of cross-infection • Appropriately managing infection in individual patients • Working appropriately within the wider community to manage the risk posed by communicable diseases	**Area 4.1**	
Examples and descriptors for Core Surgical Training	**Patient assessment** • Obtains, records and presents accurate clinical history and physical examination relevant to the clinical presentation, including an indication of patient's views • Uses and interprets findings adjuncts to basic examination appropriately e.g. internal examination, blood pressure measurement, pulse oximetry, peak flow • Responds honestly and promptly to patient questions • Knows when to refer for senior help • Is respectful to patients by ○ Introducing self clearly to patients and indicates own place in team ○ Checks that patients comfortable and willing to be seen ○ Informs patients about elements of examination and any procedures that the patient will undergo **Clinical reasoning** • In a straightforward clinical case develops a provisional diagnosis and a differential diagnosis on the basis of the clinical evidence, institutes an appropriate investigative and therapeutic plan, seeks appropriate support from others and takes account of the patients wishes **Record keeping** • Is able to format notes in a logical way and writes legibly • Able to write timely, comprehensive, informative letters to patients and to GPs **Time management** • Works systematically through tasks and		

Module 10	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment technique
	attempts to prioritise • Discusses the relative importance of tasks with more senior colleagues. • Understands importance of communicating progress with other team members **Patient safety** • Participates in clinical governance processes • Respects and follows local protocols and guidelines • Takes direction from the team members on patient safety • Discusses risks of treatments with patients and is able to help patients make decisions about their treatment • Ensures the safe use of equipment • Acts promptly when patient condition deteriorates • Always escalates concerns promptly **Infection control** • Performs simple clinical procedures whilst maintaining full aseptic precautions • Follows local infection control protocols • Explains infection control protocols to students and to patients and their relatives • Aware of the risks of nosocomial infections.	**Area 4.1**	

Module 10	Professional Behaviour and Leadership	Mapping to Leadership	Assessment Technique
Category	***Being a good communicator*** To include: • Communication with patients • Breaking bad news • Communication with colleagues	**N/A**	
Objective	**Communication with patients** • To establish a doctor/patient relationship characterised by understanding, trust, respect, empathy and confidentiality • To communicate effectively by listening to patients, asking for and respecting their views about their health and responding to their concerns and preferences • To cooperate effectively with healthcare professionals involved in patient care • To provide appropriate and timely information to patients and their families **Breaking bad news** • To deliver bad news according to the needs of individual patients		PBA, DOPS, Mini CEX, Mini PAT and CBD

Module 10	Professional Behaviour and Leadership	Mapping to Leadership	Assessment Technique
	Communication with Colleagues • To recognise and accept the responsibilities and role of the doctor in relation to other healthcare professionals. • To communicate succinctly and effectively with other professionals as appropriate • To present a clinical case in a clear, succinct and systematic manner		
Examples and descriptors for Core Surgical Training	• Conducts a simple consultation with due empathy and sensitivity and writes accurate records thereof • Recognises when bad news must be imparted. • Able to break bad news in planned settings following preparatory discussion with seniors • Accepts his/her role in the healthcare team and communicates appropriately with all relevant members thereof		

Module 10	Professional Behaviour and Leadership	Mapping to Leadership	Assessment Technique
Category	***Teaching and Training***	**N/A**	
Objective	• To teach to a variety of different audiences in a variety of different ways • To assess the quality of the teaching • To train a variety of different trainees in a variety of different ways • To plan and deliver a training programme with appropriate assessments		Mini PAT, Portfolio assessment at ARCP
Examples and descriptors for Core Surgical Training	• Prepares appropriate materials to support teaching episodes • Seeks and interprets simple feedback following teaching • Supervises a medical student, nurse or colleague through a simple procedure • Plans, develops and delivers small group teaching to medical students, nurses or colleagues		

Module 10	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
Category	***Keeping up to date and understanding how to analyse information*** Including: • Ethical research • Evidence and guidelines • Audit • Personal development	**Area 1.3**	

Module 10	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
Objective	• To understand the results of research as they relate to medical practise • To participate in medical research • To use current best evidence in making decisions about the care of patients • To construct evidence based guidelines and protocols • To complete an audit of clinical practice • At actively seek opportunities for personal development • To participate in continuous professional development activities	**Area 1.3**	Mini PAT, CBD, Portfolio assessment at ARCP, MRCS and specialty FRCS
Examples and descriptors for Core Surgical Training	• Defines ethical research and demonstrates awareness of GMC guidelines • Differentiates audit and research and understands the different types of research approach e.g. qualitative and quantitative • Knows how to use literature databases • Demonstrates good presentation and writing skills • Participates in departmental or other local journal club • Critically reviews an article to identify the level of evidence • Attends departmental audit meetings • Contributes data to a local or national audit • Identifies a problem and develops standards for a local audit • Describes the audit cycle and take an audit through the first steps • Seeks feedback on performance from clinical supervisor / mentor / patients / careers / service users	**Area 1.3** **Area 1.3**	

Module 10	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
Category	***Manager*** Including: • Self Awareness and self management • Team-working • Leadership • Principles of quality and safety improvement • Management and NHS structure	**Area 1.1 and 1.2** **Area 2** **Area 4.2, 4.3, 4.4** **Area 3**	
Objective	**Self awareness and self management** • To recognise and articulate one's own values	**Area 1.1 and 1.2**	Mini PAT and CBD

Module 10	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	and principles, appreciating how these may differ from those of others • To identify one's own strengths, limitations and the impact of their behaviour • To identify their own emotions and prejudices and understand how these can affect their judgment and behaviour • To obtain, value and act on feedback from a variety of sources • To manage the impact of emotions on behaviour and actions • To be reliable in fulfilling responsibilities and commitments to a consistently high standard • To ensure that plans and actions are flexible, and take into account the needs and requirements of others • To plan workload and activities to fulfill work requirements and commitments with regard to their own personal health **Team working** • To identify opportunities where working with others can bring added benefits • To work well in a variety of different teams and team settings by listening to others, sharing information, seeking the views of others, empathising with others, communicating well, gaining trust, respecting roles and expertise of others, encouraging others, managing differences of opinion, adopting a team approach **Leadership** • To develop the leadership skills necessary to lead teams effectively. These include: • Identification of contexts for change • Application of knowledge and evidence to produce an evidence based challenge to systems and processes • Making decision by integrating values with evidence • Evaluating impact of change and taking corrective action where necessary **Principles of quality and safety improvement** • To recognise the desirability of monitoring performance, learning from mistakes and adopting no blame culture in order to ensure high standards of care and optimise patient safety • To critically evaluate services • To identify where services can be improved • To support and facilitate innovative service improvement **Management and NHS culture**	**Area 2** **Area 5** **Area 4.2, 4.3 and 4.4**	Mini PAT, CBD and Portfolio assessment during ARCP Mini PAT, CBD and Portfolio assessment during ARCP Mini PAT, CBD and Portfolio assessment during ARCP

Module 10	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	• To organise a task where several competing priorities may be involved • To actively contribute to plans which achieve service goals • To manage resources effectively and safely • To manage people effectively and safely • To manage performance of themselves and others • To understand the structure of the NHS and the management of local healthcare systems in order to be able to participate fully in managing healthcare provision	**Area 3**	Mini PAT, CBD and Portfolio assessment during ARCP
Examples and descriptors for Core Surgical Training	**Self awareness and self management** • Obtains 360° feedback as part of an assessment • Participates in peer learning and explores leadership styles and preferences • Timely completion of written clinical notes • Through feedback discusses and reflects on how a personally emotional situation affected communication with another person • Learns from a session on time management **Team working** • Works well within the multidisciplinary team and recognises when assistance is required from the relevant team member • Invites and encourages feedback from patients • Demonstrates awareness of own contribution to patient safety within a team and is able to outline the roles of other team members. • Keeps records up-to-date and legible and relevant to the safe progress of the patient. • Hands over care in a precise, timely and effective manner • Supervises the process of finalising and submitting operating lists to the theatre suite **Leadership** • Complies with clinical governance requirements of organisation • Presents information to clinical and service managers (e.g. audit) • Contributes to discussions relating to relevant issues e.g. workload, cover arrangements using clear and concise evidence and information **Quality and safety improvement** • Understands that clinical governance is the over-arching framework that unites a range of quality improvement activities • Participates in local governance processes • Maintains personal portfolio • Engages in clinical audit	**Area 1.1 and 1.2** **Area 2** **Area 5** **Area 4.2, 4.3, 4.4**	

Module 10	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	• Questions current systems and processes **Management and NHS Structures** • Participates in audit to improve a clinical service • Works within corporate governance structures • Demonstrates ability to manage others by teaching and mentoring juniors, medical students and others, delegating work effectively, • Highlights areas of potential waste	**Area 3**	

Module 10	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
Category	***Promoting good health***		
Objective	• To demonstrate an understanding of the determinants of health and public policy in relation to individual patients • To promote supporting people with long term conditions to self-care • To develop the ability to work with individuals and communities to reduce levels of ill health and to remove inequalities in healthcare provision	**N/A**	MRCS, specialty FRCS, CBD, Mini PAT
Examples and descriptors for Core Surgical Training	• Understands that "quality of life" is an important goal of care and that this may have different meanings for each patient • Promotes patient self care and independence • Helps the patient to develop an active understanding of their condition and how they can be involved in self management • Discusses with patients those factors which could influence their health		

Module 10	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
Category:	***Probity and Ethics*** To include: • Acting with integrity • Medical Error • Medical ethics and confidentiality • Medical consent • Legal framework for medical practise	**Area 1.4**	
Objective	• To uphold personal, professional ethics and values, taking into account the values of the organisation and the culture and beliefs of individuals	**Area 1.4**	Mini PAT and CBD, PBA, DOPS, MRCS, specialty FRCS

Module 10	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	• To communicate openly, honestly and inclusively • To act as a positive role model in all aspects of communication • To take appropriate action where ethics and values are compromised • To recognise and respond the causes of medical error • To respond appropriately to complaints • To know, understand and apply appropriately the principles, guidance and laws regarding medical ethics and confidentiality as they apply to surgery • To understand the necessity of obtaining valid consent from the patient and how to obtain • To understand the legal framework within which healthcare is provided in the UK • To recognise, analyse and know how to deal with unprofessional behaviours in clinical practice, taking into account local and national regulations • Understand ethical obligations to patients and colleagues • To appreciate an obligation to be aware of personal good health		
Examples and descriptors for Core Surgical Training	• Reports and rectifies an error if it occurs • Participates in significant event audits • Participates in ethics discussions and forums • Apologises to patient for any failure as soon as an error is recognised • Understands and describes the local complaints procedure • Recognises need for honesty in management of complaints • Learns from errors • Respect patients' confidentiality and their autonomy • Understand the Data Protection Act and Freedom of Information Act • Consult appropriately, including the patient, before sharing patient information • Participate in decisions about resuscitation status, withholding or withdrawing treatment • Obtains consent for interventions that he/she is competent to undertake • Knows the limits of their own professional capabilities	**Area 1.4** **Area 1.4** **Area 1.4**	

j) ASSESSMENT OF THE CORE CURRICULUM

The purpose of the assessment system is to:

- Determine whether trainees are meeting the standards of competence and performance specified at various stages in the curriculum for surgical training
- Provide systematic and comprehensive feedback as part of the learning cycle.
- Determine whether trainees have acquired the generic and specialty-based knowledge, clinical judgement, operative and technical skills, and professional skills and behaviour required to enter ST3 in any of the nine defined surgical specialities.
- Address all the domains of Good Medical Practice and conform to the principles laid down by the Postgraduate Medical Education and Training Board.

The individual components of the assessment system are:

- The learning agreement
- Workplace based assessments covering skills, knowledge, behaviour and professional behaviour
- A logbook of procedures undertaken which provides corroborative evidence of experience
- An examination designed to assess the knowledge and skills acquired within the generic curriculum. – the MRCS
- The assigned educational supervisors' report
- Annual review of competence progression. (ARCP)

Learning agreements

At each training interval (usually six months) a trainee will meet with their Assigned Educational Supervisor initially, part way through and finally to construct and ultimately sign off the outcome of a learning agreement. Each learning agreement is predicated by already acquired experience and competency signed off at previous ARCPs or on completion of Foundation or its equivalent. Their principal purpose is to set an agenda for a training interval and to agree milestones and assessment episodes which will be used to formulate the educational supervisor's report regarding the rate of progression on the agreed educational trajectory.

Workplace Based Assessments

The workplace based assessments used during core training are:

- Peer assessment tool (Mini-PAT)
- Mini-clinical evaluation exercise (Mini CEX)
- Case Based Discussion (CBD)
- Direct Observation of Procedural Skills in Surgery (DOPS)
- Procedure based assessment (PBA)

Purpose of WPBAs

WPBAs have the primary purpose of providing short loop feedback between trainers and their trainees – a formative assessment to support learning. They are designed to be mainly trainee driven but may be trainer triggered. The number of types and intensity of each type of WPBA in any one assessment cycle will be initially determined by the Learning Agreement fashioned at the beginning of a training period and regularly reviewed. The intensity may be altered to reflect progression and trainee need. For example a trainee in difficulty would undertake more frequent assessments above an agreed base line for all trainees. In that sense WPBAs meet the criterion of being adaptive.

In particular these workplace based assessments are designed to:

- Provide feedback to trainers and trainees

The most important use of the workplace-based assessments is in providing trainees with an opportunity to assess their own learning and use that assessment to inform and develop their own practice. Each assessment is scored only for the purpose of providing meaningful feedback on one encounter. The assessments should be viewed as part of a process throughout training, enabling trainees to build on assessor feedback and chart their own progress.

Provide information for trainers and training supervisors to aid in their construction of training supervisors reports.

Like all medical training disciplines we recognise that the use of assessments for learning as part of an overall assessment of learning has theoretical disadvantages. However it is important that patient safety considerations are paramount and so ongoing monitoring is essential.

These formative assessments of learning are also used as evidence of progression and so inform (not dictate) the training supervisor's report which is the first appraisal step prior to the ARCP. The ARCP is the principal review of Learning which determines progression.

Contribute towards a body of evidence held in the learning portfolio and made available for the annual review of competence progression (ARCP) panel and planned educational reviews.

All assessment data is stored in the trainee's electronic portfolio. Although the principal role of workplace assessment is to support learning, the summary evidence will be used to inform the annual review process. This process results in decisions to how well the trainee is progressing. At the end of a period of training, the trainee's whole portfolio will be reviewed. The accumulation of assessments for learning will be only one of a range of indicators in an overall assessment of learning that inform the decision as to satisfactory completion of that period training at the annual review of competence progression.

Peer Assessment Tool

The mini-PAT, previously described as 360° assessment or multi-source feedback (MSF), is a method of assessing professional competence within a team-working environment and providing developmental feedback to the trainee. The mini-PAT assessment is undertaken every three years in specialty training. For core training first occasion will be at entry level (CT1) and for most the next assessment will be at the time of entry to specialty training (ST3). It should be used more often if there are areas of concern.

Surgical trainees work as part of a multi-professional team with other people who have complementary skills. Trainees are expected to understand the range of roles and expertise of team members in order to communicate effectively to achieve high quality service for patients. Mini-PAT comprises a self-assessment and assessments of a trainee's performance from a range of co-workers. It uses up to 12 assessors with a minimum of 8. Assessors are chosen by the trainee and will always include the assigned educational supervisor and a range of colleagues covering different grades and environments (e.g. ward, theatre, outpatients) but not administrators or patients.

Feedback is in the form of a peer assessment chart that enables comparison of the self-assessment with the collated views received from co-workers for each of the 16 competencies on a 6-point scale including a global rating. The competencies map across to the standards of Good Medical Practice and to the core objectives of the intercollegiate surgical curriculum.

The assigned educational supervisor will meet with the trainee to discuss the feedback on performance in the mini-PAT. Trainees are not given access to individual assessments. Assigned educational supervisors sign off

the trainee's mini-PAT assessment and make comments for the annual review. They can also recommend a repeat mini-PAT. The method enables serious concerns, such as those about a trainee's probity and health, to be flagged up in confidence to the assigned educational supervisor, enabling appropriate action to be taken.

Mini Clinical Evaluation Exercise

The mini-CEX is a method of assessing skills essential to the provision of good clinical care and to facilitate feedback. It assesses the trainees' clinical and professional skills on the ward, on ward rounds, in Accident and Emergency, or in outpatient clinics. It was designed originally by the American Board of Internal Medicine but has been contextualised to the surgical environment.

Trainees will be assessed on different clinical problems that they encounter from within the curriculum in a range of clinical settings. Trainees are encouraged to choose a different assessor for each assessment but one of the assessors must be the current assigned educational supervisor. Each assessor must be registered with ISCP and have expertise in the clinical problem.

The assessment involves observing the trainee interact with a patient in a clinical encounter. The areas of competence covered include: history taking, physical examination, professionalism, clinical judgement, communication skills, organisation/efficiency and overall clinical care. Most encounters should take between 15-20 minutes.

Assessors do not need to have prior knowledge of the trainee. The assessor's evaluation is recorded on a structured checklist that enables the assessor to provide developmental verbal feedback to the trainee immediately after the encounter. Feedback would normally take about 5 minutes.

Case Based Discussion

CBD was developed for the foundation training period and has been contextualised to the surgical environment. This tool is designed to assess clinical judgement, decision-making and the application of medical knowledge in relation to patient care in cases for which the trainee has been directly responsible. The method is particularly designed to test higher order thinking and synthesis as it allows assessors to explore deeper understanding of how trainees compile, prioritise and apply knowledge. CBD is not focused on the trainees' ability to make a diagnosis nor is it a viva-style assessment.

The process is a structured, in-depth discussion between the trainee and assigned educational supervisor about how a clinical case was managed by the trainee; talking through what occurred, considerations and reasons for actions. By using clinical cases that offer a challenge to the trainee, rather than routine cases, the trainee is able to explain the complexities involved and the reasoning behind choices they made. It also enables the discussion of the ethical and legal framework of practice. It uses patient records as the basis for dialogue, for systematic assessment and structured feedback. As the actual record is the focus for the discussion, the assessor can also evaluate the quality of record keeping and the presentation of cases.

Most assessments take no longer than 15-20 minutes. After completing the discussion and filling in the assessment form, the assigned educational supervisor should provide immediate feedback to the trainee. Feedback would normally take about 5 minutes.

Direct Observation of Procedural Skills (DOPS)

The Surgical version of DOPS is used to assess the trainees' technical, operative and professional skills in a range of basic diagnostic and interventional procedures, or parts of procedures, during routine surgical practice and facilitate developmental feedback. Surgical DOPS is used in relatively simple environments and procedures and can take place in wards or outpatient clinics as well as in the operating theatre. It is a surgical version of an assessment tool originally developed and evaluated by the UK Royal Colleges of Physicians.

The surgical DOPS form can be used routinely every time the trainer supervises a trainee carrying out one of the specified procedures, with the aim of making the assessment part of routine surgical training practice. The procedures reflect the procedures which are routinely carried out at the trainees' workplace.

The assessment involves an assessor observing the trainee perform a practical procedure within the workplace. Assessors do not need to have prior knowledge of the trainee. The assessor's evaluation is recorded on a structured checklist that enables the assessor to provide verbal developmental feedback to the trainee immediately afterwards. Trainees are encouraged to choose a different assessor for each assessment but one of the assessors must be the current assigned educational supervisor. Most procedures take no longer than 15-20 minutes. The assessor will provide immediate feedback to the trainee after completing the observation and evaluation. Feedback would normally take about 5 minutes.

The surgical DOPS form is scored for the purpose of providing feedback to the trainee. The overall rating on any one assessment can only be completed if the entire procedure is observed. A judgement will be made at completion of the placement as to the overall level of performance achieved in each of the assessed surgical procedures.

Procedure-based Assessment

PBAs assess trainees' technical, operative and professional skills in a range of specialty procedures or parts of procedures during routine surgical practice up to the level of CCT. PBAs provide a framework to assess practice and facilitate feedback in order to direct learning. The PBA was originally developed by the Orthopaedic Competence Assessment Project (OCAP) for trauma and orthopaedic surgery and has been further developed by the SACs for use in all surgical specialties.

The assessment tool uses two principal components:

- A series of competencies within six domains. Most of the competencies are common to all procedures, but a relatively small number of competencies within certain domains are specific to a particular procedure.
- A global assessment that is divided into four levels of overall global rating. This gives the trainer's view on the level to which completed elements of the PBA were performed. The highest rating is the ability to perform the procedure (or selected elements) to the standard expected of a specialist in practice within the NHS (the level required for the Certificate of Completion of Training - CCT).

The assessment form is supported by a worksheet, originally used as a validating the tool. It contains descriptors outlining examples desirable and undesirable behaviours that assist the assessor in making judgements.

The procedures chosen should be representative of those that the trainee would normally carry out at that level and will be one of an indicative list of procedures relevant to the specialty (selected by the SAC). The trainee generally chooses the timing and makes the arrangements with the assessor. Usually the assessor will be the trainee's assigned educational supervisor, but it is anticipated that other surgical consultants may take on the assessment of certain procedures depending on the trainee's work pattern. Trainees are encouraged to request assessments on as many procedures as possible with a range of different assessors.

Assessors do not need to have prior knowledge of the trainee. The assessor will observe the trainee undertaking the agreed sections of the PBA in the normal course of workplace activity (usually scrubbed). Given the priority of patient care, the assessor must choose the appropriate level of supervision depending on the trainee's stage of training. Trainees will carry out the procedure, explaining what they intend to do throughout. The assessor will provide verbal prompts to encourage the trainee to give explanations, if required, and intervene if the quality of patient care is at risk of compromise.

The log book of procedures

This is a web based compilation of all procedures witnessed or performed under varying degrees of supervision during the training intervals. It is validated by supervising trainers after being generated by trainees. It is web based and distinguishes between passive and active involvement in both operative and ward based procedures as laid out in the curriculum.

k) EXAMINATIONS

Introduction- Core surgical trainees will take the MRCS examination. The MRCS will assess knowledge and skills that are encompassed within the generic component of the core curriculum and is blueprinted to the curriculum. It is inevitable that although this is an assessment of the generic curriculum, the assessment will take place within a specialty context.

The written component consists of a MCQ and EMI (Extended matching item questions) combined into a single part A. These two components address knowledge and applied knowledge in the generality of surgery.

Part B consists of an Objective Structured Clinical Examination (OSCE). The precise design and structure are provided in the appendix. The overall design of the OSCE tests skills and applied knowledge as detailed below. It is innovative in that it has some optional elements which permit some choice in the contexts of which the core skills and knowledge may be tested. This is explained in more detail below. In addition to the part A anatomical assessments the OSCE also provides candidates with the opportunity to demonstrate their three dimensional anatomical knowledge in the context of their likely future surgical career, without losing the vital need to ensure a thorough overall grip of generic three dimensional surgical anatomy.

Both Parts A and B must be completed to pass the MRCS.

Trainees will typically take the examination towards the end of the CT2/ST1 year, which has the following advantages:

- If the candidate is unsuccessful, there will be an opportunity to re-sit the examination during CT3/ST2, prior to entry to ST3.
- Progression to ST3 will NOT BE POSSIBLE unless the MRCS is achieved.
- Such timing will fit well with the timetable currently in place for selection into ST3.

A more detailed description of the scope and format of the MRCS examination

The purpose of the MRCS examination is to determine that trainees have acquired the knowledge, skills and attributes required for the generic component of core training in surgery and, for trainees following the Intercollegiate Surgical Curriculum Programme, to determine their ability to progress to higher specialist training in surgery.

The MRCS examination consists of two parts, A & B. Although divided into two parts, the Intercollegiate MRCS is a single examination.

Part A

The MRCS Part A is a machine-marked, multiple choice, written, examination testing knowledge. It consists of two papers, each of two hours' duration, taken on the same day. The marks for both papers are combined to give a total mark for Part A. To achieve a pass the candidate will be required to demonstrate a minimum level of knowledge in each of the two papers, in addition to achieving or exceeding the pass mark set for the combined total mark for Part A. The papers cover generic surgical sciences and applied knowledge, including the core knowledge required in all nine specialties.

Paper 1 - Applied Basic Science.

This paper consists of 135 questions and employs the single best answer (SBA) format, each question containing five possible answers of which there is only one single best answer.

Paper 2 - Principles of Surgery-in-General.

This paper consists of 135 questions and employs the extended matching questions (EMQ) format. Each theme contains a variable number of options and clinical situations. Only one option will be the most appropriate response to each clinical situation. It is possible for one option to be the answer to more than one of the clinical situations.

Part B

The MRCS Part B is an Objective Structured Clinical Examination (OSCE). The OSCE will normally consist of eighteen examined stations. These stations will be divided into four broad content areas as follows:

- Anatomy and surgical pathology
- Applied surgical science and critical care
- Communication skills
- Clinical and procedural skills.

All of the examined stations are 'manned'. Some of the stations will have two examiners and some one. In stations with two examiners, each examiner will normally be examining different aspects of a candidate's performance.

Specialty context stations

The OSCE is designed for candidates in the generality part of their speciality training and twelve of the 18 examined stations are 'generic'. However, to meet the emerging intentions of trainees with regard to future career progression, and to accommodate different patterns of specialty training, six of the 18 examined stations are presented within a specialty context: one in the broad content area of anatomy and surgical pathology, two in clinical skills (history taking) and three in clinical skills (physical examination).

The specialty contexts are:

- head and neck
- trunk and thorax
- limbs (including spine)
- neurosciences.

Candidates must specify their choice of specialty context stations at the time of application to the examination. Their choice determines the same specialty context area for anatomy and surgical pathology, clinical skills (history taking) and one of the clinical skills (physical examination) stations. Candidates must choose a different specialty context area for the other clinical skills (physical examination) stations. It is important to emphasise that this optional element is simply to be able to demonstrate generic skills and some knowledge and its application in a context most familiar to the candidates. It is not to test deep knowledge in designated speciality areas. We believe that this is a unique feature of the new examination and one that caters best for the variety and choice inbuilt into our new approach to early year's surgical training. In effect candidates may only choose not to be examined in the context of one speciality area; this seems fair in that all surgeons should understand surgery in broad context but head and neck surgeons need less understanding in the context of say abdominal surgeons and vice versa.

N.B. THE CHOICE OF SPECIALITY CONTEXT STATIONS IS NOT DELINEATED IN THE AWARD OF MRCS. Successful candidates all are awarded exactly the same diploma as a measure of their core surgical competencies.

Domains

In addition to the four broad content areas examined in the OSCE, four domains have been identified which encompass the knowledge, skills, competencies and professional characteristics of the competent surgeon. These domains map to GMC's Good Medical Practice (GMP) and are assessed in the OSCE. They are as follows:

- Anatomy and surgical pathology
- Applied surgical science and critical care
- Communication skills
- Clinical and procedural skills

The four domains are assessed via the 18 stations of the OSCE. Each station will assess all four different domains, as described above.

SPECIALTY SPECIFIC ELEMENTS REQUIRED TO MEET THE ST3 COMPETENCY IN ANY GIVEN SURGICAL DISCIPLINE

NB: The following pages summarise the requirements of individual specialties. Entry requirements to ST3 published by individual specialties and approved by PMETB should be regarded as the primary document where there is any discrepancy. For surgery most of the requirements are common for all nine disciplines and are described in the table below. The details for each speciality specific ST1 and 2 section are described including the time expected to be spent in that discipline during early years training such that a candidate is eligible for ST3 entry. If a candidate wishes to change from one discipline to another at any stage before entry into ST3 this may prolong their training as completion of the mandatory period in the speciality is still a requirement as well as completing all the early years educational goals laid out below. In practice any wish to ladder from one discipline of surgery to another is easier the earlier the decision is made and in practice once selected into ST3 changing discipline will be extremely difficult and time consuming.

Eligibility for entry into ST3

These build on the entry requirements for entry into ST1/CT1. Criteria for entry are expanded upon on later in this document.

Application requirements to enter Specialty Training at ST3 in any discipline		
	Essential	**When Evaluated[6]**
Qualifications	MBBS or equivalent medical qualification Successful completion of MRCS or equivalent at time of application	Application form
Eligibility	Eligible for full registration with the GMC at time of appointment Eligibility to work in the UK Evidence of achievement of Foundation competences by time of appointment in line with GMC standards/ Good Medical Practice Evidence of achievement of Early years competencies in core training. Evidence of achievement of ST1 speciality specific competences in surgery at time of appointment Evidence that a candidate will reasonably have a prospect of achieving ST2 speciality specific competences by August of the year of application	Application form Application form Interview / Selection centre[7] Application form Interview / Selection centre Application form Interview / Selection centre
Fitness To Practise	Is up to date and fit to practise safely	Application form References

[6] 'when evaluated' is indicative, but may be carried out at any time throughout the selection process

[7] A selection centre is a process not a place. It involves a number of selection activities that may be delivered within the Unit of Application.

Language Skills	All applicants to have demonstrable skills in written and spoken English adequate to enable effective communication about medical topics with patients and colleagues demonstrated by one of the following: a) that applicants have undertaken undergraduate medical training in English; or b) have the following scores in the academic International English Language Testing System (IELTS) – Overall 7, Speaking 7, Listening 6, Reading 6, Writing 6. If applicants believe they have adequate communication skills but do not fit into one of these examples they must provide supporting evidence	Application form Interview / Selection centre
Application requirements to enter Specialty Training at ST3 in any discipline		
	Essential	**When Evaluated[8]**
Health	Meets professional health requirements (in line with GMC standards/Good Medical Practice)	Application form Pre-employment health screening
Career Progression	Ability to provide a complete employment history At least 24 months' experience[9] in surgical training (not including Foundation modules), of which a specified period of time in the speciality applied for by August of the year of appointment. The specified me period is described below for each of the 9 surgical disciplines	Application form
Application Completion	ALL sections of application form completed FULLY according to written guidelines	Application form

Given that entry at the ST3 level of competency must permit an individual to progress in their chosen speciality, then it is imperative that the competencies of all ST3 entrants are at the same level. This is also preferable in the speciality element also. However it needs to be pragmatically recognised that given a rich and varied choice of early years programmes, having everyone at exactly the same level in terms of the details of their WPBAs will be extremely difficult to achieve, although all must meet a minimum standard.

Trainees who have been selected despite some remediable and identified gaps in their speciality specific curriculum competencies as demanded overall for ST3 progression must ensure these are dealt with expeditiously during ST3. All these gaps must be addressed by the time of a ST3 ARCP as part of their overall permission to progress to ST4. They must be specifically addressed through local learning agreements with educational supervisors. Trainees with identified gaps must be accountable to the training programme directors whom in turn must address this as part of their report to the ARCP process.

The top up requirements for Trauma and Orthopaedics are described below.

[8] 'when evaluated' is indicative, but may be carried out at any time throughout the selection process

[9] Any time periods specified in this person specification refer to full time equivalent

What may be expected of a trainee by the time they become eligible to commence ST3 in Trauma and Orthopaedic surgery (T&O)

In order to meet the job specifications of an ST3 trainee an early year's trainee must take a clear role in the T & O surgical team, managing clinic and ward based patients under supervision, with an emphasis on trauma patients. They will need to be able to take part in a fracture clinic and see patients themselves with the consultant available for advice. This will mean the trainee understanding protocols and policies of the fracture service which is a pivotal element of Trauma and Orthopaedic practice in general. Therefore in early years training, IN ADDITION to the generic competencies for all surgeons, it is necessary to address the specifics of a developing interest in T & O during these years. This means spending one year in T & O in a service which gives trainees access to the appropriate learning opportunities. Also by the time a trainee enters ST3 they need to be familiar with the trauma operating room environment and have also observed some elective practice, although the latter is simply desirable. It is essential that early years trainees gain operative experience in the management of simple ankle fractures and fractures of the femoral neck as these are extremely common.

Trainees must attend morning trauma meetings and ward rounds, prepare operating lists for trauma, attend trauma operating sessions and actually perform some surgery under appropriate supervision, and manage all patients in a T & O ward environment, preoperatively and post operatively. This includes recognising and initiating the management of common T & O complications and emergencies, over and above those already laid out in the generic curriculum, particularly module 2.

The range of conditions a trainee needs to manage are laid out below and in the depth demonstrated in a text book such as **Apley's System of Orthopaedics and Fractures** by Louis Solomon, David Warwick, and Selvadurai Nayagam include

1. Simple fractures and dislocations

To be able to provide the early care of the injured including the management of simple fractures and dislocations

2. Soft tissue injuries

To be able to recognise and manage soft tissue injury including sprains, contusions, crushing and simple wounds

3. Ankle fractures

To be able to understand and recognize the varying patterns of ankle fractures including their initial and definitive management.

4. Proximal femoral fractures in the elderly

To be able to understand and recognize the varying fracture patterns, predisposing causes, investigation, operative management and rehabilitation of proximal femoral fracture patients.

5. Distal radial fractures

To be able to understand and recognise the varying fracture patterns, predisposing causes, operative management (manipulation, cast treatment, K-wire fixation and ORIF) and rehabilitation of distal radial fractures.

Early Years training in Trauma and Orthopaedic Surgery	
Objective	Provide experience in the early care of the injured, learn to manage simple fractures and dislocations and have some evidence of operative experience as the surgeon in ankle and extra capsular hip fractures
Knowledge	Anatomy and physiology of the locomotor system and spinal cord Understanding of imaging techniques (e.g. MRI, CT, bone scan, USS) as applied to bone and musculoskeletal soft tissues Patho-physiology of bone healing. Principles of management of fractures. Including the principles of internal and external fixation of long bone and peri-articular fractures Principles of management of joint dislocations Principles in the management of open Vs closed fractures Principles of Management of pathological fractures Details of management of ankle and hip fractures including classification and definitive treatment
Clinical Skills	Examination of the limbs and joints Perform a neurological examination in the presence of a nerve root compression or spinal injury Interpretation of plain radiographs Ability to describe a fracture/ dislocation from an x ray Classification of closed and open fractures, Assessment, investigation and management of low velocity closed fractures and dislocations encountered in a fracture clinic. Ability to prescribe rehabilitation and work with the hospital and community based interdisciplinary team
Technical Skills and Procedures	Closed manipulation and reduction of simple fractures and dislocations. Techniques of immobilisation including casting and safe splintage of these injuries Simple ankle and or olecranon fracture fixation under supervision Surgical fixation of extra capsular fractures of the femoral neck under supervision. Performance of a hemiarthroplasty under supervision

Assessment

The speciality elements of the early years will all be assessed primarily in the workplace and then scrutinised in the Annual Review of Competency Progression. All these documents would be included in a portfolio which would contribute as evidence in subsequent applications to enter ST3. All (with the exception of the final ARCP) should be available at the time of application to enter ST3.

Specific evidence includes

Assessment type	Subject	Level of achievement
DOPS a selection of types and numbers of each type according to learning agreements	Application of a secondary cast Closed reduction of a fracture Removal of a K wire Intra articular injection of a knee or shoulder Debriding a simple wound Opening and closure of a wound	Complete Complete Complete Complete Complete Complete
Case Based Discussions	One per attachment	Complete
CEX	Examples of examination of Shoulder, Spine (including neurological examination), Elbow,	Complete

Assessment type	Subject	Level of achievement
	Hand and Wrist, Hip, Knee, Ankle, Foot	
PBAs	Ankle fracture fixation Fixation of an extra capsular fracture Hemi arthroplasty of the hip	Average level 2 Average level 2 Average level 2
Training Supervisors report	Evidenced by the above WPBA	Complete
ARCP for each specified training interval	As per local Deanery specifications	Completed to level expected of candidate entering ST3
MRCS	Generic syllabus	Complete

I) SELECTION INTO A SURGICAL DISIPLINE

This document has laid out the potential careers pathways for early years training up to and including the broad outlines of selection into surgery and/or its nine SAC defined disciplines.

The responsibility for setting standards and criteria for selection out of Foundation in the UK or its equivalent standard for those from overseas rests with the Royal Colleges of Surgery which operates in this case through the JCST and its nine SACs.

Postgraduate Deaneries and their schools of surgery are responsible for running training schemes and for recruitment and selection at all levels of pre CCT training including into ST1/CT1 and ST3.

The requirements for ST/CT1are laid out on later in this document as are those for ST3.

Selection takes place in the core/themed, run through and ST3 in selection centres run either by individual Deaneries and Schools or in clusters arranged either by discipline or collaborations by a series of schools. Some of these clusters aim for a national selection process for the whole of a discipline (for example, urology, cardiothoracic surgery and neurosurgery and others through practical problems posed by size and volume to regionally orientated groups (for example General and Trauma and Orthopaedic surgery.

This is part of ongoing work and evaluation. The judgements are made according to nationally agreed standards tabulated below. The criteria apply to both levels of entry and different levels of depth depending on the stage of application (CT1/ST1 or ST3) are calibrated through selector training before selection centres take place.

SELECTION CRITERIA			
	Essential	**Desirable**	**When Evaluated**[10]
Clinical Skills	Technical Knowledge & Clinical Expertise: • Capacity to apply sound clinical knowledge & judgement & prioritise clinical need • Demonstrates appropriate technical competence & evidence of development of excellent diagnostic skills & judgement • Validated logbook documentation of surgical exposure to date	Personal Attributes: • Shows aptitude for practical skills, e.g. hand-eye co-ordination, dexterity, visuo-spatial awareness • Attendance at relevant courses, e.g. ATLS, Basic Surgical Skills or equivalent	Application form Interview /Selection centre References
SELECTION CRITERIA			

[10] 'when evaluated' is indicative, but may be carried out at any time throughout the selection process

	Essential	Desirable	When Evaluated[11]
Academic/ Research Skills	**Research Skills:** • Demonstrates understanding of the basic principles of audit, clinical risk management & evidence-based practice • Understanding of research basic research principles, methodology & ethics, with potential to contribute to research **Teaching:** • Evidence of contributing to teaching & learning of others	• Evidence of relevant academic & research achievements, e.g. degrees, prizes, awards, distinctions, publications, presentations, other achievements • Evidence of active participation in audit • Evidence of participation in risk management and/or clinical/laboratory research	Application form Interview / Selection centre
Personal Skills	**Judgement under Pressure:** • Capacity to operate effectively under pressure & remain objective in highly emotive/pressurised situations • Awareness of own limitations & when to ask for help **Communication Skills:** • Capacity to communicate effectively & sensitively with others, able to discuss treatment options with patients in a way they can understand **Problem Solving:** • Capacity to think beyond the obvious, with analytical and flexible mind • Capacity to bring a range of approaches to problem solving **Situation Awareness:** • Capacity to monitor and anticipate situations that may change rapidly **Decision Making:** • Demonstrates effective judgement and decision-making skills **Leadership & Team Involvement:** • Capacity to work effectively in a multi-disciplinary team & demonstrate leadership when appropriate • Capacity to establish good working relations with others		Application form Interview / Selection centre References Application form Interview / Selection centre References

[11] 'when evaluated' is indicative, but may be carried out at any time throughout the selection process

SELECTION CRITERIA			
	Essential	**Desirable**	**When Evaluated**[12]
Personal Skills (continued…)	**Organisation & Planning:** • Capacity to manage time and prioritise workload, balance urgent & important demands and follow instructions Understands importance & impact of information systems		
Probity	**Professional Integrity:** • Takes responsibility for own actions, demonstrates respect for the rights of all. • Demonstrates awareness of ethical principles, safety, confidentiality & consent • Aware of importance of being the patients' advocate, clinical governance & responsibilities of an NHS employee		Application form Interview /Selection centre References
Commitment To Specialty	**Learning & Development:** • Shows realistic insight into Trauma and Orthopaedics and the demands of a surgical lifestyle • Demonstrates knowledge of training programme & commitment to own development • Shows critical & enquiring approach to knowledge acquisition, commitment to self-directed learning & reflective/analytical approach to practice	• Extracurricular activities / achievements relevant to a particular discipline	Application form Interview /Selection centre References

[12] 'when evaluated' is indicative, but may be carried out at any time throughout the selection process

4. Interaction with other specialties

In the course of early years training, particularly in ST1 and 2 run-through models, T & O trainees will visit other specialties and vice versa. To facilitate these interactions a number of topics have been identified to form a brief focus for visiting trainees. These topics have been embedded into an ST1-2 learning agreement form which is included in this document asan appendix showing assessment tools and giving opportunity for reflection. This learning agreement is not intended to replace any systems or agreements in other specialties but only to support the visiting trainee and help them to maximise the learning from what may be a very brief period.

Trauma & Orthopaedics

- Trauma resuscitation
- Approach to multiple injury
- Approach to back pain
- Thromboprophylaxis in T & O
- Approach to the painful joint
- Assessment of the injured joint (knee/shoulder/wrist/hand/ankle)
- Management of open fracture
- Management of painful joint
- Management of painful back
- Cast for wrist fracture / below knee for ankle injury
- Removal of K wire
- Debridement traumatic/infected wound
- Closed reduction +/- k-wiring of a wrist fracture
- Reducing a trochanteric fracture on traction table
- Approach for application of a DHS.
- Approach to distal fibula for fracture.
- Application of a plate to distal fibula
- Application of DHS for inter-trochanteric fracture
- Simple fractures and dislocations
- Soft tissue injuries
- Ankle fractures
- Proximal femoral fractures in the elderly

Neurosurgery

- Breaking bad news
- Management of spinal cord or cauda equine compression
- Neurological assessment and initial resuscitation of patient with coma or impaired consciousness
- History and examination of a patient with spinal claudication
- Application of skull traction / Burr hole / Insertion of intracranial pressure monito

Plastic Surgery

- The multidisciplinary assessment of management of tibial fractures involving skin loss
- Management of patients developing pressure sores
- Assessment and non-operative management of the burns patient
- Examination of the injured hand
- V-Y advancement / SSG / FTSG / Excision & local flap / Digital nerve block / Primary repair of extensor of
- hand / Primary repair of flexor of hand / Wound exploration & debridement

General Surgery

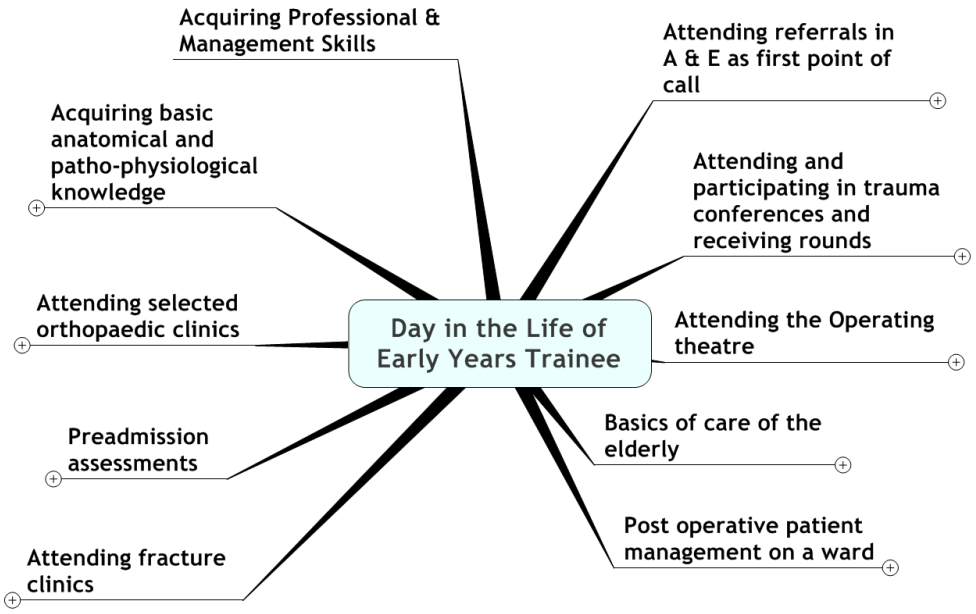
- Superficial sepsis, including necrotising infections
- Venous disease and ulceration
- Nutrition
- Assessment of the acute abdomen history, examination or resuscitation
- Assessment of patients with possible intra-abdominal injuries
- Treatment of benign lesions of skin and subcutaneous tissues
- Diagnostic peritoneal lavage

5. T&O Entry requirements to ST3

The Early years curriculum outlined in Section 3 contains the syllabus for the MRCS examination and the general requirements to enter ST3. In this section we outline the specific requirements of T&O. These are the expectations and demands of the ST3 posts in T&O and should be seen as both complementary and supplementary to the early years curriculum. In this section the requirements are outlined in the same format as the 2006 curriculum. Tthe "ST1-2" columns of the syllabi in this submission, are still included in the main tables (8-5 onwards) for convenience.

This section of the curriculum also contains checklists for the trainee wishing to enter ST3 in T&O. These checklists utilise information listed elsewhere in this curriculum in a format to help the trainee reflect on their actual experience in the various formats of early years training.

a) FEATURES OF JOBS AND EXPERIENCE TO PREPARE FOR ENTRY



Job Features		Actual Experience
Summary: A day in the life of an early years trainee	• Care of traumatized patient	
	• Orthopaedic emergencies	
	• Managing patients in a busy orthopaedic unit	
	• An introduction to elective orthopaedics	
1. Attending referrals in A & E as first point of call	• Will be first on to take calls from A & E	
	• Will be supported by a more senior trainee as well as a consultant	
2. Attending and participating in trauma conferences and receiving rounds	• Presenting cases at the meeting	
	• Having an input as to the overall management of the patient	
	• Maintaining a perspective between surgical and medical expediencies for an individual patient	
	• Building up an experience base from the discussions they are attendant to	
3. Attending the	• Organising a trauma list	

Job Features		Actual Experience
Operating theatre	• Liaising with theatre staff	
	• Liaising with radiographers	
	• Liaising with anaesthetists	
	• Scrubbing and assisting	
	▪ Carrying out a range of procedures under supervision – Closed manipulation of fractures – Application of acute casts and slabs – Setting up a femoral neck fracture on the operating table – Doing an angled screw plate – Performing Hemiarthroplasty – Fixing a simple fracture such as an olecranon or a less complex ankle fracture	
a. Mastering a limited range of common trauma situations	• Manipulation of most closed fractures and dislocations	
	• Fixed angle screw plate for neck of femur fractures	
	• Fixing a simple ankle fracture	
	• Applying a simple external fixator	
	• Doing a tension band	
4. Basics of care of the elderly	• Dehydration	
	• Electrolyte imbalance	
	• Common medical problems	
	• Arranging for ongoing care	
	• Rehabilitation team awareness	
5. Post operative patient management on a ward	• Fluid balance	
	• Surgical complications	
	• Bleeding	
	• Infection	
	• DVT and embolism	
	▪ Dislocation o Medical complications	
	• Chest pain	
	• Stroke	
	• Collapse	
	• Pneumonia etc	
6. Attending fracture clinics	• Management of closed fractures	
	• Recognising complications and what to do	
	• Knowing when to refer or defer to a more experienced or expert opinion	
	• Applying a secondary cast and or a brace	
	▪ Being able to communicate with colleagues in and out of hospital regarding patient management – Being able to write clear notes – Dictate and check a succinct letter to the GP	
7. Preadmission assessments	• Work with the preadmission team	
	• Supervise situations where the protocol is in question	
	• Anticipate problems and trouble shoot	
8. Attending selected orthopaedic clinics	• Be exposed to assessment of any of a number of common problems such as arthritis	
	• Be able to take a history	
	• Be able to examine a patient	
	• Generally	
	• Musculoskeletally	
	• Be able to participate in discussions about management	
9. Acquiring basic anatomical and patho-physiological knowledge	• Germane to surgery in a general sense	
	• Germane to the levels required to train as an orthopaedic and trauma surgeon to the level of CCT	

b) SPECIFIC KNOWLEDGE/SKILL REQUIREMENTS

This section defines in detail the knowledge and experience expected at ST3. It does not seek to define in any way the content of the selection process. It is possible to enter ST3 with gaps in knowledge or experience, this section tries to help trainees to define those gaps which will need to be filled in the early stages of ST3.

The knowledge level expected is indicated on the following four point scale:

1. knows of
2. knows basic concepts
3. knows generally
4. knows specifically and broadly

These are difficult terms to define precisely but it will be expected that a practicing surgeon (level 4) will not only be able to apply specific, detailed knowledge of a given condition or technique but also utilise a broad knowledge of orthopaedics and medicine to view any patient's situation holistically. Most crucially, trainees must demonstrate an appreciation that knowledge changes as research progresses, and so they must also possess and apply the relevant skills to keep themselves up to date. These skills are defined in the Professional Behaviour and Leadership syllabus of the curriculum.

The skills and procedures are assessed on the following four point scale:

1. has observed or knows of
2. can manage with assistance
3. can manage whole but may need assistance
4. competent to manage without assistance including complications

The core competencies for procedural skills are listed separately in this document.

c) OVERVIEW AND PRIORITIES

The detailed elements required in knowledge and application of knowledge should be reviewed in three areas which may be summarised as follows:-

1. Early years

In the first two years trainees focus predominantly in the area outlined in the early years curriculum found elsewhere in this document. All and every job available in the first two years of any programme must be capable of delivering and facilitating learning of this key syllabus. It is essential that all trainees demonstrate their acquisition of knowledge and its application by acquiring the Intercollegiate MRCS examination in full. Failure to do so will prevent progression to ST3 by any route, irrespective of what other educational milestones have been achieved.

2. Basic trauma

The predominant element of the T & O syllabus and curriculum at this level deals with trauma and its management. This is also laid out in detail in the curricular documents alluded to earlier. By the end of early years training trainees aspiring to enter ST3 in T & O must show competence in the overall management of non operative trauma and be conversant with operative trauma in general principle. Specifically they must be able to manage a limited range of techniques involved in treating fractures around the hip and simple internal fixations around the ankle or elbow. In terms of operative fixation this small selection contains very common technical problems. The techniques utilised to resolve them are very representative of the types and levels of skills which give an indication of a trainee's fitness to proceed to ST3. It follows that the underpinning knowledge and its application are required in the matching relevant areas and these are explained in detail elsewhere in this curriculum.

3. Broader trauma and elective experience

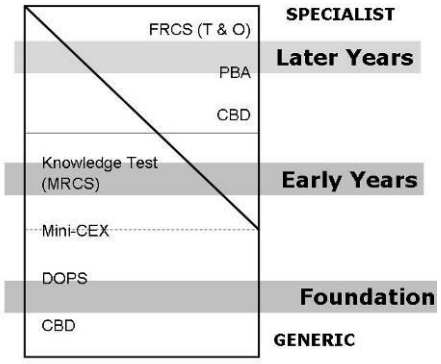
It is likely that early years trainees will also encounter a wider range of elective and trauma experience over and above the first two imperatives summarised above. It is important that such experience is used when available, reflected upon in the log book and supported by appropriate reading across the range of topics indicated in the orthopaedic curriculum. Such work is expected of committed career professionals. However, such records and reflections must not detract from the imperatives of area 1 (the early years/generality of surgery) and 2(the particular specifics of trauma surgery) alluded to above. In the future once the first two priorities are met then the committed trainee will be making a worthwhile start on their deeper and more extensively based reflective practice which will be required to achieve the CCT following entry to ST3.

d) DETAILED REQUIREMENTS

The column "ST1-2" in the Applied Clinical Knowledge Syllabus and Applied Clinical Skills Syllabus beginning on Page 8-17 outline the detailed entry requirements for ST3. They should be used as a self-assessment/reflective tool by any trainee aspiring to enter ST3 in T & O.

e) ASSESSMENT EVIDENCE REQUIRED

The assessment strategy is illustrated below



Assessment tools from foundation are continued into the early years (in particular ST1-2 in T & O). As training progresses more emphasis is placed on PBA's.

1) Learning Agreements

Evidence should be provided that learning agreements were set, reviewed and completed. Evidence of reflective practice such as presentations, research etc may be included but no absolute requirements are laid out in the curriculum.

2) Workplace Based assessments

Early years assessments

The assessment tools from foundation (DOPS, CBD, Mini-CEX, Mini-PAT, TAB) are available to the trainee and their supervisors. The curriculum requires evidence of progress (thus logically at least two of each assessments per attachment) but no absolute limits on how many assessments must be undertaken. In particular all surgical DOPS relating to T&O should be completed.

Direct Observation of Procedural Skills	**Completed?**
Application of a secondary cast in the plaster room during a fracture clinic to a forearm or leg	
Insertion of traction pins	
Intra articular injections for joint aspiration	
Removal of K wire	
Opening and closure of a wound	
Debriding a simple wound	
Excision and direct suture of skin lesion	
Use of Z-plasty	

Procedure Based Assessments

As part of the trauma based early years elements of the curriculum certain procedures in Procedure Based Assessments including those listed below which are mandatory. [6-4]

Procedure Based Assessment	**Completed?**
Operative Fixation of Weber B Fracture of Ankle	
Hemiarthroplasty Intracapsular Fracture Neck of Femur	

An early years trainee will not necessarily be expected to complete the whole PBA at level 4 but will certainly be expected to have attempted all elements of the above PBA's.

3) Formal knowledge Assessment

Before the end of early years/ST2 we will expect a trainee to demonstrate knowledge in the basic surgical sciences (germane to all surgery), anatomical knowledge of sufficient depth to facilitate training in T & O and specific patho-physiological and biomechanical knowledge relevant to musculoskeletal surgery.

MRCS exam must be passed before entering ST3.

6. Overview of Curriculum

Trauma and Orthopaedic Surgery is a specialty which encompasses the management of acute injuries and conditions and elective practice covering both congenital and acquired disorders of the bones, joints and their associated soft tissues, including ligaments, nerves and muscles.

Most consultants contribute to an emergency trauma service. For the majority of their working lives they will be expected to deal with bony and soft tissue injuries admitted through their local A & E Departments. The vast majority of surgeons also have a specialist elective interest in orthopaedic conditions often based on an anatomical region of the body including the following:

- Lower limb joint reconstruction (hip and knee replacements and associated procedures).
- Hip surgery
- Knee surgery (bony and soft tissue)
- Ankle and foot
- Upper limb (shoulder and elbow)
- Upper limb (hands)
- Spine
- Bone tumour surgery
- The surgery of childhood
- Rheumatoid surgery
- Complex trauma surgery

A minority of surgeons have very highly specialised practices in one of these areas and an increasing proportion do not take part in general trauma surgery.

The award of a Certificate of Completion of Training (CCT) occurs at the completion of training once the Trainee has demonstrated a range of generic medical skills including team working and communication as well as evidence of competence in the general practice of orthopaedic and trauma surgery and the successful completion of the interspecialty examination. By the time they acquire the CCT they may already have developed a special interest in one of the above named areas.

a) RECRUITMENT INTO TRAUMA AND ORTHOPAEDICS

Orthopaedics and Trauma aspires to select all surgeons at the earliest possible stage using the most fair and effective methods available to the specialty.

b) PROGRAMME OF TRAINING

The early years ST1 and ST2 will enable those selected to show their capabilities and, subject to assessment, to pass seamlessly into ST3. It is anticipated that the majority of those entering the programme will need a further 6 indicative years after ST2 to achieve the standard dictated for the awarding of a CCT in T&O. Part of the later years (ST6+) assessment will include the successful completion of the Intercollegiate specialty examination.

c) ASSESSMENT

During the first year (ST1) we will utilise a Learning Agreement (including PBA assessments) within the first 8 months, enabling trainers and trainees to assess the trainee's progress and potential. This agreement will formally be reviewed on two occasions during this period by an ARCP/RITA-like process. A process of counselling will be instituted at an early stage if there is doubt on either side as to choice of career path or change of mind as to the direction of future career. The assessment tools for the early years are described within this curriculum as are those for the later years of training.

The award of a Certificate of Completion of Training (CCT) occurs at the completion of training once the Trainee has demonstrated their competence in the entire range of skills, knowledge and attitudes described in Good Medical Practice, including competence in the general practice of orthopaedic and trauma surgery. By the time they acquire the CCT they may already have developed an interest in one of the above named specialist areas.

By the end of ST2 the trainee will have to demonstrate knowledge germane to the general principles of surgery and knowledge specific to training in Trauma and as orthopaedics. This is best done by MCQ and EMI.

The trainee will, as a normal part of their later training, begin to explore sub-specialist interests. This exploration will form a normal part of the learning agreement (s) and be subject to routine workplace based assessment (e.g. PBA) informing CCT (as any other attachment). The interest that many trainees develop at this stage will not be assessed in terms of specialty content for the purposes of CCT. It will, however, be a valuable developmental stage which will inform the trainee's own CPD agenda for the future.

Before the award of the CCT the trainee will need to demonstrate in a formal summative assessment of the curriculum the applied knowledge, skills, attitudes and judgements of an Orthopaedic surgeon practicing independently in the generality of the discipline.

d) CURRICULUM PHASES

The curriculum for T&O training is modular with the trainee rotating through a series of attachments aimed at providing a comprehensive appreciation of the range of disorders likely to present in later professional life.

The Initial Phase (ST1-2)

The initial phase ST1 stresses the learning of essential generic surgical principles shared by all surgical specialties and the acquisition of skills for the management of trauma. Initial focus will be fractures to the neck of the femur and to the ankle as well as a general ability to manage other low velocity fractures normally expected to be seen in A&E and admitted or referred on to fracture clinics. ST2 then expands the trauma vocabulary and consolidates generic surgical principles of in- and out- patient care as well as providing an introduction to the principles of modern elective orthopaedic practice by the commencement of the modular attachments, described below (intermediate phase).

The Intermediate Phase (ST3-6)

The next period of training takes the trainee to an intermediate level, usually involving six month specialist attachments in the sub specialist areas described above and referred to hereafter as Modules. The trainee would be expected to acquire in each area of orthopaedics a level of knowledge, skills and professionalism expected of a consultant surgeon practising in a district general hospital setting where they will be receiving trauma and managing most common orthopaedic conditions.

The Final Phase (ST7-8)

Following the acquisition of all or most competencies defined above, a further period of focused training and experience will be planned in one or more of the sub-specialist modules described above. This will be assessed as part of the CCT but this does not imply that sub-specialisation is completed at this stage (see above).

The Outcome of Training

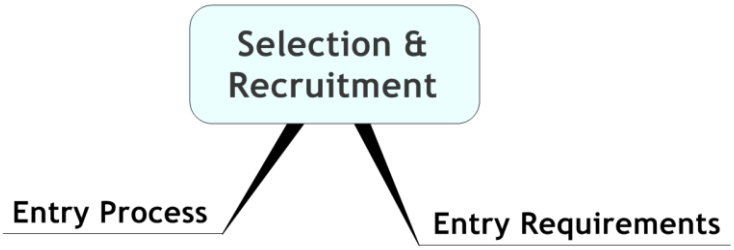
A newly appointed consultant in T&O with CCT should be able to accept responsibility for the reception and initial management of the majority of unselected trauma cases and act as the primary consultant for the small number of rare orthopaedic emergencies which may occur. They will deal with the majority of these cases definitively. The consultant will also make appropriate referral to other specialists within the discipline, depending on local circumstances, for those patients who are best served by a colleague with a specific expertise.

The acquisition of a CCT will define an individual who could work in a multi disciplinary team with other more experienced surgeons. This individual would be expected to assess emergencies as they arise, resuscitate and definitively treat the majority, referring on some of the more specialised cases as described above. In the final phase of training, although the CCT holder will already have proven competencies in one or more of the specialist areas, further acquisition of skills, professionalism and knowledge in the sub specialist areas will continue during Continuous Professional Development. Any defined specialist interest will ultimately need to be competency proven, probably through peer review of a portfolio of work developed through CPD. The acquisition of a CCT permits the Orthopaedic Surgeon to be placed on the specialist register of the GMC as a T & O surgeon but gives no guarantee of appointment to a particular post. The final decision as to suitability for a Consultant appointment lies with the designated Appointment Committee and the job description.

Trainees who for whatever reason opt out of training prior to acquisition of CCT need special consideration. Those who choose to practice with less than the minimum level of training to achieve CCT will require supervision by a CCT holder.

Independent practice and full responsibility for action require a doctor who has reached the stage of being able to make critical and independent judgements. Even within focused specialty practice, such an individual requires training in the round, as evidenced by CCT.

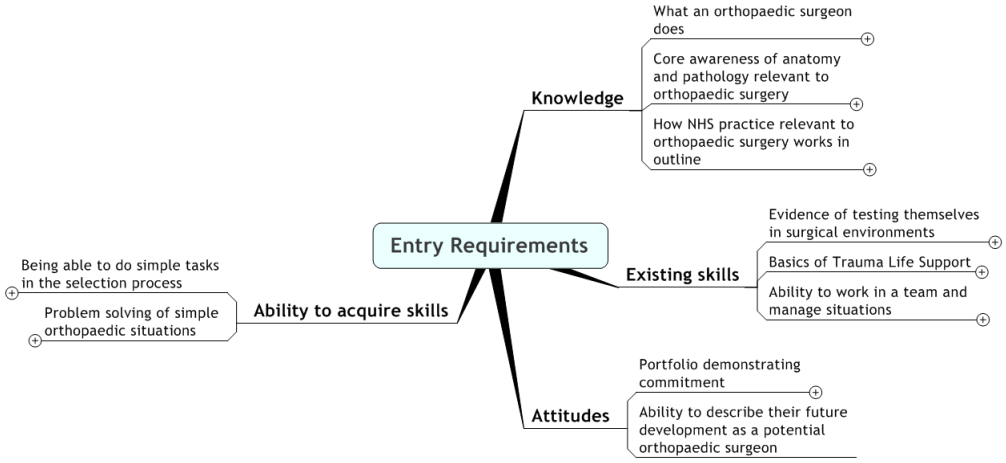
7. Selection and Recruitment



We anticipate selection into Trauma and Orthopaedic Surgery being part of the national selection process into surgery taking place simultaneously in individual Deaneries across the UK. In time recruitment will be exclusively from F2.

The selection process will be non discriminatory; prior exposure to a T&O experience during F1/2 will not be an essential prerequisite although evidence of knowledge of, commitment to, and enthusiasm for T&O are all highly desirable attributes.

a) ENTRY REQUIREMENTS FOR RUN THROUGH TRAINING



It is important that the knowledge, attitudes and skills that are required to be able to train and then practice as an Orthopaedic Surgeon are identified and verified in the selection process. The diagram above summarises desirable attributes in an individual wishing to train in T & O and are described in more detail below.

i. Knowledge

a. What an orthopaedic surgeon does
   i. Trauma care
      - Low velocity fractures make up the most part of care
      - The management of multiply injured patients
      - Fracture fixation
   ii. Elective care
      - How orthopaedics is divided up into sub-specialities
      - Environments where elective care is administered

b. Core awareness of anatomy and pathology relevant to orthopaedic surgery
   i. A knowledge of the basic lay out of the musculoskeletal system
   ii. Some examples of applied anatomy
      1. Nerve root origins and their significance
      2. Joint structure and function
   iii. Soft tissue pathophysiology
   iv. Basic biomechanical awareness
   v. The response of the body to trauma and surgery

c. How NHS practice relevant to orthopaedic surgery works in outline
   i. The relationship between trauma and elective services

ii. Existing Skills

a. Evidence of testing themselves in surgical environments
   i. Basic surgical skills
      - Student exposure
      - Voluntary exposure in Foundation

b. Basics of Trauma Life Support
   - More than statutory requirements in Foundation

c. Ability to work in a team and manage situations
   i. Scenario discussions around team situations
   ii. Situation awareness

iii. Attitudes

a. Portfolio demonstrating commitment
   i. Student electives
   ii. Student projects
   iii. Published work
   iv. Audits carried out
   v. Intercalated degrees
   vi. Other activities outwith the curriculum relevant to a career in orthopaedics
      - Voluntary work
      - Visits

b. Ability to describe their future development as a potential orthopaedic surgeon

iv. Ability to acquire skills

a. Being able to do simple tasks in the selection process
   i. Knot tying
   ii. Three dimensional orientation with a simple endoscopic model

b. Problem solving of simple orthopaedic situations
   a) OSCE type settings of simple things
      Looking at an x ray
      Seeing the normal
      See the obviously abnormal
      Looking at a set of blood investigations related to bones and joints
   b) Orthopaedic trauma case based discussions

b) ENTRY PROCESS (EARLY YEARS)

An initial paper/electronic based selection process will match candidates against broad generic criteria indicating a propensity for surgical training. Selection into T & O will be facilitated by face-to-face interviews with Orthopaedic Surgeons as part of the selection process.

Selection centres will provide aptitude testing (as yet undefined) with smaller deaneries being part of a regional selection process to preserve a national standard for selection.

At present we expect that the selection centre will provide information linked to previous education and experience on the applicant's motivation (towards surgery in general and T&O in particular) together with a judgement as to their ability to be trained.

c) Entry into Later Years of Training

There will be a need to provide for entry into a variety of levels of training for those applying from research and academic posts, career posts, after assessment under Article 14 and periods of absence after career breaks.

1. Intermediate phase ST3-6

To permit entry into the later stages of training ST3-6 a selection process would be conducted in a similar manner to the earlier years entry with an initial electronic screening followed by selection against specialty specific criteria.

In order to standardise this process the specialty specific criteria will be developed in the first tranche of the "Further Work and Development" – Section 14. The basis of these criteria will be the competencies required to enter at each level.

For example entry to ST3 will require completion of the competencies required to successfully complete ST2 including the test of knowledge applied at this stage.

2. Final Phase ST6-8

It is anticipated that in order to access the final phases of training it would be necessary to have completed all the modular competencies equivalent to completing ST6 and to be able to demonstrate that the applicant had a level of knowledge sufficient to complete the Intercollegiate Specialty Exam in Trauma and Orthopaedics within 12 months of entering at this level.

d) Introduction to T & O Prior to Entry

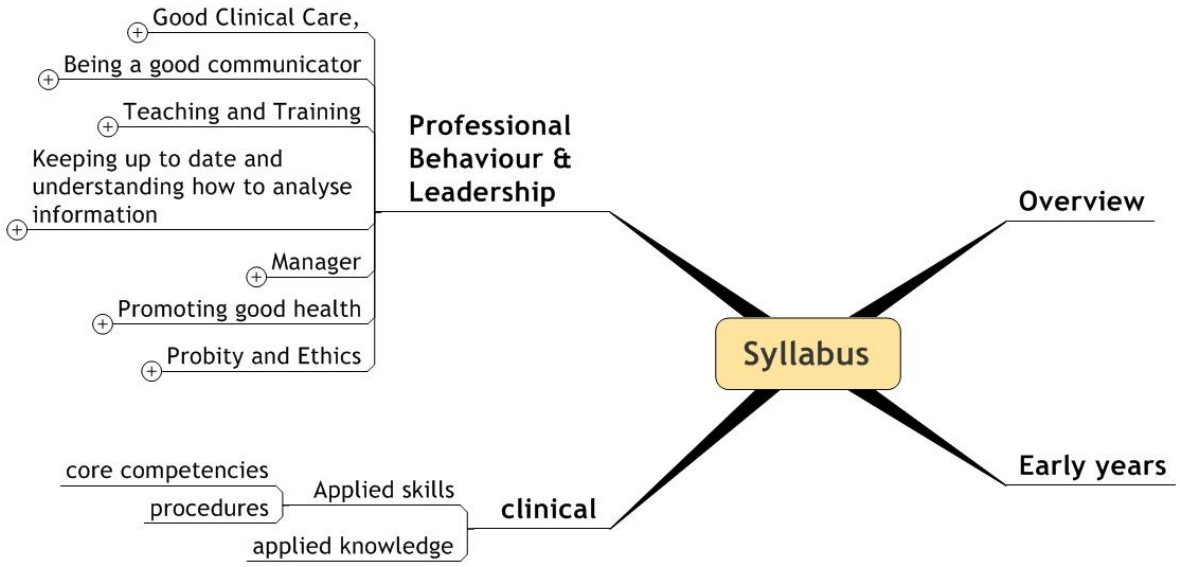
Prior to entry into T&O the specialty will, in collaboration with Royal Colleges and specialist associations, make introductory material available to potential candidates in the form of Websites (information and contacts), Summer Schools (knowledge and experience) and Careers Fairs (contacts and questions).

e) Article 14

Those individuals applying to access the specialist register by having their evidence of training and experience assessed by the processes laid out under Article 14 will need to demonstrate that their skills, knowledge and attitudes are of the same standard as those who have achieved the CCT as described in this curriculum.

Individuals who have been assessed under Article 14 as requiring additional skills and knowledge may need to enter training in order to fulfil these requirements. They will be considered for an earlier stage of training dependent on the requirements identified. .

8. Syllabus



a) OVERVIEW

The early years' syllabus is common to all nine SAC defined surgical disciplines and contains skills and knowledge expected of any surgeon in training. This syllabus has been presented earlier in this document as part of the early years curriculum (see Page 3-11)

The Syllabus specifically supporting T & O has three distinct elements which capture the skills, knowledge and attitudes required of a T & O surgeon practicing in a modern health service. All map back to Good Medical Practice which then permits the whole content to be associated with assessment, making a complete curriculum which is capable of being audited for scope and quality. The Professional and management syllabus has been imported from ISCP and is now common to all surgical specialties.

The three T & O components consist of:-

- Applied Clinical Knowledge with specific application in the context of T&O.
- Applied Clinical Skills, including core competencies which are applied in procedures which encompass the core of T & O surgical practice, and are tested in a selected group of key (or indicative) procedures.
- Professional and Management, which brings together key competence groupings under GMP headings to emphasise knowledge, skills and attitudes which are essential both clinically and generally in order to be a practicing surgeon at the same time as practising the specifics of surgery. This syllabus is also mapped to the AoMRC leadership syllabus.

These three elements are interdependent – for example being skilled manually but a poor communicator is no more acceptable than being indifferently skilled but a good communicator. We are in full sympathy with the public's expectation of surgeons to perform at the highest levels of skill and with appropriate attitudes in a patient centred approach to practice.

Applied Clinical Knowledge

This component contains that which underpins training in T&O and is essential both to contextualize skills and attitudes acquired in training and in order to practice as a T & O surgeon.

The knowledge level expected is indicated on the following four point scale:

1. knows of
2. knows basic concepts
3. knows generally
4. knows specifically and broadly

These are difficult terms to define precisely but it will be expected that a practicing surgeon (level 4) will not only be able to apply specific, detailed knowledge of a given condition or technique but also utilise a broad knowledge of orthopaedics and medicine to view any patient's situation holistically. Most crucially, trainees must demonstrate an appreciation that knowledge changes as research progresses, and so they must also possess and apply the relevant skills to keep themselves up to date. These skills are defined in the Professional Behaviour & Leadership skills section of the curriculum.(see page 8-11)

Applied Clinical Skills

In the early years of training trainees must acquire core technical skills expected of a surgeon in any discipline (e.g. suturing, soft tissue handling, sterile practice). Also they must acquire skills in straightforward orthopaedic practice, such as the application of a plaster or safe infiltration of a joint. These are dealt with in the generality syllabus.

A collection of core competencies have been identified through OCAP. These now form part of the Applied Clinical Skills syllabus (and form the basis for assessment through PBA's).

The trainee must demonstrate the same competence and skill in all procedures they eventually perform as a consultant.

The Procedures section of the syllabus contains all the operations currently listed in the T & O log book, in a format that ensures immediate resonance (and eventual electronic integration).

Assessment of competence in procedures is dealt with in depth in Section 10 of this curriculum (see Section 10-2). In order to facilitate workplace based assessment a number of key (indicative) procedures have been identified. These will be assessed in depth in the Procedure Based Assessment workplace assessment instrument described in Section 10-4. It is essential to realise that these key procedures do not encompass the whole practice of the discipline but do indicate the whole range of skills to be acquired by a competent T & O surgeon. Assessment (PBA) in the key procedures gives evidence as to the quality of a trainee's performance, their overall competence is assessed from this evidence set in the context of their entire logbook (quantity) of procedures. Trainees must make every effort (with the support of their local programme) to experience the scope of the whole procedures list in as much depth as is practicably possible. Trainees and trainers should aspire to a level of mastery and not just core competence.

The skills and procedures are assessed on the following four point scale:

1. has observed or knows of
2. can manage with assistance
3. can manage whole but may need assistance
4. competent to manage without assistance including complications

All key procedures (PBA) must be mastered to level 4 and the remainder at a minimum of level 2, except in rarer and very specialized areas when this will simply not be practicably possible. The detailed levels of all the procedures are indicated in the syllabus.

Professional Behaviour & Leadership

This syllabus/section incorporates clinical skills alongside general aspects of behaviour as a high grade professional. The two are deliberately integrated to reflect their essential and inseparable nature in day to day practice. They map to Good Clinical Practice and the AOMRC Leadership syllabus. It cannot be over emphasized how important it is for a T & O surgeon to behave in an all round manner which is nothing less than exemplary at all times.

The syllabus at critical waypoints

Although training and education in the full scope of the curriculum are progressive and seamless there are convenient way points within key stages. These stages are described in detail in Section 9 which describes the learning opportunities and contextualizes them in the real world of clinical training. At these way points the trainee's progress through the syllabus may be helpfully reviewed.

The first way point is after what is termed the "early years". Here trainees and trainers must be able to be certain that career choice is correct and ability matches aspiration. The generality of surgical knowledge must be mastered and basic skills acquired. Once an NTN has been confirmed at the end of this period the trainee must be comfortable that they have both the motivation and the ability required to succeed.

The second way point is towards the end of training, after the middle years period, when the generality of the discipline will have been covered and competence demonstrated. The nature of training in the middle years will be modular and vary in style depending on the nature of local training programmes which are bound together by the standards set out in this curriculum. Towards the end of this period, or at the start of the next, a public demonstration of the acquisition of the skills, knowledge and attitudes expected of a T & O surgeon practicing in the generality of the discipline at the level of an NHS consultant must take place in the form of a Fellowship examination. Together with a portfolio of evidence of workplace based competency this will permit the trainee to enter the final stages described below.

In the last part of training the acquired competence will be honed into capability through gaining broader experience in the discipline and specific experience in a developing specialist interest converting a competent

trainee into a capable and flexible surgeon. The nature of this last part will vary and the different options are outlined in Section 9.

Standards and values

Mastery

The standards set in the three core elements we have described must not be set at the lowest common denominator as “competent”. The culture of training programmes and aspirations of trainees must aspire to “Mastery”, especially as specialist interests begin to be honed. Mastery means a continuing self reflection and drive by trainer and trainee alike to achieve the most from assessment and feedback. Self and peer assessment by trainees followed by constructive feedback from trainers who develop “adult – adult” learning environments with their trainees will ensure that training programmes “aim high”.

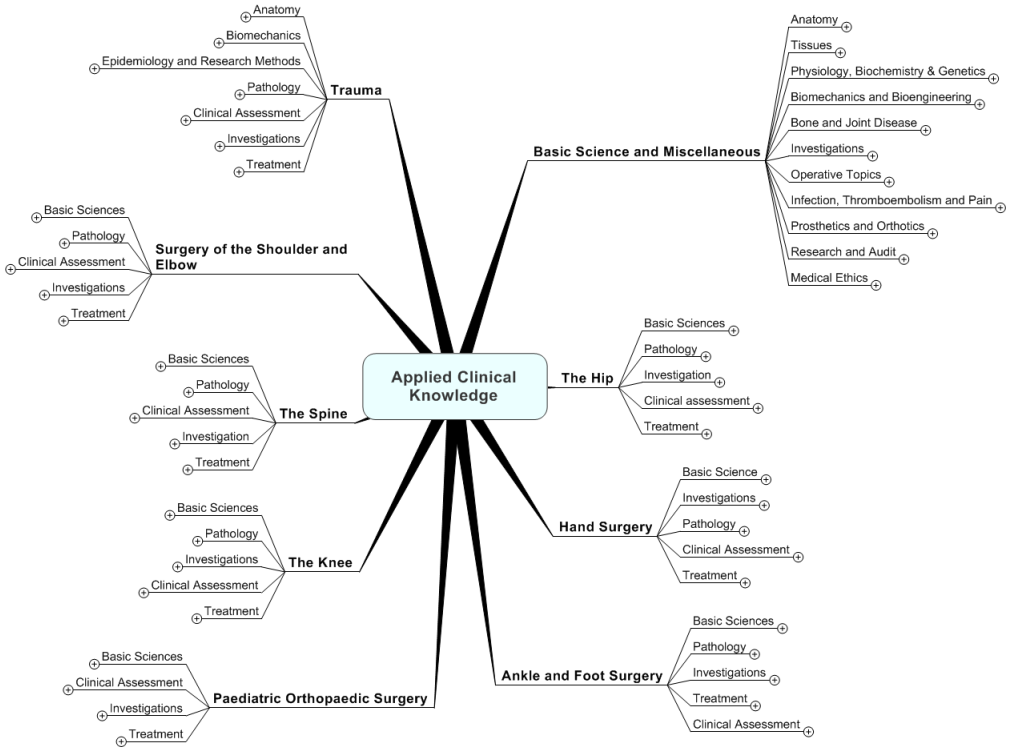
Transparency

This syllabus is available to trainers and trainees alike – there are no separate documents or agendas. To monitor progress training programme directors will have more information about individual trainees but in general we wish to foster a culture of openness and transparency whilst respecting personal confidentiality appropriately.

Partnership

The curriculum lays out relationships of the key stakeholders around the premise that the trainee is responsible for her or his own learning. A mature partnership with designated trainers and training programme directors is expected and the record of achievement will be explicit.

b) APPLIED CLINICAL KNOWLEDGE SYLLABUS (TRAUMA & ORTHOPAEDICS)



All T & O surgeons need to understand the scope of their discipline and ultimately to varying degrees of depth depending on their sub-specialist interest in future practice. There are some things all T & O surgeons must know well and these are delineated in the following section (defined as level 4). Crucially, knowledge changes and this section acknowledges that all T & O surgeons can no longer know everything about all aspects of their chosen discipline. With this in mind trainees must reflect on the need to update and change their knowledge base throughout their career. Trainees must know what they do not know, have the skills to find out using modern technology and display the self awareness, humility and commitment to continuously pursue the search.

The column in the tables headed “ST1-2” should be read as the entry requirements for ST3. This information has also been included adjacent to the early years curriculum earlier in this document.

Applied Clinical Knowledge Syllabus (T&O)

A trainee must be able to apply the knowledge listed below in the relevant clinical situations. They should demonstrate their competence by the ability to verbalise express the knowledge and justify any action or decision.

Competence Levels	
1 = Knows of	**3** = Knows generally
2 = Knows basic concepts	**4** = Knows specifically and broadly
4s = Competence level (4) needed only by those trainees selecting this area as a sub-specialist interest	

Topic	ST1 – 2	ST3 – 6	ST7 – 8
Basic Science & Miscellaneous			
BASIC SCIENCE			
Anatomy:			
▪ Clinical and functional anatomy with pathological and operative relevance	3	4	4
▪ Anatomy (and embryology) of nervous and vascular systems	3	4	4
▪ Surgical approaches to the limbs and axial skeleton	2	4	4
▪ Anatomy (and embryology) of musculoskeletal system	3	4	4
Tissues:			
▪ Bone - Structure & Function	3	4	4
▪ Cartilage - articular, meniscal - Structure & Function	3	4	4
▪ Muscle and tendon - Structure & Function	3	4	4
▪ Synovium - Structure & Function	3	4	4
▪ Ligament - Structure & Function	3	4	4
▪ Nerve - Structure & Function	3	4	4
▪ Intervertebral disc - Structure & Function	2	3	3
Physiology, Biochemistry & Genetics:			
▪ Structure and function of connective tissues	2	3	3
▪ Application/relevance of modern genetics to orthopaedic disease and treatment	2	3	3
▪ Shock - types, physiology, recognition and treatment	3	4	4
▪ Metabolism and hormonal regulation	3	4	4
▪ Metabolic and immunological response to trauma	3	4	4
▪ Blood loss in trauma/surgery, fluid balance and blood transfusion	4	4	4
▪ Bone grafts, bone banking and tissue transplantation	3	4	4
Biomechanics & Bioengineering:			
▪ Biomechanics of musculoskeletal tissues	2	3	3
▪ Biomechanics of fracture fixation	3	4	4
▪ Tribology of natural and artificial joints	1	3	3
▪ Design of implants and factors associated with implant failure (wear, loosening)	1	3	4s
▪ Kinematics and gait analysis	1	2	3s
▪ Biomaterials	1	2	3s
BONE & JOINT DISEASE			
Orthopaedic Oncology:			
▪ Knowledge of the presentation, radiological features, pathological features, treatment and outcome for common benign and malignant tumours	2	4	4
▪ Understanding of the principles of management of patients with metastatic bone disease in terms of investigation, prophylactic and definitive fixation of pathological fractures and oncological management	2	4	4
▪ Knowledge of the presenting features, management and outcome of soft tissue swellings, including sarcomas	1	3	4s
General:			

Topic	ST1 – 2	ST3 – 6	ST7– 8
▪ Osteoarthritis	2	4	4
▪ Osteoporosis	2	4	4
▪ Metabolic bone disease	2	4	4
▪ Rheumatoid arthritis and other arthropathies (inflammatory, crystal, etc)	2	4	4
▪ Haemophilia	1	2	4s
▪ Inherited musculoskeletal disorders	1	3	4s
▪ Neuromuscular disorders - inherited and acquired	1	3	3
▪ Osteonecrosis	2	4	4
▪ Osteochondritides	2	3	3
▪ Heterotopic ossification	2	3	3
▪ Metastases	2	4	4
Investigations:			
▪ Blood tests	3	4	4
▪ Musculoskeletal imaging: x-ray, contrast studies (myelography, arthrography), CT, MR, ultrasound, radioisotope studies	2	4	4
▪ Effects of radiation	3	3	3
▪ Bone densitometry	2	3	3
▪ Electrophysiological investigations	2	3	3
Operative Topics:			
▪ Tourniquets	3	4	4
▪ Design of theatres	2	3	3
▪ Anaesthesia - principles and practice of local and regional anaesthesia and principles of general anaesthesia	2	2	2
Infection, Thromboembolism & Pain:			
▪ Infection of bone, joint, soft tissue, including tuberculosis , and their prophylaxis	2	4	4
▪ Sterilisation	2	3	3
▪ Thromboembolism and prophylaxis	2	4	4
▪ Behavioural dysfunction and somatization	2	3	3
▪ AIDS and surgery in high-risk patients	2	4	4
▪ Pain and pain relief	3	3	3
▪ Skin preparation	4	4	4
▪ Complex regional pain syndromes e.g. Reflex Sympathetic Dystrophy and Causalgia	2	3	3
Prosthetics & Orthotics:			
▪ Principles of design	1	3	3
▪ Prescription and fitting of standard prostheses	1	3	3
▪ Principles of orthotic bracing for control of disease, deformity and instability	1	3	3
Research & Audit:			
▪ Design and conduct of clinical trials	1	3	3
▪ Data analysis and statistics - principles and applications	1	2	2
▪ Principles of Epidemiology	1	2	2
▪ Audit	3	4	4
Medical Ethics:			
▪ Duties of care	3	4	4
▪ Informed consent	3	4	4
▪ Medical negligence	3	4	4
Hand Surgery			
BASIC SCIENCE			
Anatomy of:			
▪ The wrist/MCP/PIP/DIP joints and CMC joint of the thumb	3	3	4s
▪ The flexor and extensor mechanism of the fingers including interaction between extrinsic and intrinsic mechanism	3	3	4s

Topic	ST1 – 2	ST3 – 6	ST7– 8
▪ The posture of the thumb in pinch, power and key grip	3	3	4s
▪ The nerve supply to the hand	3	3	4s
▪ The closed compartments of forearm and hand	2	4	4
Pathology:			
▪ An understanding of the special circumstances associated with swelling and the effects of rising pressure in a closed compartment secondary to infection and injury	3	4	4
▪ An understanding of the special circumstances in which oedema causes fibrosis and permanent stiffness	3	4	4
▪ Tendon injury and healing	3	4	4
▪ Nerve injury and healing	3	4	4
▪ An appreciation of the imbalances and deformities associated with inflammatory arthritis	1	3	4s
▪ A classification system for congenital hand disorders	n/a	2	4s
▪ Langers lines	3	4	4
▪ Hand tumours (e.g. ganglion/enchondroma)	1	3	4s
▪ Dupuytren's disease	1	3	4s
Clinical Assessment:			
▪ History of examination of hand and wrist in the assessment of tendons, distal radioulnar and radiocarpal joints	3	3	4s
▪ Ability to elicit median, ulnar and radial nerve function and disorders	3	3	4s
▪ Recognition of patterns of presentation of common compressive neuropathies and brachial neuralgia	3	4	4
▪ Assessment of intrinsic and extrinsic motors in digits and recognition of common deformities and deficiencies	2	3	4s
▪ Awareness of presentation of work-related hand disorders	2	3	4s
▪ Ability to examine and assess common rheumatoid hand deformities, e.g.: inferior radioulnar subluxation and carpal translocation; MCP subluxation and ulnar drift; digital Boutonniere and swan neck; thumb Boutonniere deformity and CMC disease	1	3	4s
▪ Ability to recognise and assess focal hand swellings	2	4	4
Investigations:			
▪ Interpretation of plain and stress x-rays of wrist. A knowledge of other views	2	3	4s
▪ Awareness of role of MRI/bone scan/arthrography/arthroscopy	1	4	4s
▪ Place and interpretation of nerve conduction studies	1	4	4s
Treatment:			
▪ Knowledge of a strategy of management for the osteo arthritic rheumatoid hand. Understanding of the place of soft tissue reconstruction, joint fusion, interposition and excision arthroplasty in the treatment of the arthritic hand and wrist.	1	3	4s
▪ Knowledge of the management of stenosing tenovaginitis	1	3	4s
▪ Knowledge of the principles of treatment for common flexor and extensor tendon injuries and of the common surgical approaches to the digital flexor and extensor compartments	3	3	4s
▪ Fractures of metacarpals and phalanges	3	3	4s
▪ Familiarity with the surgical treatment of Dupuytren's disease	1	3	4s
▪ Awareness of the principles of tendon transfer for the reconstruction of mediun, ulnar and radial nerve palsy and familiarity with simple transfers, e.g. indicis to EPL	1	2	4s
▪ Knowledge of splinting techniques and rehabilitation principles	3	4	4s
▪ Ability to plan management for finger tip injuries and undertake closed management	3	4	4s
▪ Knowledge of surgical approach to digits with particular regard to the restoration of function and prevention of stiffness	3	4	4s
▪ Knowledge of the levels for digital amputation	2	4	4s
▪ Injuries of ulnar collateral ligament of thumb	2	3	4s
▪ Dislocations of carpus and carpal instability	2	4	4s
▪ Knowledge of closed and operative options of treatment for fractures of distal radius and common carpal injuries including scaphoid non union.	4	4	4s
▪ Familiarity with the surgical treatment of common compressive neuropathy	3	3	4s
▪ Ability to manage common hand infections	3	4	4s

Topic	ST1 – 2	ST3 – 6	ST7– 8
Knee			
BASIC SCIENCE			
Anatomy:			
▪ Knowledge of regional anatomy of the knee, including:	3	4	4
▪ Surface anatomy	3	4	4
▪ Neural and vascular structures and their relations with particular reference to standard anterior and posterior surgical approaches	3	4	4
▪ Bones and joints	3	4	4
▪ Functional anatomy of ligaments and supporting muscles	3	4	4
▪ Innervation of the knee including controlling musculature	3	4	4
▪ The extent and function of the synovium and bursae of the knee	3	4	4
▪ The structure and function of the menisci, and articular cartilage	3	4	4
Biomechanics:			
▪ The mechanics of the patello-femoral mechanism	1	3	4s
▪ The medial and lateral weight-bearing joints and their inter-relationship	2	4	4s
▪ The cruciate and collateral ligaments and other ligamentous and muscular supports	2	4	4s
▪ Menisci and articular cartilage	3	4	4
Pathology:			
▪ The mechanism of ligamentous, bony and combined trauma to the knee and healing potential	3	4	4
▪ A complete knowledge of arthritides, including degenerate wear, ageing changes and traumatic damage	2	4	4
▪ Pathology of inflammatory disease and infection affecting the knee	2	4	4
▪ The response of synovium to debris	2	3	4s
▪ Benign and malignant conditions in the knee and surrounding structures including recognised classification where appropriate	2	3	4s
Clinical Assessment:			
A sound knowledge and understanding of:			
▪ History and examination of the knee to include relevant surrounding structures	3	4	4
▪ The standard clinical signs of the knee and relevant adjacent structures and competent skill in describing these	3	4	4
▪ A critical understanding of rating and outcome measures in common use	1	3	4s
Investigations:			
Indications for and interpretations of:			
▪ Radiographs – standard and specialised	1	3	4s
▪ Blood investigation	2	4	4
▪ Aspiration	3	4	4
▪ Special investigations including CT, MRI and radioisotope scanning	3	4	4
▪ Arthroscopy	2	3	4s
▪ Biomechanical testing	1	2	4s
Treatment:			
A sound knowledge of conservative and surgical management, including the indications for referral to a specialist of:			
▪ Paediatric disorders, including deformity, dislocations, epiphyseal disorders, osteochondritis and discoid meniscus	2	3	4s
▪ Adolescent disorders including patello femoral and meniscal dysfunction, osteochondritis dissecans	2	3	4s
▪ Young adult disorders including patello femoral and meniscal injuries, instability and ligament deficiency, synovial disorders, benign and malignant tumours	2	4	4
▪ Degenerative and inflammatory arthritis, including a balanced understanding of conservative and surgical options, including osteotomy, arthrodesis and arthroplasty	2	4	4
▪ Traumatic disorders including skin and soft tissue injuries, fractures and dislocations of patella, tibia and femoral components, ligament ruptures and internal derangement of the knee. Conservative and surgical indications and detailed methods of treatment. Outcomes of conservative and operative management	3	4	4

Topic	ST1 – 2	ST3 – 6	ST7– 8
▪ Infections, particularly infections and inflammations of the bursae, intra-articular sepsis, prevention and management of sepsis in implant surgery	3	4	4
▪ A sound working knowledge of the range of arthroplasties for primary and revision surgery for patello femoral, unicompartmental and total replacement of the knee with particular reference to secure bone anchorage, alignment, ligament stability and optimising range of movement; a good knowledge of post-operative complications, their prophylaxis and management	2	4	4
▪ A knowledge of the indications and techniques of revision surgery particularly for aseptic and septic loosening	n/a	3	4s
▪ A knowledge of simple arthroscopic surgery including meniscectomy, trimming and shaving	2	4	4
▪ An appreciation of complex arthroscopic procedures	1	3	4s
▪ An appreciation of medical and surgical techniques available to repair and replace articular cartilage	1	3	4s
Ankle & Foot Surgery			
BASIC SCIENCE			
Anatomy:	3	4	4
▪ Bones and articulations	3	4	4
▪ Ligamentous structures - ankle/hindfoot/midfoot	3	4	4
▪ Plantar fascia and MTP anatomy	3	4	4
▪ Surface markings of neural and vascular structures	3	4	4
▪ Tendon anatomy	3	4	4
▪ Muscle compartments of the foot	3	4	4
Biomechanics:			
▪ Function of the lower limb and foot in gait	2	4	4
▪ Ankle and subtalar joint	2	4	4
▪ Plantar fascia mechanisms	2	4	4
▪ Tendon function	2	4	4
▪ Orthoses and footwear	2	4	4
Pathology:			
Arthritides			
▪ Degenerative joint disease	2	4	4
▪ Rheumatoid foot disease	1	4	4
Neuropathy			
▪ Neuropathic joint and skin changes	1	3	4s
Tumours			
▪ E.g. osteoid osteoma and plantar fibroma	1	3	4s
Clinical Assessment:			
▪ History and clinical examination of the foot and ankle in order to assess pain, joint function, deformity, nerve, muscle and tendon function	3	4	4
Ability to recognise and assess the following diseases of the ankle and foot:			
Neurological disorders:			
▪ Charcot joint	1	3	4s
▪ Morton's neuroma	2	3	4s
▪ Nerve entrapment	2	3	4s
▪ Neurological foot deformity	2	3	4s
Trauma:			
▪ Evaluation of skin and soft tissue injury	4	4	4
▪ Compartment syndrome	4	4	4
▪ Recognition of all fractures and dislocations	3	4	4
Ankle and hindfoot disorder:			
▪ Hindfoot pain	1	3	4s
▪ Ankle instability	1	3	4s
▪ Heel pain	1	4	4
▪ Degenerative disease of the ankle	1	3	4s

Topic	ST1 – 2	ST3 – 6	ST7– 8
▪ Rheumatoid arthritis	1	3	4s
▪ Osteochondritis dissecans of talus	2	4	4
Forefoot disorders:			
▪ Hallux valgus	1	4	4s
▪ Hallux rigidus	1	4	4s
▪ Lesser toe deformities	1	4	4s
▪ Metatarsalgia	1	4	4s
▪ Inflammatory arthritis	2	3	4s
Tumours:			
▪ Ability to recognise and assess local foot swellings	1	4	4
Diabetic foot:	2	4	4
Complex foot deformity			
▪ Flatfoot deformity - mobile and rigid	1	3	4s
▪ Cavus deformity	1	3	4s
▪ Residual congenital foot deformity	1	3	4s
Investigations:			
Radiograph:			
▪ Standard foot and ankle views	4	4	4
CT, MRI and Scintigraphy:			
▪ Knowledge of role of these ancillary investigations in certain specific conditions e.g. infection, tumour, tibialis posterior rupture, osteonecrosis	2	4	4
EMG:			
▪ Relevance to foot and ankle disorders	1	3	4s
Treatment:			
Non-operative:			
▪ Knowledge of rational basis for the use of footwear modifications, orthoses and total contact casting	1	3	4s
Operative:			
▪ Detailed knowledge of closed and operative methods for management of fractures and dislocations of ankle, hindfoot and forefoot, including knowledge of common reconstructive surgical procedures for foot deformity including hallux valgus, lesser toe deformity, acquired flat-foot, to include arthrodesis, osteotomy and soft-tissue reconstruction	3	4	4
▪ Knowledge of common amputations through foot and ankle	3	4	4
▪ Knowledge of common reconstructive surgical procedures for degenerative and inflammatory disorders of ankle and foot including arthrodesis, arthroplasty, excision arthroplasty procedures to first ray both proximal and distally for management of hallux valgus and rigidus	1	3	4s
Hip			
BASIC SCIENCE			
Anatomy:			
▪ Basic knowledge of the regional anatomy of the hip including:	3	4	4
▪ Development of the hip joint	3	4	4
▪ Relationship of bony elements	3	4	4
▪ Blood supply of the femoral head	3	4	4
▪ Anatomical course of all major regional vessels and nerves	3	4	4
▪ The capsule, labrum and related ligaments	3	4	4
▪ An understanding of the action, anatomy and innervation of the regional musculature	3	4	4
▪ Detailed knowledge of the applied anatomy of common surgical approaches to the hip (medial, anterior, lateral and posterior)	3	4	4
Biomechanics:			
▪ An understanding of the lever arms, muscles and body weight forces that produce the joint reaction force in both normal and abnormal hips	2	3	4s
▪ An understanding of the application of these principles to the rationale of both pelvic and femoral osteotomies, and replacement arthroplasty	1	3	4s

Topic	ST1 – 2	ST3 – 6	ST7– 8
▪ Knowledge of the tribological properties of materials used for articulating surfaces	1	3	4s
▪ Knowledge of the biocompatibility and mechanical properties of materials in common use in total hip arthroplasty	1	3	4s
Pathology:			
▪ Basic knowledge of the pathology of pyogenic and non-pyogenic arthritis, slipped upper femoral epiphysis [SUFE], Perthes' disease and hip dysplasia	2	4	4
▪ Mechanism and pattern of common fractures and fracture dislocations around the hip (intracapsular, extracapsular, acetabular and periacetabular, femoral head, etc)	3	4	4
▪ Knowledge of the pathology of osteoarthritis, rheumatoid arthritis and the seronegative arthritides at the hip and of osteonecrosis of the femoral head	2	4	4
▪ Familiarity with current theories of the aetiopathogenesis of osteoarthritis	1	4	4
▪ An understanding of the microbiological rationale for the prevention of sepsis in total hip arthroplasty	3	4	4
Clinical Assessment:			
▪ A sound knowledge of clinical assessment of the hip, lumbosacral spine and knee. Particular reference should be paid to the gait, the Trendelenberg sign, limb length, loss of movement and deformity at the joint	3	4	4
▪ The trainee needs to be well informed of current opinion regarding aetiopathogenesis, clinical presentation and appropriate investigation of:	2	3	4s
▪ Proximal femoral fractures (intracapsular, extracapsular) and simple fracture dislocations of the hip	4	4	4
▪ Osteoarthritis and the inflammatory arthropathies	2	4	4
▪ Perthes' disease	2	3	4s
▪ Slipped upper femoral epiphysis	2	3	4s
▪ Septic arthritis	3	4	4
▪ Osteonecrosis	3	4	4
▪ Soft tissue conditions around the hip (snapping hip, gluteus medius tendonitis, etc)	2	4	4
A working knowledge of the clinical presentations and investigations of:			
▪ The sequelae of CDH and hip dysplasia	1	3	4s
▪ The sequelae of SUFE	3	3	4s
▪ Juvenile chronic arthritis	1	3	4s
▪ Non pyogenic arthritis	2	3	4s
▪ The painful total hip replacement	1	3	4s
Investigation:			
▪ A working knowledge of the interpretation of plain radiographs, dynamic arthrography, CT, bone scintigraphy and MRI of the hip region	2	4	4s
▪ A working classification of proximal femoral and periacetabular fractures. Also, mechanisms and classification of failure of joint replacement and of periprosthetic fractures	3	4	4
Treatment:			
Non-operative			
▪ An understanding of the principles of traction, bracing and spica immobilisation	3	3	4s
▪ An understanding of the non operative aspects of the management of hip pathology	3	4	4
Operative			
▪ A thorough knowledge of soft tissue surgery, osteotomy, arthrodesis and arthroplasty (excision and replacement). A sound knowledge of anterior, anterolateral, lateral and posterior approaches to the hip and of the complications associated with each	3	4	4
▪ A sound knowledge of: internal fixation of proximal femoral fractures, hemiarthroplasty for intracapsular fractures, primary total hip replacement for OA and inflammatory arthropathies in the elderly, simple proximal femoral osteotomies. Familiarity with potential complications (i.e. thromboembolism, sepsis, dislocation, etc) and be aware of current opinion on the prevention and management of these complications	3	4	4
▪ A knowledge of the indications for, and principles of, complex proximal femoral osteotomies, hip arthroscopy, reconstruction of the hip in young adults (JCA and hip dysplasia, etc), complex hip revision surgery	1	3	4s
▪ An appreciation of complex acetabular and pelvic fractures, complex periacetabular osteotomies	3	3	4s
▪ An understanding of the place of modern technologies such as, joint resurfacing procedures	2	3	4s

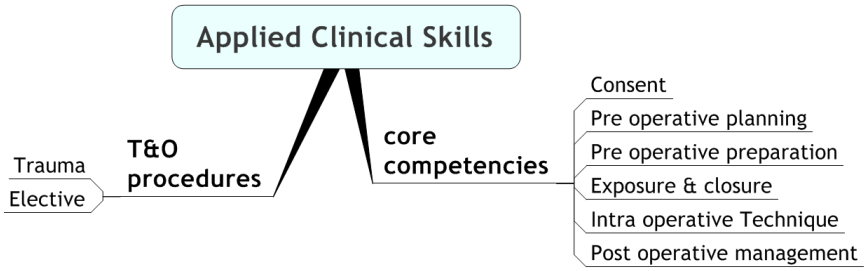
Topic	ST1 – 2	ST3 – 6	ST7– 8
minimally invasive hip replacements and computer assisted implantation in the management of hip pathology and the attendant risks and complications			
The Spine			
BASIC SCIENCE			
Anatomy:			
▪ Development of the spine, spinal cord and nerve roots	3	3	4s
▪ Surgical anatomy of the cervical, dorsal and lumbosacral spine	3	4	4
▪ Anterior and posterior surgical approaches to the spine at each level	3	4	4
Biomechanics:			
▪ Basic knowledge of the biomechanics of the cervical and lumbosacral spines	2	3	4s
▪ An understanding of the biomechanics of spinal instability as applied to trauma, tumour, infection and spondylolysis/listhesis	1	3	4s
▪ Biomechanics of spinal deformity	1	2	4s
▪ A knowledge of the basic mechanics of spinal instrumentation	1	2	4s
Pathology:			
▪ Pathophysiology of the ageing spine and degenerative disc disease	3	4	4
▪ Acute and chronic infections of the spine	1	3	4s
▪ Pathology of spinal deformity	1	3	4s
▪ Pathology of the acutely prolapsed cervical and lumbar disc	2	4	4
▪ Recognition of patterns of spinal injury and associated cord and nerve root damage	3	3	4s
▪ Tumours of the spine	1	3	4s
Clinical Assessment:			
▪ A thorough knowledge of general and orthopaedic history-taking and examination	3	4	4
▪ A knowledge of the assessment of spinal deformity	1	3	4s
▪ An understanding of the assessment of thoracic pain	1	3	4s
▪ A sound knowledge of clinical assessment of the spine for low back pain, sciatica, spinal claudication, neck pain, radiating arm pain, spinal injury and incipient myelopathy	2	4	4
▪ A knowledge of the assessment of spinal tumour	2	3	4s
▪ A basic knowledge of the assessment of a patient after failed spinal surgery	1	2	4s
Investigation:			
▪ A thorough knowledge of the basic investigations required in spinal surgery, specifically: blood tests, plain radiographs, bone scintigraphy, discography, electrophysiological studies [including cord monitoring], CT scanning, MRI scanning	2	3	4s
▪ A thorough knowledge of how each of these investigations contributes to the diagnosis and management of each of the major areas of spinal disease	2	3	4s
Treatment:			
Non-operative			
▪ A knowledge of the non-surgical methods available for the treatment of low back pain, sciatica, claudication, neck pain, spinal deformity, instability, tumour, infection and fracture to include:	2	4	4
▪ Analgesics and NSAIDs, physiotherapeutic regimes, pain clinic techniques, bracing, use of radiotherapy and chemotherapy, non-operative management of spinal injuries	1	3	4s
Operative			
▪ A sound knowledge of the indications for and operative surgical management of the acute prolapsed lumbar intervertebral disc, spinal stenosis, lumbar spinal instability due to spondylolysis/listheses	2	4	4
▪ A knowledge of the indications for, and operative surgical management of the acutely prolapsed cervical disc, cervical stenosis, spinal injury and the surgery of spinal infection	2	3	4s
▪ A basic knowledge of the surgery of spinal deformity and tumours of the spine	1	3	4s
Trauma			
BASIC SCIENCE			
Anatomy:			
▪ Applied to diagnosis and surgical treatment of common bone, joint and soft tissue injuries	4	4	4
▪ Knowledge of those anatomical structures particularly at risk from common injuries or in	4	4	4

Topic	ST1 – 2	ST3 – 6	ST7– 8
surgical approaches			
▪ Physeal anatomy and its application to injury	3	4	4
Biomechanics:			
▪ Application to open reduction and internal fixation of fractures and external skeletal fixation	3	4	4
▪ Applied to fracture formation and fracture treatment both operative and non-operative	3	4	4
▪ Biomechanics of implants and fracture fixation systems, including their material properties	3	4	4
Epidemiology and Research Methods:			
▪ Research and audit methods including the design of clinical trials	2	3	3
Pathology:			
▪ Applied to fracture and soft tissue healing, including skin, muscle, tendon and neurological structures	4	4	4
▪ Classification systems for fractures and dislocations	3	4	4
▪ Pathology of non-union of fractures	4	4	4
▪ Response of the body, and local musculoskeletal tissues to infection	4	4	4
▪ Systemic response of body to major injury	4	4	4
▪ Mechanisms underlying Acute Respiratory Distress Syndrome and similar life threatening conditions	4	4	4
▪ Science of fluid replacement therapy in the acutely injured including application to the treatment of burns	4	4	4
▪ Science of treatment of compartment syndrome	4	4	4
▪ Response of infants, children and the elderly to injury	4	4	4
Clinical Assessment:			
▪ Initial clinical assessment of the patient with severe injury, including spinal cord injury, soft tissue injury, burns and head injury	4	4	4
▪ Assessment of all types of fracture and dislocation, their complications, early and late	4	4	4
▪ Identification of life threatening/limb threatening injuries. Understanding priorities of treatment	4	4	4
Investigations:			
▪ Knowledge of the principles, application and side effects of commonly used investigations, including radiographs, CT and MRI scans, radio-isotope imaging, ultrasound scans and electrophysiological investigations	3	4	4
Treatment:			
▪ Knowledge of different treatment options for musculoskeletal injury, both non-operative and operative. Ability to analyse the pros and cons for each method	3	4	4
▪ Ability to manage the overall care of the severely injured	3	4	4
▪ Ability to undertake the complete treatment of all types of common fracture and dislocation including the bone and soft tissue treatment of open fractures and the treatment of pathological fractures	3	4	4
▪ Where common injuries are normally treated by a sub specialist (e.g. spinal injury, arterial injury or intra cranial haemorrhage) there should be ability to manage the initial treatment of the patient and know the principles of the specialist treatment	3	4	4
▪ Principles of reconstructive surgery for the injured, including treatment of non-union and mal-union of fractures, bone defects, chronic post-traumatic osteomyelitis and delayed treatment of nerve injury; principles of soft tissue reconstruction	3	4	4
▪ The principles of amputation in the injured and the rehabilitation of such patients	3	4	4
Paediatric Orthopaedic Surgery			
BASIC SCIENCE			
▪ Detailed knowledge of the growth of bones, physeal anatomy and its application to fracture types and pathological processes and infection in particular	2	4	4
▪ Knowledge of the anatomy of bones and joints in the growing child and its application to growth and deformity	2	4	4
▪ Knowledge of the neurological processes involved in the production of deformity e.g. spina bifida, cerebral palsy and muscular dystrophy	2	3	4s
Clinical Assessment:			
▪ Core knowledge should be at least that of a general orthopaedic textbook	2	4	4
▪ 'Expert' knowledge, i.e. the level of the speciality journal is required for those wishing to pursue a career in children's orthopaedics	2	3	4s

Topic	ST1 – 2	ST3 – 6	ST7– 8
▪ The trainee must be able to clinically examine a child competently and to relate effectively with the family	2	4	4
▪ The trainee must be able to make proper management decisions in paediatric practice and to refer appropriately for treatment	2	3	4s
Investigations:			
▪ Knowledge of the indications for plain x-ray, arthrogram, CT, MRI and the ability to interpret the images	1	3	4s
▪ Knowledge of the indications for the use of ultrasound and nuclear imaging	1	3	4s
▪ Awareness of the limitations of certain investigations in paediatric practice	1	3	4s
Treatment:			
▪ A sound knowledge of normal variants, e.g. knock knees, bow legs and flat feet	1	3	4s
A detailed knowledge of the treatment for:			
▪ Fractures (including non-accidental injury) and growth plate injuries and recognise the sequelae	3	4	4
▪ Bone and joint infection	3	4	4
▪ Common childhood orthopaedic conditions, e.g. irritable hip, anterior knee pain	1	3	4s
A working knowledge of the treatment for:			
▪ Slipped epiphysis	2	3	4s
▪ Perthes' disease	1	3	4s
▪ Developmental dysplasia of the hip	1	3	4s
▪ Talipes	1	3	4s
▪ Scoliosis	1	3	4s
▪ Simple foot deformities (e.g. hallux valgus, metatarsus varus)	1	3	4s
▪ Simple congenital hand abnormalities (e.g. trigger thumb)	1	3	4s
▪ Osteogenesis imperfecta	2	3	4s
▪ Skeletal dysplasias	1	3	4s
▪ Tarsal coalitions	1	3	4s
▪ Torticollis	1	3	4s
▪ Leg length discrepancy	1	3	4s
A knowledge of:			
▪ Screening services for congenital abnormalities	1	3	4s
▪ Assessment of physical disability	1	3	4s
Shoulder & Elbow			
BASIC SCIENCE			
Anatomy:			
▪ Basic knowledge of the regional anatomy of the shoulder including:			
▪ Detailed anatomy of the sternoclavicular, acromioclavicular, glenohumeral and elbow joints to include the connecting bones, muscles and tendons acting across them, neurovascular supply, bursae and relationships to local structures	3	4	4
▪ Surgical approaches: deltopectoral and posterior approaches to glenohumeral joint; superior (McKenzie) approach to rotator cuff; and surgical approaches to the acromioclavicular and sternoclavicular joints	3	4	4s
▪ Structure and function of the above joints; a clear understanding of the static and dynamic stabilisers of the glenohumeral and elbow joints	3	4	4
Biomechanics:			
▪ Biomechanics of the shoulder and elbow to the level of the currently published specialist journals	2	3	4s
▪ Knowledge of the various types of shoulder and elbow prostheses including the factors influencing design, wear and loosening to the level of the currently published specialist journals	1	3	4s
Pathology:			
▪ Sound knowledge of all commonly encountered benign and malignant conditions affecting the shoulder girdle, elbow and surrounding soft tissues	1	3	4s
A basic understanding of the pathology of:			

Topic	ST1 – 2	ST3 – 6	ST7– 8
▪ Impingement and rotator cuff disorders	2	3	4s
▪ Instability of the shoulder and the elbow	2	3	4s
▪ Inflammatory and degenerative conditions affecting the articular cartilage and synovium	2	3	4s
▪ Infection	2	4	4
▪ Adhesive capsulitis of the shoulder	2	3	4s
▪ The pathology of the stiff elbow	2	3	4s
▪ Disorders such as ulnar neuritis and tennis or golfer's elbow	2	3	4s
Clinical Assessment:			
▪ Detailed history and examination of the painful, stiff or unstable shoulder or elbow	3	4	4
▪ Knowledge of clinical tests used specifically to assess instability of the shoulder and elbow, rotator cuff disorders, the stiff shoulder or elbow and the use of local anaesthetic in assessment. Examples are the apprehension tests for shoulder instability, impingement signs and tests, Gerber's lift off test, Napoleon's sign, elbow instability tests, ulnar nerve assessment	2	4	4
▪ Knowledge of conditions causing referred symptoms to the shoulder and elbow (e.g. cervical spine diseases, entrapment neuropathies and thoracic outlet disorders)	3	4	4
▪ Knowledge to the level of a basic specialist shoulder textbook of common conditions affecting the shoulder including instability, impingement, rotator cuff tears, adhesive capsulitis, osteoarthritis, rheumatoid disease, avascular necrosis, biceps tendon disorders, fractures of the proximal humerus and clavicle, and disorders of the acromioclavicular and sternoclavicular joints and scapula	3	4	4
▪ Knowledge to the level of a basic specialist elbow textbook of common conditions affecting the elbow including instability, osteoarthritis, rheumatoid arthritis, causes of stiffness, soft tissue problems such as medial and lateral epicondylitis, neuropathies and fractures around the elbow	3	4	4
Investigation:			
▪ Knowledge of plain radiographs as used to assess shoulder and elbow disorders. This should include a knowledge of those special views (e.g. Modified axial, Stryker notch, Supraspinatus Neer outlet and cubital tunnel views) required to assess adequately the conditions which commonly affect the shoulder and elbow. The ability to recognise correctly normal and abnormal abnormalities on plain radiographs	3	4	4
▪ Knowledge of the value of ultrasound, arthrography, CT and MRI as used to assess the shoulder and elbow. An ability to identify straightforward abnormalities on CT and MRI (e.g. full thickness and partial thickness rotator cuff tears on MRI and the pathological anatomy of fractures around the shoulder and elbow using CT)	3	4	4s
▪ Knowledge of the use and abuse of arthroscopy of the shoulder and elbow including a knowledge of normal and abnormal arthroscopic findings	2	3	4s
Treatment:			
Non-operative			
▪ An ability to supervise the non-operative management of fractures, dislocations and soft tissue injuries around the shoulder and elbow	3	4	4
▪ An in-depth knowledge of the management of straightforward fractures and dislocations of the shoulder girdle and elbow. Knowledge of the treatment options for more complex fractures with an understanding that these might more appropriately be referred to someone with a special interest; examples of these might include four part fractures of the proximal humerus and complex intraarticular fractures of the distal humerus. An ability to recognise upper limb injuries involving injuries to the brachial plexus and refer on as appropriate	3	4	4
▪ A knowledge of injection techniques for both the shoulder and the elbow	2	4	4
▪ Knowledge of both the non-operative and operative treatment of common disorders such as recurrent anterior traumatic instability of the shoulder, rotator cuff impingement and small rotator cuff tears, adhesive capsulitis, acromioclavicular joint pain	2	3	4s
Operative			
▪ A knowledge of the management of soft tissue elbow disorders such as lateral and medial epicondylitis and ulnar neuropathy	2	3	4s
▪ Knowledge of the indications, options and complications for prosthetic replacement of the shoulder and elbow. A detailed knowledge of the surgical techniques is not required	2	3	4s
▪ Knowledge of the indications and benefits of arthroscopy of the shoulder and elbow. An ability to perform an arthroscopic assessment of the shoulder is expected but a knowledge of the techniques of arthroscopic surgery procedures is not required	1	3	4s
▪ Understanding the principles of management of tumours around the shoulder and elbow	1	3	4s

c) APPLIED CLINICAL SKILLS



Recording a particular surgical skill such as suturing, or taking consent in isolation does not tell us sufficiently well how a professional deals with problems in the round. Neither do we want to simply credential individuals to carry out a particular hip replacement or fix a certain type of fracture.

We therefore want to train and assess the ability of the trainee in the context of the whole problem and extrapolate that to dealing with problems in general.

Core competencies

The skills syllabus is not simply a list of procedures and levels of competence to do something essentially manual or visuo-spatial, but considers each procedure as a whole from the first encounter with the patient preoperatively to their management afterwards and onwards to discharge. The skills are captured as a list in the core domains of consent etc listed below. They are then broken down further within each core domain to explore different elements, some of which may be verbal, involve interpretation or judgment as well as manual ability etc.

The way that this is interpreted in assessment is explained on Section 10-2.

It should be noted that, as with the Applied clinical knowledge syllabus the column “ST1-2” initially included for run through trainees may also be seen as the entry requirement for ST3.

The list of procedures correlates with the elogbook structure which facilitate the electronic monitoring of the trainee’s developing experience.

CORE COMPETENCIES

I Consent

- Demonstrates sound knowledge of indications and contraindications including alternatives to surgery
- Demonstrates awareness of sequelae of operative or non operative management
- Demonstrates sound knowledge of complications of surgery
- Explains the perioperative process to the patient and/or relatives or carers and checks understanding
- Explains likely outcome and time to recovery and checks understanding

II Pre operative planning

- Demonstrates recognition of anatomical and pathological abnormalities (and relevant co-morbidities) and selects appropriate operative strategies/techniques to deal with these e.g. nutritional status
- Demonstrates ability to make reasoned choice of appropriate equipment, materials or devices (if any) taking into account appropriate investigations e.g. x-rays
- Checks materials, equipment and device requirements with operating room staff
- Ensures the operation site is marked where applicable
- Checks patient records, personally reviews investigations

III Pre operative preparation

- Checks in theatre that consent has been obtained
- Gives effective briefing to theatre team
- Ensures proper and safe positioning of the patient on the operating table
- Demonstrates careful skin preparation
- Demonstrates careful draping of the patient's operative field
- Ensures general equipment and materials are deployed safely (e.g. catheter, diathermy)
- Ensures appropriate drugs administered
- Arranges for and deploys specialist supporting equipment (e.g. image intensifiers) effectively

IV Exposure and closure

- Demonstrates knowledge of optimum skin incision / portal / access
- Achieves an adequate exposure through purposeful dissection in correct tissue planes and identifies all structures correctly
- Completes a sound wound repair where appropriate
- Protects the wound with dressings, splints and drains where appropriate

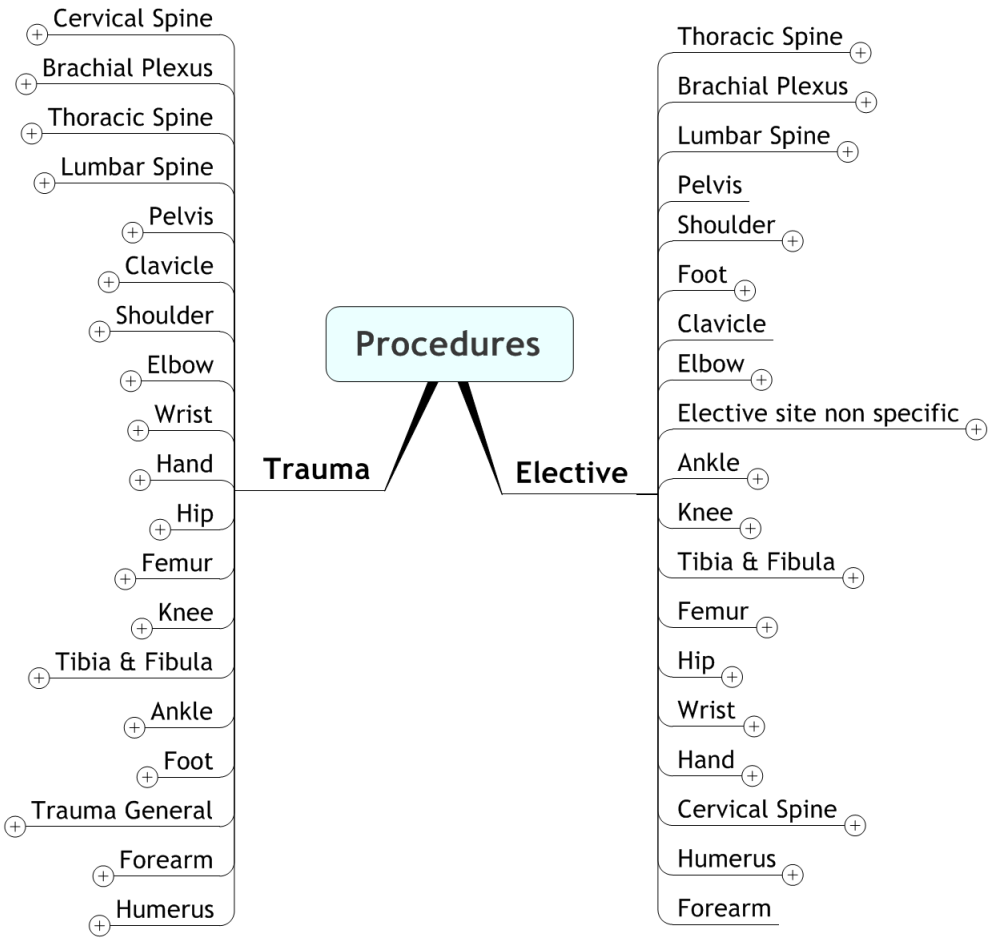
V Intra operative Technique

- Follows an agreed, logical sequence or protocol for the procedure
- Consistently handles tissue well with minimal damage
- Controls bleeding promptly by an appropriate method
- Demonstrates a sound technique of knots and sutures/staples
- Uses instruments appropriately and safely
- Proceeds at appropriate pace with economy of movement
- Anticipates and responds appropriately to variation e.g. anatomy
- Deals calmly and effectively with unexpected events/complications
- Uses assistant(s) to the best advantage at all times
- Communicates clearly and consistently with the scrub team
- Communicates clearly and consistently with the anaesthetist

VI Post operative management

- Ensures the patient is transferred safely from the operating table to bed
- Constructs a clear operation note
- Records clear and appropriate post operative instructions
- Deals with specimens. Labels and orientates specimens appropriately

Procedures


Procedures
Trauma
Cervical Spine
Brachial Plexus
Thoracic Spine
Lumbar Spine
Pelvis
Clavicle
Shoulder
Elbow
Wrist
Hand
Hip
Femur
Knee
Tibia & Fibula
Ankle
Foot
Trauma General
Forearm
Humerus
Elective
Thoracic Spine
Brachial Plexus
Lumbar Spine
Pelvis
Shoulder
Foot
Clavicle
Elbow
Elective site non specific
Ankle
Knee
Tibia & Fibula
Femur
Hip
Wrist
Hand
Cervical Spine
Humerus
Forearm

Clinical Procedures Syllabus

A trainee must be able to demonstrate their competence in the procedures below at the appropriately marked level and stage of training.

Competence Levels	
1 = Has observed or knows of	**3** = Can manage whole but may need assistance
2 = Can manage with assistance	**4** = Competent to manage without assistance including complications
4s = Competence level (4) needed only by those trainees selecting this area as a sub-specialist interest, otherwise as ST3 - 6	

Topic	ST1 – 2	ST3 – 6	ST7 – 8
Trauma			
TRAUMA GENERAL			
Free flap	1	1	1
Full thickness skin graft	1	3	4s
Muscle flap	1	1	4s
Nerve repair	1	2	4s
Pedicle flap	1	1	4s
Removal external fixator or frame	3	4	4
Removal foreign body from skin / subcutaneous tissue	3	4	4
Removal K wires or skeletal traction	4	4	4
Split skin graft	1	3	4s
Transpositional flap	1	1	4s
Wound closure, delayed primary or secondary	4	4	4
Wound Debridement	3	4	4
AXIAL SKELETON:			
Cervical Spine			
Anterior fixation fracture / dislocation cervical spine	1	1	3s
Application halo / tong traction cervical spine	1	2	3s
MUA fracture / dislocation cervical spine	1	2	3s
Posterior fixation fracture / dislocation cervical spine	1	2	3s
Thoracic Spine			
Anterior decompression / fixation thoracic spine	1	2	4s
Posterior decompression / fixation thoracic spine	1	2	4s
Lumbar Spine			
Anterior decompression / fixation lumbar spine	1	2	4s
Posterior decompression / fixation lumbar spine	1	2	4s
Pelvis			
Acetabular fracture ORIF	1	2	4s
Pelvic fracture:			
▪ Pelvic fracture external fixator application	1	3	4s
▪ Pelvic fracture ORIF	1	2	4s
UPPER LIMB:			
Brachial Plexus			
Exploration / repair / grafting brachial plexus	1	1	3s
Clavicle			

Topic	ST1 – 2	ST3 – 6	ST7 – 8
ORIF clavicle fracture	1	3	4s
ORIF non-union clavicle fracture	1	2	4s
Shoulder			
Anterior dislocation shoulder			
▪ Anterior dislocation shoulder closed reduction	3	4	4
▪ Anterior dislocation shoulder open reduction +/- fixation	1	2	4s
Acromioclavicular joint dislocation acute ORIF	1	3	4s
Fracture proximal humerus ORIF	2	3	4s
Glenoid fracture ORIF	1	2	4s
Posterior dislocation shoulder closed reduction	3	4	4
Humerus			
Fracture diaphysis humerus **non-op**:	4	4	4
▪ Non-union ORIF +/- bone grafting	1	2	4s
▪ Fracture diaphysis humerus IM nailing	1	3	4s
▪ Fracture diaphysis humerus MUA +/- POP	2	4	4
▪ Fracture diaphysis humerus ORIF plating	2	4	4
Elbow			
Dislocated elbow +/- fracture:			
▪ Dislocated elbow +/- fracture closed reduction	3	4	4
▪ Dislocated elbow +/- fracture open reduction +/- fixation	2	3	4s
Intraarticular distal humerus fracture ORIF	2	3	4s
Lateral condyle fracture ORIF	2	3	4
Medial condyle / epicondyle fracture MUA / K wire / ORIF	2	4	4
Olecranon fracture ORIF	2	4	4
Dislocated elbow +/- fracture:			
▪ Radial head / neck fracture MUA +/- K wire	3	4	4
▪ Radial head / neck fracture ORIF	2	4	4
▪ Radial head replacement for fracture	1	3	4
Supracondylar fracture:			
▪ Supracondylar fracture MUA +/- K wires	2	3	4
▪ Supracondylar fracture **ORIF**	1	3	4
Forearm			
Fasciotomy for compartment syndrome	1	4	4
Fracture distal radius:			
▪ Fracture distal radius – closed non-op	1	4	4
▪ Fracture distal radius external fixation	2	3	4s
▪ Fracture distal radius MUA & percutaneous wires	2	3	4
▪ Fracture distal radius MUA & POP	3	4	4
▪ Fracture distal radius ORIF	2	3	4s
Fracture shaft radius / ulna:			
▪ Fracture shaft radius / ulna IM nailing	1	3	4s
▪ Fracture shaft radius / ulna MUA & percutaneous wires	2	4	4
▪ Fracture shaft radius / ulna MUA & POP	2	4	4
▪ Fracture shaft radius / ulna ORIF	2		4
Wrist			
Carpal fracture / dislocation:			
▪ Carpal fracture / dislocation MUA & percutaneous wires	2	3	4s

Topic	ST1 – 2	ST3 – 6	ST7 – 8
▪ Carpal fracture / dislocation MUA & POP	2	4	4
▪ Carpal fracture / dislocation ORIF	1	2	4s
Scaphoid fracture non-op	3	4	4
Scaphoid fracture ORIF	1	3	4s
Scaphoid fracture MUA & percutaneous wires	1	3	4s
Scaphoid fracture non-union ORIF +/- graft	1	2	4s
Hand			
Carpal fracture / dislocation:			
▪ 5th metacarpal fracture / dislocation non-op	3	4	4
▪ 5th metacarpal fracture / dislocation MUA & percutaneous wires	3	4	4
▪ 5th metacarpal fracture / dislocation MUA & POP	2	4	4
▪ 5th metacarpal fracture / dislocation ORIF	2	4	4
Finger tip reconstruction	2	4	4
Infection:			
▪ Infection hand drainage (not tendon sheath)	2	4	4
▪ Infection tendon sheath drainage	2	4	4
IPJ fracture / dislocation:			
▪ IPJ fracture / dislocation MUA & percutaneous wires	2	4	4
▪ IPJ fracture / dislocation MUA +/- POP	2	4	4
▪ IPJ fracture / dislocation ORIF	2	4	4
Ligament repair hand	2	3	4s
Metacarpal fracture (not 1st or 5th) non-op	3	4	4
Metacarpal fracture (not 1st or 5th) MUA & Percutaneous wires	2	4	4
Metacarpal fracture (not 1st or 5th) MUA +/- POP	2	4	4
Metacarpal fracture (not 1st or 5th) ORIF	2	4	4
Phalangeal fracture non-op	3	4	4
Phalangeal fracture MUA & percutaneous wires	2	4	4
Phalangeal fracture MUA +/- POP	2	4	4
Phalangeal fracture ORIF	2	3	4s
Tendon repair:			
▪ Tendon repair extensor	3	4	4
▪ Tendon repair flexor	2	4	4
MCPJ fracture / dislocation:			
▪ MCPJ fracture / dislocation MUA & Percutaneous wires	2	3	4s
▪ MCPJ fracture / dislocation MUA +/- POP	2	3	4s
▪ MCPJ fracture / dislocation ORIF	2	3	4s
LOWER LIMB:			
Hip			
Dislocated hip:			
▪ Dislocated hip closed reduction	2	4	4
▪ Dislocated hip open reduction +/- fixation	1	2	4s
Extracapsular fracture:			
▪ Extracapsular fracture CHS / DHS	3	4	4
▪ Extracapsular fracture intramedullary fixation	3	4	4
▪ Extracapsular fracture other fixation	3	4	4
Intracapsular fracture:			
▪ Intracapsular fracture hemiarthroplasty	2	4	4

Topic	ST1 – 2	ST3 – 6	ST7 – 8
▪ Intracapsular fracture internal fixation	3	4	4
▪ Intracapsular fracture intracapsular fracture THR	2	3	4
Femur			
Diaphyseal fracture closed:			
▪ Diaphyseal fracture traction or spica in child	1	3	4s
▪ Diaphyseal fracture intramedullary nailing	2	4	4
▪ Diaphyseal fracture plate/screw fixation	2	4	4
Fasciotomy for compartment syndrome	3	4	4
Subtrochanteric fracture:			
▪ Subtrochanteric fracture intramedullary fixation	2	4	4
▪ Subtrochanteric fracture plate/screw fixation	3	4	4
Supracondylar fracture (not intraarticular):			
▪ Supracondylar fracture (not intraarticular) DCS / blade plate etc	2	3	4s
▪ Supracondylar fracture (not intraarticular) intramedullary fixation	2	3	4s
Knee			
Acute haemarthrosis arthroscopy	1	3	4s
Acute ligament repair	1	2	4s
Intraarticular fracture distal femur ORIF	1	2	4s
Patella dislocation closed reduction +/- open repair	2	4	4
Patella fracture ORIF	2	4	4
Patella tendon repair	2	4	4
Quadriceps tendon repair	2	4	4
Tibial plateau fracture	1	3	4s
Tibial plateau fracture arthroscopically assisted fixation	1	3	4s
Tibial plateau fracture ORIF with plates & screws	1	3	4s
Tibial plateau fracture treatment with circular frame	1	3	4s
Tibia & Fibula			
Diaphyseal tibial fracture external fixation (including frame)	2	3	4s
Diaphyseal tibial fracture intramedullary nailing	2	4	4
Diaphyseal tibial fracture MUA & POP	3	4	4
Tibial shaft plating	2	3	4
Fasciotomy for compartment syndrome	1	3	4
Tibial non-union:			
▪ Tibial non-union circular frame management	1	2	4s
▪ Tibial non-union intramedullary nailing +/- bone grafting	1	3	4s
Ankle			
Ankle fracture / dislocation:			
▪ Ankle fracture / dislocation MUA & POP	3	4	4
▪ Ankle fracture / dislocation ORIF	3	4	4
Pilon fracture:			
▪ Pilon fracture ORIF	1	2	4s
▪ Pilon fracture with circular frame	1	2	4s
Tendoachilles repair	2	4	4
Foot			
Amputation toe / ray for trauma	2	4	4
Calcaneal fracture ORIF	1	2	4s
Metatarsal fracture ORIF	1	4	4

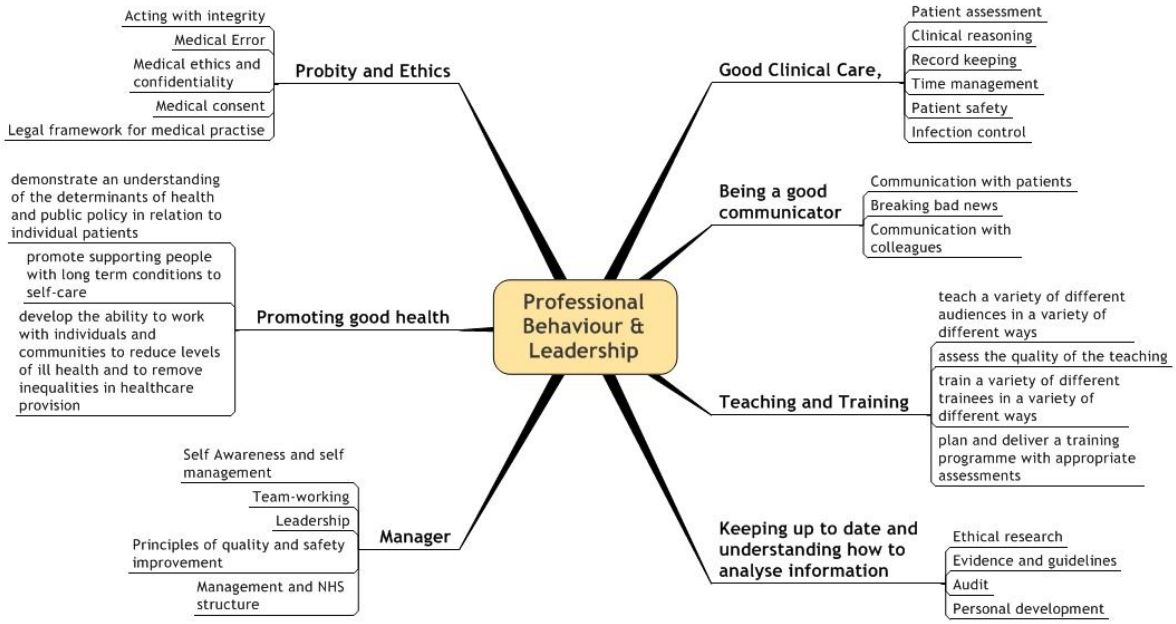
Topic	ST1 – 2	ST3 – 6	ST7 – 8
Phalangeal fracture MUA +/- K wire +/- ORIF	2	4	4
Talar, subtalar or midtarsal fracture / disloc:			
▪ Talar, subtalar or midtarsal fracture / dislocation MUA +/-POP +/- K wires	1	3	4s
▪ Talar, subtalar or midtarsal fracture / dislocation ORIF	1	3	4s
AchillesTendon Repair	1	3	4
Elective			
ELECTIVE SITE NON SPECIFIC			
Aspiration / injection joint	3	4	4
Benign tumour excision **(not exostoses)**	2	4	4
Biopsy bone - needle	1	4	4
Biopsy bone - open	1	4	4
Bursa excision	3	4	4
Cyst bone curettage +/- bone graft	1	4	4
Epiphysiodesis	n/a	3	4s
Malignant tumour excision	1	2	3s
AXIAL SKELETON:			
Cervical Spine			
Anterior decompression +/- fixation / fusion (C2-C7)	n/a	1	3s
Atlantoaxial fixation +/- fusion	n/a	1	3s
Biopsy cervical spine	n/a	2	4s
Excision cervical / 1st rib	n/a	1	3s
Nerve root / facet joint injection cervical spine	n/a	1	4s
Occipito-cervical fusion +/- fixation	n/a	1	3s
Posterior decompression +/- fixation / fusion (C20C7)	n/a	1	3s
Thoracic Spine			
Anterior decompression +/- fixation / fusion	n/a	1	3s
Biopsy thoracic spine	n/a	1	3s
Posterior decompression +/- fixation / fusion	n/a	2	4s
Scoliosis correction - anterior release +/- instrumentation	n/a	1	3s
Scoliosis correction - posterior fusion +/- instrumentation	n/a	1	3s
Lumbar Spine			
Caudal epidural injection	n/a	2	4s
Decompression lumbar spine with fusion +/- fixation	n/a	2	4s
Decompression lumbar spine without fusion (not disectomy alone)	n/a	2	4s
Discectomy open / micro	1	3	4s
Nerve root / facet joint injection lumbar spine	1	2	4s
Brachial Plexus			
Exploration / repair / grafting brachial plexus	1	1	3s
UPPER LIMB:			
Shoulder			
Acromioclavicular joint excison - arthroscopic / open / lateral clavicle	n/a	3	4s
Acromioclavicular joint reconstruction (e.g. Weaver Dunn)	n/a	2	4s
Acromioplasty open	n/a	2/3	4s
Anterior repair for instability arthroscopic	n/a	2	4s
Anterior repair for instability open including capsular shift	n/a	4	4
Arthroscopic subacromial decompression	n/a	3	4s
Arthroscopy diagnostic	1	4	4s

Topic	ST1 – 2	ST3 – 6	ST7 – 8
Rotator cuff repair (open or arthroscopic) +/- acromioplasty	n/a	2	4s
Total shoulder replacement	1	2	4s
UPPER ARM:			
Elbow			
Arthrolysis elbow (open/arthroscopic)	n/a	2	4s
Arthroscopy elbow diagnostic	n/a	2	4s
Arthoscopy elbow therapeutic	1	2	4s
Arthrotomy elbow	2	4	4
Excision radial head +/- synovectomy	1	2	4s
Radial head replacement	1	3	4s
Tennis / golfer elbow release	1	3	4s
Total elbow replacement	1	2	4s
Ulnar nerve decompression / transposition	1	4	4
FOREARM:			
Wrist			
Arthrodesis wrist (includes partial arthrodesis)	n/a	3	4s
Arthroscopy wrist	n/a	1	3s
Carpal tunnel decompression	1	4	4
De Quervain's decompression	1	4	4
Excision distal ulna	1	3	4s
Ganglion excision at wrist	3	4	4
Ulna shortening	1	2	4s
Ulnar nerve decompression at wrist	1	4	4
Hand			
Dupuytrens contracture operation	1	3	4
Excision synovial cyst	1	4	4
Fusion of MCPJ or IPJ	1	3	4s
MCPJ replacement	n/a	2	4s
Soft tissue reconstruction hand	1	3	4s
Tendon transfer hand	1	2	4s
Trapezium excision or replacement	n/a	2	4s
Trigger finger release	1	4	4
Trigger thumb release	1	4	4
LOWER LIMB:			
HIP			
Arthrodesis hip	n/a	1	3s
Arthrogram hip	n/a	1	4s
Arthroscopy hip - diagnostic	n/a	1	4s
Arthroscopy hip - therapeutic	n/a	1	4s
Arthrotomy hip	2	4	4
Excision arthroplasty hip (e.g. Girdlestone)	n/a	3	4s
Open reduction for DDH	n/a	2	4s
Osteotomy hip - pelvic for DDH	n/a	2	4s
Osteotomy hip - proximal femoral for DDH	n/a	2	4s
Osteotomy pelvis - not for DDH	n/a	2	4s
Revision Total Hip Replacement	n/a	3	4s
Revision THR acetabular component	n/a	3	4s

Topic	ST1 – 2	ST3 – 6	ST7 – 8
Revision THR both components	n/a	3	4s
Revision THR femoral component	n/a	3	4s
Slipped upper femoral epiphysis:			
▪ Slipped upper femoral epiphysis open reduction	n/a	2	3s
▪ Slipped upper femoral epiphysis pinning	n/a	3	4s
Total Hip Replacement:			
▪ THR cemented	1	4	4
▪ THR hybrid	1	4	4
▪ THR surface replacement	1	2	4s
▪ THR uncemented	1	3	4s
Femur			
Amputation above knee	1	4	4
Femoral lengthening	n/a	2	4s
Osteotomy corrective (not for DDH)	n/a	2	4s
Knee			
ACL reconstruction	1	2	4s
Arthroscopic lateral release	1	3	4s
Arthroscopic partial meniscectomy	1	3	4s
Arthroscopic removal loose bodies knee	1	3	4s
Arthroscopic synovectomy	1	2	4s
Arthroscopic knee diagnostic	2	4	4
Osteotomy distal femoral	n/a	2	4s
Osteotomy proximal tibial	n/a	2	4s
Patella realignment	n/a	3	4s
Patella resurfacing alone	n/a	3	4s
Revision TKR	n/a	3	4s
TKR	n/a	4	4
Unicompartmental knee replacement	n/a	3	4s
Tibia & Fibula			
Amputation below knee	1	4	4
Tibial lengthening	n/a	2	4s
Ankle			
Arthrodesis ankle	1	2	4s
Arthroplasty ankle	n/a	2	4s
Arthroscopy ankle diagnostic	n/a	2	4s
Arthroscopy ankle therapeutic	n/a	2	4s
Arthrotomy ankle	n/a	4	4
Decompression tendons at ankle	n/a	4	4
Tendoachilles lengthening	n/a	4	4
Foot			
Amputation toe / ray	1	4	4
Calcaneal osteotomy	n/a	2	4s
CTEV correction	n/a	2	4s
Fifth toe soft tissue correction	n/a	3	4s
First metatarsal osteotomy	n/a	4	4
First MTPJ arthrodesis	n/a	4	4
First MTPJ excision arthroplasty	n/a	4	4

Topic	ST1 – 2	ST3 – 6	ST7 – 8
First MTPJ soft tissue correction	n/a	4	4
Hindfoot arthrodesis	n/a	3	4s
Ingrowing toenail operation	3	4	4
Lesser metatarsal osteotomy	n/a	3	4s
Lesser toe arthrodesis	n/a	4	4
Lesser toe excision part/all phalanx	n/a	4	4
Lesser toe tenotomy	n/a	4	4
Tendon decompression or repair	n/a	4	4
Tendon transfer foot	n/a	2	4s
Wedge tarsectomy	n/a	2	4s

d) PROFESSIONAL BEHAVIOUR & LEADERSHIP SKILLS



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Professional Behaviour and Leadership Syllabus

The Professional Behaviour and leadership elements are mapped to the leadership curriculum as laid out by the Academy of Medical Royal Colleges. The assessment of these areas is a thread running through the curriculum and this makes them common to all of the disciplines of surgery. For this reason, assessment techniques for this element of the curriculum are summarised in the final column.

	Professional Behaviour and Leadership	**Mapping to Leadership Curriculum**	**Assessment Technique**
Category	Good Clinical Care, to include: • History taking (GMP Domains: 1, 3, 4) • Physical examination (GMP Domains: 1, 2,4) • Time management and decision making (GMP Domains: 1,2,3) • Clinical reasoning (GMP Domains: 1,2, 3, 4) • Therapeutics and safe prescribing (GMP Domains: 1, 2, 3) • Patient as a focus of clinical care (GMP Domains: 1, 3, 4) • Patient safety (GMP Domains: 1, 2, 3) • Infection control (GMP Domains: 1, 2, 3)	**Area 4.1**	

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique

Objective	To achieve an excellent level of care for the individual patient
	• To elicit a relevant focused history (See modules 2, 3, 4,5)
	• To perform focused, relevant and accurate clinical examination (See modules 2,3,4,5)
	• To formulate a diagnostic and therapeutic plan for a patient based upon the clinic findings (See modules 2,3,4,5)
	• To prioritise the diagnostic and therapeutic plan (See modules 2,3,4,5)
	• To communicate a diagnostic and therapeutic plan appropriately (See modules 2,3,4,5)
	
	To produce timely, complete and legible clinical records to include case-note records, handover notes, and operation notes
	
	To prescribe, review and monitor appropriate therapeutic interventions relevant to clinical practice including non – medication based therapeutic and preventative indications (See module 1,2,3,4,5)
	
	To prioritise and organise clinical and clerical duties in order to optimise patient care
	
	To make appropriate clinical and clerical decisions in order to optimise the effectiveness of the clinical team resource.
	
	To prioritise the patient's agenda encompassing their beliefs, concerns expectations and needs
	
	To prioritise and maximise patient safety:
	
	• To understand that patient safety depends on
	  ○ The effective and efficient organisation of care
	  ○ Health care staff working well together
	  ○ Safe systems, individual competency and safe practice
	• To understand the risks of treatments and to discuss these honestly and openly with patients
	• To systematic ways of assessing and minimising risk
	• To ensure that all staff are aware of risks and work together to minimise risk
	
	To manage and control infection in patients, including:
	• Controlling the risk of cross-infection
		Area 4.1	Mini CEX, CBD, Mini PAT, MRCS and Specialty FRCS

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	• Appropriately managing infection in individual patients • Working appropriately within the wider community to manage the risk posed by communicable diseases		
Knowledge	**Patient assessment** • Knows likely causes and risk factors for conditions relevant to mode of presentation • Understands the basis for clinical signs and the relevance of positive and negative physical signs • Recognises constraints and limitations of physical examination • Recognises the role of a chaperone is appropriate or required • Understand health needs of particular populations e.g. ethnic minorities • Recognises the impact of health beliefs, culture and ethnicity in presentations of physical and psychological conditions **Clinical reasoning** • Interpret history and clinical signs to generate hypothesis within context of clinical likelihood • Understands the psychological component of disease and illness presentation • Test, refine and verify hypotheses • Develop problem list and action plan • Recognise how to use expert advice, clinical guidelines and algorithms • Recognise and appropriately respond to sources of information accessed by patients • Recognises the need to determine the best value and most effective treatment both for the individual patient and for a patient cohort **Record keeping** • Understands local and national guidelines for the standards of clinical record keeping in all circumstances, including handover • Understanding of the importance of high quality and adequate clinical record keeping and relevance to patient safety and to litigation • Understand the primacy for confidentiality **Time management** • Understand that effective organisation is key to time management • Understand that some tasks are more urgent and/or more important than others • Understand the need to prioritise work according to urgency and importance • Maintains focus on individual patient needs whilst balancing multiple competing pressures		

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	• Outline techniques for improving time management **Patient safety** • Outline the features of a safe working environment • Outline the hazards of medical equipment in common use • Understand principles of risk assessment and management • Understanding the components of safe working practice in the personal, clinical and organisational settings • Outline local procedures and protocols for optimal practice e.g. GI bleed protocol, safe prescribing • Understands the investigation of significant events, serious untoward incidents and near misses **Infection control** • Understand the principles of infection control • Understands the principles of preventing infection in high risk groups • Understand the role of Notification of diseases within the UK • Understand the role of the Health Protection Agency and Consultants in Health Protection	**Area 4.1**	
Skills	**Patient assessment** • Takes a history from a patient with appropriate use of standardised questionnaires and with appropriate input from other parties including family members, carers and other health professionals • Performs an examination relevant to the presentation and risk factors that is valid, targeted and time efficient and which actively elicits important clinical findings • Give adequate time for patients and carers to express their beliefs ideas, concerns and expectations • Respond to questions honestly and seek advice if unable to answer • Develop a self-management plan with the patient • Encourage patients to voice their preferences and personal choices about their care **Clinical reasoning** • Interpret clinical features, their reliability and relevance to clinical scenarios including recognition of the breadth of presentation of common disorders		

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	• Incorporates an understanding of the psychological and social elements of clinical scenarios into decision making through a robust process of clinical reasoning • Recognise critical illness and respond with due urgency • Generate plausible hypothesis(es) following patient assessment • Construct a concise and applicable problem list using available information • Construct an appropriate management plan in conjunction with the patient, carers and other members of the clinical team and communicate this effectively to the patient, parents and carers where relevant **Record keeping** • Producing legible, timely and comprehensive clinical notes relevant to the setting • Formulating and implementing care plans appropriate to the clinical situation, in collaboration with members of an interdisciplinary team, incorporating assessment, investigation, treatment and continuing care • Presenting well documented assessments and recommendations in written and/or verbal form **Time management** • Identifies clinical and clerical tasks requiring attention or predicted to arise • Group together tasks when this will be the most effective way of working • Organise, prioritise and manage both team-members and workload effectively and flexibly **Patient safety** • Recognise and practise within limits of own professional competence • Recognise when a patient is not responding to treatment, reassess the situation, and encourage others to do so • Ensure the correct and safe use of medical equipment • Improve patients' and colleagues' understanding of the side effects and contraindications of therapeutic intervention • Sensitively counsel a colleague following a significant untoward event, or near incident, to encourage improvement in practice of individual and unit • Recognise and respond to the manifestations of a patient's deterioration or lack of improvement (symptoms, signs, observations, and laboratory results) and support other members of the team	**Area 4.1**	

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	to act similarly **Infection control** • Recognise the potential for infection within patients being cared for • Counsel patients on matters of infection risk, transmission and control • Actively engage in local infection control procedures • Prescribe antibiotics according to local guidelines and work with microbiological services where appropriate • Recognise potential for cross-infection in clinical settings • Practice aseptic technique whenever relevant		
Behaviour	• Shows respect and behaves in accordance with Good Medical Practice • Ensures that patient assessment, whilst clinically appropriate considers social, cultural and religious boundaries • Support patient self-management • Recognise the duty of the medical professional to act as patient advocate • Ability to work flexibly and deal with tasks in an effective and efficient fashion • Remain calm in stressful or high pressure situations and adopt a timely, rational approach • Show willingness to discuss intelligibly with a patient the notion and difficulties of prediction of future events, and benefit/risk balance of therapeutic intervention • Show willingness to adapt and adjust approaches according to the beliefs and preferences of the patient and/or carers • Be willing to facilitate patient choice • Demonstrate ability to identify one's own biases and inconsistencies in clinical reasoning • Continue to maintain a high level of safety awareness and consciousness • Encourage feedback from all members of the team on safety issues • Reports serious untoward incidents and near misses and co-operates with the investigation of the same. • Show willingness to take action when concerns are raised about performance of members of the healthcare team, and act appropriately when these concerns are voiced to you by others • Continue to be aware of one's own limitations, and operate within them • Encourage all staff, patients and relatives to observe infection control principles • Recognise the risk of personal ill-health as a risk		

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	to patients and colleagues in addition to its effect on performance		

Examples and descriptors for Core Surgical Training	**Patient assessment**
	• Obtains, records and presents accurate clinical history and physical examination relevant to the clinical presentation, including an indication of patient's views
	• Uses and interprets findings adjuncts to basic examination appropriately e.g. internal examination, blood pressure measurement, pulse oximetry, peak flow
	• Responds honestly and promptly to patient questions
	• Knows when to refer for senior help
	• Is respectful to patients by
	  ○ Introducing self clearly to patients and indicates own place in team
	  ○ Checks that patients comfortable and willing to be seen
	  ○ Informs patients about elements of examination and any procedures that the patient will undergo
	
	Clinical reasoning
	• In a straightforward clinical case develops a provisional diagnosis and a differential diagnosis on the basis of the clinical evidence, institutes an appropriate investigative and therapeutic plan, seeks appropriate support from others and takes account of the patients wishes
	
	Record keeping
	• Is able to format notes in a logical way and writes legibly
	• Able to write timely, comprehensive, informative letters to patients and to GPs
	
	Time management
	• Works systematically through tasks and attempts to prioritise
	• Discusses the relative importance of tasks with more senior colleagues.
	• Understands importance of communicating progress with other team members
	
	Patient safety
	• Participates in clinical governance processes
	• Respects and follows local protocols and guidelines
	• Takes direction from the team members on patient safety
	• Discusses risks of treatments with patients and is able to help patients make decisions about		

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	their treatment • Ensures the safe use of equipment • Acts promptly when patient condition deteriorates • Always escalates concerns promptly **Infection control** • Performs simple clinical procedures whilst maintaining full aseptic precautions • Follows local infection control protocols • Explains infection control protocols to students and to patients and their relatives • Aware of the risks of nosocomial infections.	**Area 4.1**	
Examples and descriptors for CCT	**Patient assessment** • Undertakes patient assessment (including history and examination) under difficult circumstances. Examples include: o Limited time available (Emergency situations, Outpatients, ward referral), o Severely ill patients o Angry or distressed patients or relatives • Uses and interprets findings adjuncts to basic examination appropriately e.g. electrocardiography, spirometry, ankle brachial pressure index, fundoscopy, sigmoidoscopy • Recognises and deals with complex situations of communication, accommodates disparate needs and develops strategies to cope • Is sensitive to patients cultural concerns and norms • Is able to explain diagnoses and medical procedures in ways that enable patients understand and make decisions about their own health care. **Clinical reasoning** • In a complex case, develops a provisional diagnosis and a differential diagnosis on the basis of the clinical evidence, institutes an appropriate investigative and therapeutic plan, seeks appropriate support from others and takes account of the patients wishes **Record keeping** • Produces comprehensive, focused and informative records which summarise complex cases accurately **Time management** • Organises, prioritises and manages daily work efficiently and effectively • Works with, guides, supervises and supports junior colleagues • Starting to lead and direct the clinical team in		

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	effective fashion **Patient safety** • Leads team discussion on risk assessment, risk management, clinical incidents • Works to make organisational changes that will reduce risk and improve safety • Promotes patients safety to more junior colleagues • Recognises and reports untoward or significant events • Undertakes a root cause analysis • Shows support for junior colleagues who are involved in untoward events **Infection control** • Performs complex clinical procedures whilst maintaining full aseptic precautions • Manages complex cases effectively in collaboration with infection control specialists	**Area 4.1**	

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
Category	***Being a good communicator*** To include: • Communication with patients (GMP Domains: 1, 3, 4) • Breaking bad news (GMP Domains: 1, 3, 4) • Communication with colleagues (GMP Domains: 1, 3)	***N/A***	
Objective	**Communication with patients** • To establish a doctor/patient relationship characterised by understanding, trust, respect, empathy and confidentiality • To communicate effectively by listening to patients, asking for and respecting their views about their health and responding to their concerns and preferences • To cooperate effectively with healthcare professionals involved in patient care • To provide appropriate and timely information to patients and their families **Breaking bad news** • To deliver bad news according to the needs of individual patients		PBA, DOPS, Mini CEX, Mini PAT and CBD

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	Communication with Colleagues • To recognise and accept the responsibilities and role of the doctor in relation to other healthcare professionals. • To communicate succinctly and effectively with other professionals as appropriate • To present a clinical case in a clear, succinct and systematic manner		
Knowledge	**Communication with patients** • Understands questioning and listening techniques • Understanding that poor communication is a cause of complaints/ litigation **Breaking bad news** • In delivering bad news understand that: o The delivery of bad news affects the relationship with the patient o Patient have different responses to bad news o Bad news is confidential but the patient may wish to be accompanied o Once the news is given, patients are unlikely to take in anything else o Breaking bad news can be extremely stressful for both parties o It is important to prepare for breaking bad news **Communication and working with colleagues** • Understand the importance of working with colleagues, in particular: o The roles played by all members of a multi-disciplinary team o The features of good team dynamics o The principles of effective inter-professional collaboration o The principles of confidentiality		
Skills	**Communication with patients** • Establish a rapport with the patient and any relevant others (eg carers) • Listen actively and question sensitively to guide the patient and to clarify information • Identify and manage communication barriers, tailoring language to the individual patient and others and using interpreters when indicated • Deliver information compassionately, being alert to and managing their and your emotional response (anxiety, antipathy etc) • Use, and refer patients to appropriate written and other evidence based information sources		

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	• Check the patient's understanding, ensuring that all their concerns/questions have been covered • Make accurate contemporaneous records of the discussion • Manage follow-up effectively and safely utilising a variety of methods (eg phone call, email, letter) • Ensure appropriate referral and communications with other healthcare professional resulting from the consultation are made accurately and in a timely manner **Breaking bad news** • Demonstrate to others good practice in breaking bad news • Recognises the impact of the bad news on the patient, carer, supporters, staff members and self • Act with empathy, honesty and sensitivity avoiding undue optimism or pessimism **Communication with colleagues** • Communicate with colleagues accurately, clearly and promptly • Utilise the expertise of the whole multi-disciplinary team • Participate in, and co-ordinate, an effective hospital at night or hospital out of hours team • Communicate effectively with administrative bodies and support organisations • Prevent and resolve conflict and enhance collaboration		
Behaviour	**Communication with patients** • Approach the situation with courtesy, empathy, compassion and professionalism • Demonstrate and inclusive and patient centred approach with respect for the diversity of values in patients, carers and colleagues **Breaking bad news** • Behave with respect, honest ant empathy when breaking bad news • Respect the different ways people react to bad news **Communication with colleagues** • Be aware of the importance of, and take part in, multi-disciplinary teamwork, including adoption of a leadership role • Foster an environment that supports open and transparent communication between team members		

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	• Ensure confidentiality is maintained during communication with the team • Be prepared to accept additional duties in situations of unavoidable and unpredictable absence of colleagues		
Examples and descriptors for Core Surgical Training	• Conducts a simple consultation with due empathy and sensitivity and writes accurate records thereof • Recognises when bad news must be imparted. • Able to break bad news in planned settings following preparatory discussion with seniors • Accepts his/her role in the healthcare team and communicates appropriately with all relevant members thereof		
Examples and descriptors for CCT	• Shows mastery of patient communication in all situations, anticipating and managing any difficulties which may occur • Able to break bad news in both unexpected and planned settings • Fully recognises the role of, and communicates appropriately with, all relevant team members • Predicts and manages conflict between members of the healthcare team • Beginning to take leadership role as appropriate, fully respecting the skills, responsibilities and viewpoints of all team members		

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
Category	***Teaching and Training (GMP Domains: 1, 3)***	**N/A**	
Objective	• To teach to a variety of different audiences in a variety of different ways • To assess the quality of the teaching • To train a variety of different trainees in a variety of different ways • To plan and deliver a training programme with appropriate assessments		Mini PAT, Portfolio assessment at ARCP
Knowledge	• Understand relevant educational theory and principles relevant to medical education • Understand the structure of an effective appraisal interview • Understand the roles to the bodies involved in medical education • Understand learning methods and effective learning objectives and outcomes		

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	• Differentiate between appraisal, assessment and performance review • Differentiate between formative and summative assessment • Understand the role, types and use of workplace-based assessments • Understand the appropriate course of action to assist a trainee in difficulty		
Skills	• Critically evaluate relevant educational literature • Vary teaching format and stimulus, appropriate to situation and subject • Provide effective feedback and promote reflection • Conduct developmental conversations as appropriate eg: appraisal, supervision, mentoring • Deliver effective lecture, presentation, small group and bed side teaching sessions • Participate in patient education • Lead departmental teaching programmes including journal clubs • Recognise the trainee in difficulty and take appropriate action • Be able to identify and plan learning activities in the workplace		
Behaviour	• In discharging educational duties respect the dignity and safety of patients at all times • Recognise the importance of the role of the physician as an educator • Balances the needs of service delivery with education • Demonstrate willingness to teach trainees and other health workers • Demonstrates consideration for learners • Acts to endure equality of opportunity for students, trainees, staff and professional colleagues • Encourage discussions with colleagues in clinical settings to share understanding • Maintains honesty, empathy and objectivity during appraisal and assessment		
Examples and descriptors for Core Surgical Training	• Prepares appropriate materials to support teaching episodes • Seeks and interprets simple feedback following teaching • Supervises a medical student, nurse or colleague through a simple procedure • Plans, develops and delivers small group teaching to medical students, nurses or colleagues		
Examples and	• Performs a workplace based assessment including giving appropriate feedback		

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
descriptors for CCT	• Devises a variety of different assessments (eg MCQs, WPBAs) • Appraises a medical student, nurse or colleague • Acts as a mentor to a medical student, nurses or colleague • Plans, develops and delivers educational programmes with clear objectives and outcomes • Plans, develops and delivers an assessment programme to support educational activities		

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
Category	***Keeping up to date and understanding how to analyse information*** Including • *Ethical research* (GMP Domains: 1) • Evidence and guidelines (GMP Domains: 1) • Audit (GMP Domains: 1, 2) • Personal development	**Area 1.3**	
Objective	• To understand the results of research as they relate to medical practise • To participate in medical research • To use current best evidence in making decisions about the care of patients • To construct evidence based guidelines and protocols • To complete an audit of clinical practice • At actively seek opportunities for personal development • To participate in continuous professional development activities	**Area 1.3** **Area 1.3**	Mini PAT, CBD, Portfolio assessment at ARCP, MRCS and specialty FRCS
Knowledge	• Understands GMC guidance on good practice in research • Understands the principles of research governance • Understands research methodology including qualitative, quantitative, bio-statistical and epidemiological research methods • Understands of the application of statistics as applied to medical practise • Outline sources of research funding • Understands the principles of critical appraisal • Understands levels of evidence and quality of evidence • Understands guideline development together		

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	with their roles and limitations • Understands the different methods of obtaining data for audit • Understands the role of audit in improving patient care and risk management • Understands the audit cycle • Understands the working and uses of national and local databases used for audit such as specialty data collection systems, cancer registries etc • To demonstrate knowledge of the importance of best practice, transparency and consistency	**Area 1.3**	
Skills	• Develops critical appraisal skills and applies these when reading literature • Devises a simple plan to test a hypothesis • Demonstrates the ability to write a scientific paper • Obtains appropriate ethical research approval • Uses literature databases • Contribute to the construction, review and updating of local (and national) guidelines of good practice using the principles of evidence based medicine • Designs, implements and completes audit cycles • Contribute to local and national audit projects as appropriate • To use a reflective approach to practice with an ability to learn from previous experience • To use assessment, appraisal, complaints and other feedback to discuss and develop an understanding of own development needs	**Area 1.3** **Area 1.3**	
Behaviour	• Follows guidelines on ethical conduct in research and consent for research • Keep up to date with national reviews and guidelines of practice (e.g. NICE) • Aims for best clinical practice at all times, responding to evidence based medicine while recognising the occasional need to practise outside clinical guidelines • Recognise the need for audit in clinical practice to promote standard setting and quality assurance • To be prepared to accept responsibility • Show commitment to continuing professional development	**Area 1.3** **Area 1.3**	
Examples and descriptors	• Defines ethical research and demonstrates awareness of GMC guidelines • Differentiates audit and research and understands the different types of research		

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
for Core Surgical Training	approach e.g. qualitative and quantitative • Knows how to use literature databases • Demonstrates good presentation and writing skills • Participates in departmental or other local journal club • Critically reviews an article to identify the level of evidence • Attends departmental audit meetings • Contributes data to a local or national audit • Identifies a problem and develops standards for a local audit • Describes the audit cycle and take an audit through the first steps • Seeks feedback on performance from clinical supervisor/mentor/patients/carers/service users	**Area 1.3** **Area 1.3**	
Examples and descriptors for CCT	• Demonstrates critical appraisal skills in relation to the published literature • Demonstrates ability to apply for appropriate ethical research approval • Demonstrates knowledge of research organisation and funding sources • Demonstrates ability to write a scientific paper • Leads in a departmental or other local journal club • Contributes to the development of local or national clinical guidelines or protocols • Organise or lead a departmental audit meeting • Lead a complete clinical audit cycle including development of conclusions, the changes needed for improvement, implementation of findings and re-audit to assess the effectiveness of the changes • Seeks opportunity to visit other departments and learn from other professionals	**Area 1.3** **Area 1.3**	

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
Sub-category:	***Manager*** Including: • Self Awareness and self management (GMP Domains: 1) • Team-working (GMP Domains: 1, 3) • Leadership (GMP Domains: 1, 2, 3) • Principles of quality and safety improvement	**Area 1.1 and 1.2** **Area 2** **Area 4.2, 4.3, 4.4**	

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	(GMP Domains: 1, 3, 4) • Management and NHS structure (GMP Domains: 1)	**Area 3**	
Objective	**Self awareness and self management** • To recognise and articulate one's own values and principles, appreciating how these may differ from those of others • To identify one's own strengths, limitations and the impact of their behaviour • To identify their own emotions and prejudices and understand how these can affect their judgement and behaviour • To obtain, value and act on feedback from a variety of sources • To manage the impact of emotions on behaviour and actions • To be reliable in fulfilling responsibilities and commitments to a consistently high standard • To ensure that plans and actions are flexible, and take into account the needs and requirements of others • To plan workload and activities to fulfil work requirements and commitments with regard to their own personal health **Team working** • To identify opportunities where working with others can bring added benefits • To work well in a variety of different teams and team settings by listening to others, sharing information, seeking the views of others, empathising with others, communicating well, gaining trust, respecting roles and expertise of others, encouraging others, managing differences of opinion, adopting a team approach **Leadership** • To develop the leadership skills necessary to lead teams effectively. These include: • Identification of contexts for change • Application of knowledge and evidence to produce an evidence based challenge to systems and processes • Making decision by integrating values with evidence • Evaluating impact of change and taking corrective action where necessary **Principles of quality and safety improvement** • To recognise the desirability of monitoring performance, learning from mistakes and adopting no blame culture in order to ensure	**Area 1.1 and 1.2** **Area 2** **Area 5**	Mini PAT & CBD Mini PAT, CBD and Portfolio assessment during ARCP Mini PAT, CBD and Portfolio assessment during ARCP

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	high standards of care and optimise patient safety • To critically evaluate services • To identify where services can be improved • To support and facilitate innovative service improvement **Management and NHS culture** • To organise a task where several competing priorities may be involved • To actively contribute to plans which achieve service goals • To manage resources effectively and safely • To manage people effectively and safely • To manage performance of themselves and others • To understand the structure of the NHS and the management of local healthcare systems in order to be able to participate fully in managing healthcare provision	**Area 4.2, 4.3 and 4.4** **Area 3**	Mini PAT, CBD and Portfolio assessment during ARCP Mini PAT, CBD and Portfolio assessment during ARCP
Knowledge	**Self awareness and self management** • Demonstrate knowledge of ways in which individual behaviours impact on others; • Demonstrate knowledge of personality types, group dynamics, learning styles, leadership styles • Demonstrate knowledge of methods of obtaining feedback from others • Demonstrate knowledge of tools and techniques for managing stress • Demonstrate knowledge of the role and responsibility of occupational health and other support networks • Demonstrate knowledge of the limitations of self professional competence **Team working** • Outline the components of effective collaboration and team working • Demonstrate knowledge of specific techniques and methods that facilitate effective and empathetic communication • Demonstrate knowledge of techniques to facilitate and resolve conflict • Describe the roles and responsibilities of members of the multidisciplinary team • Outline factors adversely affecting a doctor's and team performance and methods to rectify these • Demonstrate knowledge of different leadership styles **Leadership**	**Areas 1.1 and 1.2** **Area 2**	

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	• Understand the responsibilities of the various Executive Board members and Clinical Directors or leaders • Understand the function and responsibilities of national bodies such as DH, HCC, NICE, NPSA, NCAS; Royal Colleges and Faculties, specialty specific bodies, representative bodies; regulatory bodies; educational and training organisations • Demonstrate knowledge of patient outcome reporting systems within surgery, and the organisation and how these relate to national programmes. • Understand how decisions are made by individuals, teams and the organisation • Understand effective communication strategies within organisations • Demonstrate knowledge of impact mapping of service change, barriers to change, qualitative methods to gather the experience of patients and carers **Quality and safety improvement** • Understand the elements of clinical governance and its relevance to clinical care • Understands significant event reporting systems relevant to surgery • Understands the importance of evidence-based practice in relation to clinical effectiveness • Understand risks associated with the surgery including mechanisms to reduce risk • Outline the use of patient early warning systems to detect clinical deterioration • Keep abreast of national patient safety initiatives including National Patient Safety Agency , NCEPOD reports, NICE guidelines etc • Understand quality improvement methodologies including feedback from patients, public and staff • Understand the role of audit, research, guidelines and standard setting in improving quality of care • Understand methodology of creating solutions for service improvement • Understand the implications of change **Management and NHS Structure** • Understand the guidance given on management and doctors by the GMC • Understand the structure of the NHS and its constituent organisation • Understand the structure and function of	**Area 5** **Area 4.2, 4.3, 4.4**	

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique

	healthcare systems as they apply to surgery
	• Understand the principles of:
	  ○ Clinical coding
	  ○ Relevant legislation including Equality and Diversity, Health and Safety, Employment law, European Working Time Regulations
	  ○ National Service Frameworks
	  ○ Health regulatory agencies (e.g., NICE, Scottish Government)
	  ○ NHS Structure and relationships
	  ○ NHS finance and budgeting
	  ○ Consultant contract
	  ○ Commissioning, funding and contracting arrangements
	  ○ Resource allocation
	  ○ The role of the independent sector as providers of healthcare
	  ○ Patient and public involvement processes and role
	  ○ Understand the principles of recruitment and appointment procedures
	• Understand basic management techniques
		Area 3	

Skills	**Self awareness and self management** • Demonstrate the ability to maintain and routinely practice critical self awareness, including able to discuss strengths and weaknesses with supervisor, recognising external influences and changing behaviour accordingly • Demonstrate the ability to show awareness of and sensitivity to the way in which cultural and religious beliefs affect approaches and decisions, and to respond respectfully • Demonstrate the ability to recognise the manifestations of stress on self and others and know where and when to look for support • Demonstrate the ability to balance personal and professional roles and responsibilities, prioritise tasks, having realistic expectations of what can be completed by self and others **Team working** • Preparation of patient lists with clarification of problems and ongoing care plan • Detailed hand over between shifts and areas of care • Communicate effectively in the resolution of conflict, providing feedback • Develop effective working relationships with colleagues within the multidisciplinary team • Demonstrate leadership and management in the following areas: ○ Education and training of junior	**Area 1.2 and 1.2** **Area 2**	

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	colleagues and other members of the team ○ Deteriorating performance of colleagues (e.g. stress, fatigue) ○ Effective handover of care between shifts and teams • Lead and participate in interdisciplinary team meetings • Provide appropriate supervision to less experienced colleagues • Timely preparation of tasks which need to be completed to a deadline **Leadership** • Discuss the local, national and UK health priorities and how they impact on the delivery of health care relevant to surgery • Identify trends, future options and strategy relevant to surgery • Compare and benchmark healthcare services • Use a broad range of scientific and policy publications relating to delivering healthcare services • Prepare for meetings by reading agendas, understanding minutes, action points and background research on agenda items • Work collegiately and collaboratively with a wide range of people outside the immediate clinical setting • Evaluate outcomes and re-assess the solutions through research, audit and quality assurance activities • Understand the wider impact of implementing change in healthcare provision and the potential for opportunity costs **Quality and safety improvement** • Adopt strategies to reduce risk e.g. Safe surgery • Contribute to quality improvement processes e.g. ○ Audit of personal and departmental performance ○ Errors / discrepancy meetings ○ Critical incident and near miss reporting ○ Unit morbidity and mortality meetings ○ Local and national databases • Maintenance of a personal portfolio of information and evidence • Creatively question existing practise in order to improve service and propose solutions **Management and NHS Structures** • Manage time and resources effectively	**Area 5**	

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	• Utilise and implement protocols and guidelines • Participate in managerial meetings • Take an active role in promoting the best use of healthcare resources • Work with stakeholders to create and sustain a patient-centred service • Employ new technologies appropriately, including information technology • Conduct an assessment of the community needs for specific health improvement measures	**Area 4.2, 4.3, 4.4** **Area 3**	
Behaviour	**Self awareness and self management** • To adopt a patient-focused approach to decisions that acknowledges the right, values and strengths of patients and the public • To recognise and show respect for diversity and • differences in others • To be conscientious, able to manage time and delegate • To recognise personal health as an important issue **Team working** • Encourage an open environment to foster and explore concerns and issues about the functioning and safety of team working • Recognise limits of own professional competence and only practise within these. • Recognise and respect the skills and expertise of others • Recognise and respect the request for a second opinion • Recognise the importance of induction for new members of a team • Recognise the importance of prompt and accurate information sharing with Primary Care team following hospital discharge **Leadership** • Demonstrate compliance with national guidelines that influence healthcare provision • Articulate strategic ideas and use effective influencing skills • Understand issues and potential solutions before acting • Appreciate the importance of involving the public and communities in developing health services • Participate in decision making processes beyond the immediate clinical care setting	**Area 1.1 and 1.2** **Area 2** **Area 5**	

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	• Demonstrate commitment to implementing proven improvements in clinical practice and services • Obtain the evidence base before declaring effectiveness of changes **Quality and safety improvement** • Participate in safety improvement strategies such as critical incident reporting • Develop reflection in order to achieve insight into own professional practice • Demonstrates personal commitment to improve own performance in the light of feedback and assessment • Engage with an open no blame culture • Respond positively to outcomes of audit and quality improvement • Co-operate with changes necessary to improve service quality and safety **Management and NHS Structures** • Recognise the importance of equitable allocation of healthcare resources and of commissioning • Recognise the role of doctors as active participants in healthcare systems • Respond appropriately to health service objectives and targets and take part in the development of services • Recognise the role of patients and carers as active participants in healthcare systems and service planning • Show willingness to improve managerial skills (e.g. management courses) and engage in management of the service •	**Area 4.2, 4.3, 4.4** **Area 3**	
Examples and descriptors for Core Surgical Training	**Self awareness and self management** • Obtains 360° feedback as part of an assessment • Participates in peer learning and explores leadership styles and preferences • Timely completion of written clinical notes • Through feedback discusses and reflects on how a personally emotional situation affected communication with another person • Learns from a session on time management **Team working** • Works well within the multidisciplinary team and recognises when assistance is required from the relevant team member • Invites and encourages feedback from patients	**Area 1.1 and 1.2** **Area 2**	

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	• Demonstrates awareness of own contribution to patient safety within a team and is able to outline the roles of other team members. • Keeps records up-to-date and legible and relevant to the safe progress of the patient. • Hands over care in a precise, timely and effective manner • Supervises the process of finalising and submitting operating lists to the theatre suite **Leadership** • Complies with clinical governance requirements of organisation • Presents information to clinical and service managers (eg audit) • Contributes to discussions relating to relevant issues e.g. workload, cover arrangements using clear and concise evidence and information **Quality and safety improvement** • Understands that clinical governance is the over-arching framework that unites a range of quality improvement activities • Participates in local governance processes • Maintains personal portfolio • Engages in clinical audit • Questions current systems and processes **Management and NHS Structures** • Participates in audit to improve a clinical service • Works within corporate governance structures • Demonstrates ability to manage others by teaching and mentoring juniors, medical students and others, delegating work effectively, • Highlights areas of potential waste	**Area 5** **Area 4.2, 4.3, 4.4** **Area 3**	
Examples and descriptors for CCT	**Self awareness and self management** • Participates in case conferences as part of multidisciplinary and multi agency team • Responds to service pressures in a responsible and considered way • Liaises with colleagues in the planning and implementation of work rotas **Team working** • Discusses problems within a team and provides an analysis and plan for change • Works well in a variety of different teams • Shows the leadership skills necessary to lead the multidisciplinary team	**Area 1.1 and 1.2** **Area 2**	

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique

	• Beginning to leads multidisciplinary team meetings
	  ○ Promotes contribution from all team members
	  ○ Fosters an atmosphere of collaboration
	  ○ Ensures that team functioning is maintained at all times.
	  ○ Recognises need for optimal team dynamics
	  ○ Promotes conflict resolution
	• Recognises situations in which others are better equipped to lead or where delegation is appropriate
	
	Leadership
	• Shadows NHS managers
	• Attends multi-agency conference
	• Uses and interprets departments performance data and information to debate services
	• Participates in clinical committee structures within an organisation
	
	Quality and safety improvement
	• Able to define key elements of clinical governance
	• Demonstrates personal and service performance
	• Designs audit protocols and completes audit cycle
	• Identifies areas for improvement and initiates improvement projects
	• Supports and participates in the implementation of change
	• Leads in review of patient safety issue
	• Understands change management
	
	Management and NHS Structure
	• Can describe in outline the roles of primary care, including general practice, public health, community, mental health, secondary and tertiary care services within healthcare
	• Participates fully in clinical coding arrangements and other relevant local activities
	• Can describe the relationship between PCTs/Health Boards, General Practice and Trusts including relationships with local authorities and social services
	• Participate in team and clinical directorate meetings including discussions around service development
	• Discuss the most recent guidance from the relevant health regulatory agencies in
		Area 5
		
		Area 4.2, 4.3, 4.4
		
		Area 3	

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	relation to the surgical specialty • Describe the local structure for health services and how they relate to regional or devolved administration structures • Discusses funding allocation processes from central government in outline and how that might impact on the local health organisation		

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
Sub-category:	**Promoting good health (GMP Domains: 1, 2, 3)**		
Objective	• To demonstrate an understanding of the determinants of health and public policy in relation to individual patients • To promote supporting people with long term conditions to self-care • To develop the ability to work with individuals and communities to reduce levels of ill health and to remove inequalities in healthcare provision • To promote self care	**N/A**	MRCS, specialty FRCS, CBD, Mini PAT
Knowledge	• Understand guidance documents relevant to the support of self care • Recognises the agencies that can provide care and support out with the hospital • Understand the factors which influence the incidence and prevalence of common conditions including psychological, biological, social, cultural and economic factors • Understand the screening programmes currently available within the UK • Understand the possible positive and negative implications of health promotion activities • Demonstrate knowledge of the determinants of health worldwide and strategies to influence policy relating to health issues • Outline the major causes of global morbidity and mortality and effective, affordable interventions to reduce these		
Skills	• Adapts assessment and management accordingly to the patients social circumstances • Assesses patient's ability to access various services in the health and social system and offers appropriate assistance • Ensures appropriate equipment and devices		

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	are discussed and where appropriate puts the patient in touch with the relevant agency • Facilitating access to appropriate training and skills to develop the patients' confidence and competence to self care • Identifies opportunities to promote change in lifestyle and to prevent ill health • Counsels patients appropriately on the benefits and risks of screening and health promotion activities		
Behaviour	• Recognises the impact of long term conditions on the patient, family and friends • Put patients in touch with the relevant agency including the voluntary sector from where they can access support or equipment relevant to their care • Show willingness to maintain a close working relationship with other members of the multi-disciplinary team, primary and community care • Recognise and respect the role of family, friends and carers in the management of the patient with a long term condition • Encourage where appropriate screening to facilitate early intervention		
Examples and descriptors for Core Surgical Training	• Understands that "quality of life" is an important goal of care and that this may have different meanings for each patient • Promotes patient self care and independence • Helps the patient to develop an active understanding of their condition and how they can be involved in self management • Discusses with patients those factors which could influence their health		
Examples and descriptors for CCT	• Demonstrates awareness of management of long term conditions • Develops management plans in partnership with the patient that are pertinent to the patients long term condition • Engages with relevant external agencies to promote improving patient care • Support small groups in a simple health promotion activity • Discuss with small groups the factors that have an influence on their health and describe steps they can undertake to address these • Provide information to an individual about a screening programme offering specific guidance in relation to their personal health and circumstances concerning the factors that would affect the risks and benefits of screening to them as an individual.		

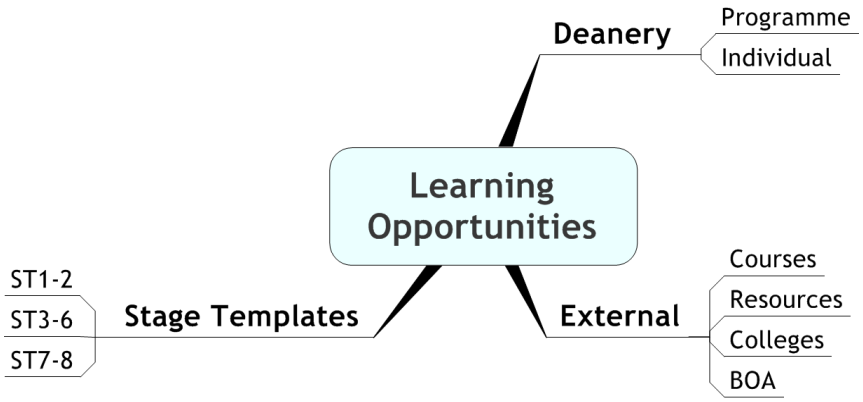
	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
Sub-category:	**Probity and Ethics** To include • Acting with integrity • Medical Error • Medical ethics and confidentiality (GMP Domains: 1, 2, 3, 4) • Medical consent (GMP Domains: 1, 3, 4) • Legal framework for medical practise (GMP Domains: 1, 2, 3)	**Area 1.4**	
Objective	• To uphold personal, professional ethics and values, taking into account the values of the organisation and the culture and beliefs of individuals • To communicate openly, honestly and inclusively • To act as a positive role model in all aspects of communication • To take appropriate action where ethics and values are compromised • To recognise and respond the causes of medical error • To respond appropriately to complaints • To know, understand and apply appropriately the principles, guidance and laws regarding medical ethics and confidentiality as they apply to surgery • To understand the necessity of obtaining valid consent from the patient and how to obtain • To understand the legal framework within which healthcare is provided in the UK • To recognise, analyse and know how to deal with unprofessional behaviours in clinical practice, taking into account local and national regulations • Understand ethical obligations to patients and colleagues • To appreciate an obligation to be aware of personal good health	**Area 1.4**	Mini PAT and CBD, PBA, DOPS, MRCS, specialty FRCS
Knowledge	• Understand local complaints procedure • Recognise factors likely to lead to complaints • Understands the differences between system and individual errors • Outline the principles of an effective apology • Knows and understand the professional, legal and ethical codes of the General Medical Council and any other codes to which the physician is bound • Understands of the principles of medical ethics • Understands the principles of confidentiality	**Area 1.4**	

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	• Understands the Data Protection Act and Freedom of Information Act • Understands the principles of Information Governance and the role of the Caldicott Guardian • Understands the legal framework for patient consent in relation to medical practise • Recognises the factors influencing ethical decision making including religion, personal and moral beliefs, cultural practices • Understands the standards of practice defined by the GMC when deciding to withhold or withdraw life-prolonging treatment • Understands the UK legal framework and GMC guidelines for taking and using informed consent for invasive procedures including issues of patient incapacity		
Skills	• To recognise, analyse and know how to deal with unprofessional behaviours in clinical practice taking into account local and national regulations • To create open and nondiscriminatory professional working relationships with colleagues awareness of the need to prevent bullying and harassment • Contribute to processes whereby complaints are reviewed and learned from • Explains comprehensibly to the patient the events leading up to a medical error or serious untoward incident, and sources of support for patients and their relatives • Deliver an appropriate apology and explanation relating to error • Use and share information with the highest regard for confidentiality both within the team and in relation to patients • Counsel patients, family, carers and advocates tactfully and effectively when making decisions about resuscitation status, and withholding or withdrawing treatment • Present all information to patients (and carers) in a format they understand, checking understanding and allowing time for reflection on the decision to give consent • Provide a balanced view of all care options • Applies the relevant legislation that relates to the health care system in order to guide one's clinical practice including reporting to the Coroner's/Procurator Officer, the Police or the proper officer of the local authority in relevant circumstances • Ability to prepare appropriate medical legal statements for submission to the Coroner's Court, Procurator Fiscal, Fatal Accident	**Area 1.4** **Area 1.4**	

	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	Inquiry and other legal proceedings • Be prepared to present such material in Court		
Behaviour	• To demonstrate acceptance of professional regulation • To promote professional attitudes and values • To demonstrate probity and the willingness to be truthful and to admit errors • Adopt behaviour likely to prevent causes for complaints • Deals appropriately with concerned or dissatisfied patients or relatives • Recognise the impact of complaints and medical error on staff, patients, and the National Health Service • Contribute to a fair and transparent culture around complaints and errors • Recognise the rights of patients to make a complaint • Identify sources of help and support for patients and yourself when a complaint is made about yourself or a colleague • Show willingness to seek advice of peers, legal bodies, and the GMC in the event of ethical dilemmas over disclosure and confidentiality • Share patient information as appropriate, and taking into account the wishes of the patient • Show willingness to seek the opinion of others when making decisions about resuscitation status, and withholding or withdrawing treatment • Seeks and uses consent from patients for procedures that they are competent to perform while o Respecting the patient's autonomy o Respecting personal, moral or religious beliefs o Not exceeding the scope of authority given by the patient o Not withholding relevant information • Seeks a second opinion, senior opinion, and legal advice in difficult situations of consent or capacity • Show willingness to seek advice from the employer, appropriate legal bodies (including defence societies), and the GMC on medico-legal matters	**Area 1.4** **Area 1.4** **Area 1.4**	
Examples and descriptors for Core Surgical Training	• Reports and rectifies an error if it occurs • Participates in significant event audits • Participates in ethics discussions and forums • Apologises to patient for any failure as soon as an error is recognised • Understands and describes the local	**Area 1.4** **Area 1.4** **Area 1.4**	

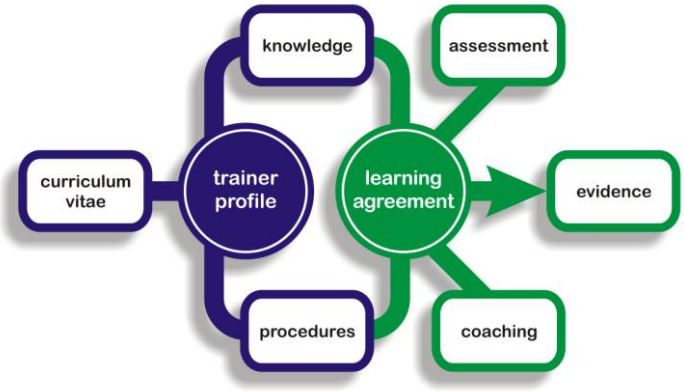
	Professional Behaviour and Leadership	Mapping to Leadership Curriculum	Assessment Technique
	complaints procedure • Recognises need for honesty in management of complaints • Learns from errors • Respect patients' confidentiality and their autonomy • Understand the Data Protection Act and Freedom of Information Act • Consult appropriately, including the patient, before sharing patient information • Participate in decisions about resuscitation status, withholding or withdrawing treatment • Obtains consent for interventions that he/she is competent to undertake • Knows the limits of their own professional capabilities		
Examples and descriptors for CCT	• Recognises and responds to both system failure and individual error • Provides timely accurate written responses to complaints when required • Counsels patients on the need for information distribution within members of the immediate healthcare team • Seek patients' consent for disclosure of identifiable information • Discuss with patients with whom they would like information about their health to be shared • Understand the importance the possible need for ethical approval when patient information is to be used for any purpose • Understand the difference between confidentiality and anonymity • Know the process for gaining ethical approval for research • Able to assume a full role in making and implementing decisions about resuscitation status and withholding or withdrawing treatment • Able to support decision making on behalf of those who are not competent to make decisions about their own care • Obtains consent for interventions that he/she is competent to undertake, even when there are communication difficulties • Identifies cases which should be reported to external bodies • Identify situations where medical legal issues may be relevant • Work with external bodies around cases that should be reported to them. • Collaborating with external bodies by preparing and presenting reports as required		

9. Learning Opportunities



a) LEARNING AGREEMENT

The Learning Agreement between the trainer and the trainee forms the cement that binds together the Orthopaedic Curriculum. The formulation of this agreement in the workplace environment is made as simple and straightforward as possible through the use of a series of templates and agendas which form a protocol already in place (since August 2005) through the OCAP Project. The diagram below summarises the process



which may at present be followed on paper, online or a mixture of both as circumstances demand:

1. From a series of templates based on the Orthopaedic syllabi the trainer creates a “trainer profile” which summarises the skills, attitudes and knowledge focus of their particular attachment and how they practice T & O.
2. Using this profile (together with “Learning Agreement Record”) the trainer establishes a Learning Agreement with the trainee agreeing not only the focus of the procedures for the attachment but also which PBAs or other assessment tools are to be used. This customises the training period to the particular needs of that particular trainee.
3. As the attachment progresses the trainer provides feedback to the trainee as part of the agreement through PBAs and other assessment tools.

4. Midway through the attachment the Learning Agreement targets are reviewed in a second Educational Appraisal using the "Learning Agreement Record". If necessary further reviews can be instituted by either the trainer or trainee.
5. Any additional items identified or targets that are falling behind are then addressed in the remainder of the attachment.
6. At the end of the attachment the final Educational Appraisal uses the "Learning Agreement Record" to review the Learning Agreement as a whole and progress is recorded on specific PBAs using the "PBA Assessment Summary". This end of attachment appraisal is very important and should clearly delineate whether both trainer(s) and trainee agree that the agreed competencies have or have not been achieved.
7. All evidence and reflective records from the agreement are taken by the trainee to the annual Formal Educational Review (ARCP/RITA).

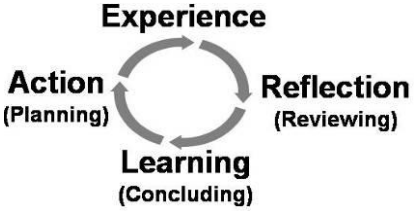
As the Orthopaedic Curriculum develops it is planned that adjustments will be made to the Learning Agreements through the mechanism of the trainer profile (and now online through a trainee profile). The profiles and forms used throughout the learning agreement have now been linked to the trainees' e-logbook so that at a yearly formal Educational Review (ARCP/RITA) the review panel may consider not only the qualitative evidence from the learning agreement but also the quantitative evidence provided by the logbook. This seamless interface now offers opportunities to quality assure the process through the cross referencing of PBAs to logbook activity and to monitor the impact that the implementation of assessments (PBAs) in specific procedures has on the availability of learning opportunities in those procedures. A full description of the OCAP tools with illustrations can be found in Appendix (d).

b) MODELS OF LEARNING

1) Educational Models

There are numerous educational models theories and papers that have relevance to this curriculum and to the activity of training in T & O. Of all of these trainers and trainees should be familiar with four, listed below, that have underpinned the development of this curriculum.

How surgeons learn

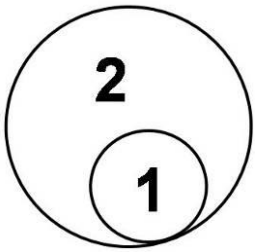


David Kolb's learning Cycle illustrates the importance of reflection in the learning process. Without the key activities of reflecting and drawing conclusions learning is reduced to a series of events with no connection to changes or improvements in behaviour or competence.

The T&O curriculum encourages reflective learning on the part of both trainer and trainee in the learning agreement. All trainers are required to reflect on their own practice in the production of a trainer profile which is shared with each trainee at the start of an attachment. The trainee in turn uses this profile to reflect on their own progress to date, sharing this with the trainer in the first learning agreement meeting where, together, they set goals for the attachment. As the attachment progresses PBA and other formative assessments generate feedback for the trainee on which s/he reflects informally on a day to day basis and formally at two further learning agreement meetings, the last of which offers opportunity to reflect on the attachment as a whole and draw conclusions to be actioned in the next attachment.

What surgeons learn

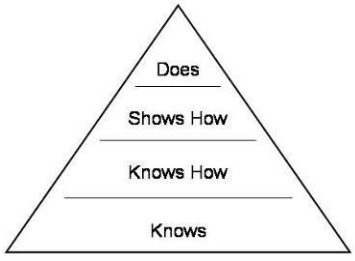
Argyris & Schon proposed that to be effective in the workplace learning must cover multiple levels synergistically. It is not enough to move rapidly around loop 1 (detecting errors and fixing immediate problems). Without loop 2 (values, underlying principles, why the problems occur in the first place) learning is incomplete.



Similarly it is not enough for a surgical trainee to learn the specific details of clinical work (doing surgery) without simultaneously extending their competence in being a surgeon, a much wider activity.

In the T & O curriculum the content of the clinical syllabus represents the detail of surgery (including those skills relating to the generality of the discipline) whereas the Professional & Management syllabus represents the breadth of surgical activity beyond the solution of clinical problems (Good Medical Practice).

Assessment of learning



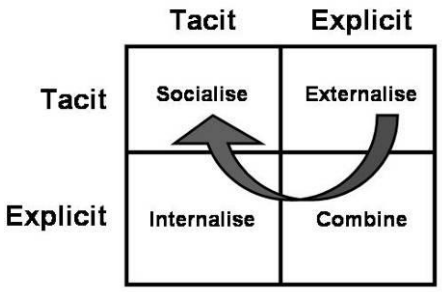
George Miller provided a framework for assessment in his pyramid model. In Miller's view a portfolio of assessments need to be used to evaluate the trainee at different levels.

In the T& O curriculum Procedure Based Assessments target the highest levels of the pyramid. Mini CEX, CBD and PAT address middle levels and the examination focuses largely at the knowledge level.

Articulating Tacit knowledge (& skills)

Most surgeons will find it difficult to articulate how or when they learned "professional judgement", "leadership" or many other meta-skills. This may be in part because such learning was through socialisation (rather than programmed) but fundamentally because such knowledge and skills are routinely held tacitly by consultants.

Tacit knowledge is the collection of things we don't know we know, even though we use them to do things. Explicit knowledge (skills) refers to the things we know that we know and are able to share with others through words or deliberate actions. Ikujiro Nonaka's work on knowledge management helps us to see that two people may share their tacit knowledge (through socialisation, unguided observation…). One or other may then externalise that knowledge, combine it with other knowledge and then re-internalise it through practice.



For example, a trainee assists the trainer in a difficult procedure during which an unexpected complication occurs. The trainee has seen and heard much during the procedure including conversations between the surgeon, scrub nurse and anaesthetist. In commenting to the surgeon afterwards on what has (factually) been observed the trainee makes the knowledge explicit and then combines this explicit knowledge with explanations from the surgeon or other knowledge. The trainee then "takes onboard" or internalises it as part of ongoing competence development in readiness to pursue the learning cycle further. The articulation of Tacit Knowledge is a frequently occurring element of reflection within the overall learning cycle.

There is much in this T&O curriculum that will be "newly explicit" to many trainers and trainees. There has been a clinical knowledge syllabus for many years (on which various examinations have been based) but the material now included in the professional and management syllabus covers skills which have, until now, been "picked up on the way". It is to be hoped that the curriculum will enable trainers and trainees to progress more easily by the externalisation of such skills.

2) Learning Environment

As surgery is a craft specialty it is essential that trainees are able to acquire their specialist surgical skills in the work place under progressive levels of supervision. They will be expected to use those skills to deliver clinical services and thus acquire experience based on the competencies they achieve. The delivery of training occurs alongside service delivery as a matter of necessity. Clarity is required on the nature of this partnership in order that the interests of all parties (trainee, trust and patient) are best served. It is the responsibility of the programme director, in partnership with the Postgraduate Dean and the individual training unit to ensure that an adequate learning environment is provided.

c) Individuals in the Workplace

Trainees

Individual trainees must take the ultimate responsibility for their own learning. It will be their duty to ensure that they cover the syllabus (as set out in this document) and supplement the other aspects of their training with planned learning, personal study, audit and research.

As part of the process of work based learning a trainee would be expected to:

- Attend supervised Fracture and Orthopaedic clinics
- Attend supervised elective and trauma operating lists
- Undertake emergency assessments of the acute presentations of trauma and orthopaedic problems in the Accident and Emergency department
- Participate in the presentation of trauma cases and trauma management discussions
- Work as a member of a team that includes other health care professionals
- Undertake the care of patients in the ward environment
- Participate in the organisation and management of in and outpatient care

- Attend teaching sessions within the work place
- Participate in audit meetings
- Participate in Journal clubs
- Undertake clinical reviews and research

The trainee would be expected to take advantage of external learning opportunities.

- Attend programme based Core Curriculum sessions
- Attend appropriately organised and instructed external courses and workshops as agreed in their learning agreements
- Attend Professional association instructional courses and conferences
- Produce poster presentations, presentations and publications
- Undertake guided reading
- Undertake internet based learning

Trainers

One of the most valued resources of the current training system is the time commitment and energy devoted by the trainers.

Currently trainers are expected to have completed a Training the Trainer, and a diversity course. In future it is anticipated that trainers will have to demonstrate that they are competent and fit for purpose in their trainer role, fully compliant with the PMETB standards for trainers. This is discussed in "Further Work and Development" (see Section 14-1).

In the meantime the SAC in T & O has specified standards that they wish trainers to demonstrate.

Trainers must

1. Produce and maintain an up to date profile (Templates available on the OCAP web site). This should contain:
    - a Curriculum Vitae in the agreed style
    - a Procedures profile relating to the published syllabus
2. Be familiar with and understand the published Curriculum for Trauma and Orthopaedic surgery
3. Be registered, and maintain the e-log book for their practice as it relates to training
4. Be prepared to demonstrate their commitment to training by the completion of training courses in educational method, assessment, feedback, equality and diversity and curriculum delivery
5. Be willing to participate in the deanery training programme and ARCP/RITA assessment process
6. Be in a substantive appointment as a CCST/CCT registered specialist
7. Maintain their good standing with the GMC and undergo annual appraisals as part of this process
8. Fulfil the PMETB requirements outlined in "Standards for trainers"

The new consultant contract gives the opportunity to declare and have recognised this commitment although it is acknowledged that the time component devoted is unlikely in many cases to be fully recognised within the job plan.

d) DEANERY/PROGRAMME

The programme director should produce an outline rotation for each Stage of training to enable trainees to acquire the necessary skills and knowledge to fulfil each stage of their educational requirements. The outline rotation may need to be adjusted subject to the outcomes of the ARCP/RITA process. As schools of surgery develop and ARCP/RITA is revised this role will be suitably modified.

The programme should provide a cohesive progressive core curriculum programme, which should include opportunities for didactic tuition, clinical presentation, paper presentations and for journal discussion.

e) External Resources

Courses

External organizations regularly promote and organize courses of study. Trainees (in discussion with their trainers) must choose courses appropriate to their stage of learning and identify them in their learning agreement. Full funding for these courses will rarely be available from training budgets and Trainees should be aware of this when planning these external opportunities.

Resources

There is now a wealth of web based instructional materials and medical resources with which the trainee should become familiar.

Colleges

All the Royal Colleges produce publications and instructional material sometimes on an intercollegiate basis.

British Orthopaedic Association (BOA)

The BOA hosts instructional courses for trainees and includes instructional sessions within its Annual General Meeting.

The BOA web site has a specific education section with information and hyperlinks.

f) Stages of Learning

i. The Early Years (ST1-2)

Requirements for early years training are outlined in the earlier part of this document (see Section 3) These notes should be read in that context. At the time of writing they were aimed at run through trainees.

The purpose of ST1 is to provide an introduction to the overarching principles of surgical practice within this context of T & O and in addition specific experience in the early care of traumatised patients, the management of simple fractures and mastery of the core principles of fixation seen in those fractures on which surgery is commonly performed. In ST1 there is an induction to the principles underlying all surgical practices. Core operative skills and perioperative management will be acquired during this attachment.

An attachment to a Trauma and Orthopaedic Department recognised for training will take place within the first year. This period and level of training could also be utilised by any other branch of surgery as part of their acquisition of generic competencies.

During ST1 and ST2, exposure to a range of relevant disciplines not already encountered in F1 and F2 is desirable. Attachments in any discipline of surgery including attachments in, Plastics, Neurosurgery, A+E Medicine, General Surgery offering relevant acute experience or critical care may occur in the ST1 and ST2 years. In some Deaneries 4 month attachments may take place and in some cases 6 months. We would recommend that at least 12 months T+O should be undertaken within the ST1 and ST2 years and that a minimum of 4 months T&O should be experienced in ST1. Ideally there should be 8 months of T&O in the ST1

year and a further 8 months in the ST2 year with a 4 month attachment in the complementary specialties in each of these years.

At the end of ST1 training the young surgeon should be competent in managing a simple closed fracture and should be able to recognise (if not treat) common complications and certainly know when to ask for help. They should also feel able to fix routine extra-capsular hip fractures with supervision and also, with supervision perform a hip hemi-arthroplasty and simple screw and plate fixation of ankle fractures. This should include pre and post operative care. They should be able to demonstrate common sense and judgement.

The purpose of ST2 is to consolidate the experience of generic surgical practice seen in the previous year and to extend the knowledge of the care of the injured.

By the end of the second year the trainee will have acquired competence in the outpatient management of the majority of low velocity fractures commonly seen in fracture clinics and will have developed an understanding of the natural history of these conditions and the proper management of commonly seen complications.

The trainee should have already acquired competencies including hip fixation and hemiarthroplasty of the hip and this ability will be built on and consolidated. During this second year operative experience will extend to include exposure to intra-medullary nailing techniques of the femur and tibia and the various operative techniques for treating distal radial fractures as well as plating for forearm fractures. Exposure to the principles of management of complex, intra articular and open fractures will have occurred.

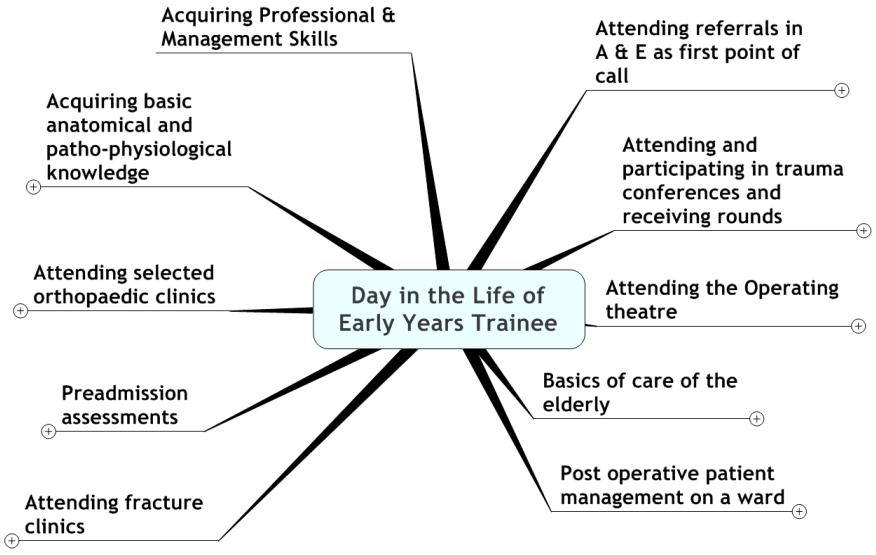
By the end of this fourth postgraduate year (ST2) the trainee should have acquired a sound ability to oversee the day-to-day management of inpatients and the supervision and support of the F1 and F2 doctors. The trainee should by this stage have demonstrated a sound understanding of reflective practice and should have undertaken and presented a number of audit projects.

During this year there may be limited exposure to aspects of the elective practices of the major orthopaedic subspecialties such as lower limb joint replacement, and arthroscopic techniques as well as possible exposure to foot and ankle, hand and possibly spine practice. This would not however be the main object of these training years.

The T+O components of ST1 and ST2 will be spent within recognized Trauma and Orthopaedic attachments attached to a number of trainers spanning several of the possible anatomical interest zones.

The ST1 module will be entirely devoted to Traumatology and depending on the competencies achieved at least 50-75% of available time in ST2 should be occupied with trauma related duties. By the end of the ST2 year the trainee will be expected to have completed the requirements of the test of knowledge prescribed for early years and the subsection related to Trauma and Orthopaedics when this is available.

The context in which this actually will be taking place is summarised in the diagram below and subsequently expanded on in the text. We have taken the liberty of paraphrasing a well known section “Day in the Life” (copyright Sunday Times) in a Sunday supplement which seems to exactly express what we are trying to achieve in the descriptions.



Summary: A day in the life of an early years trainee

- Care of traumatized patient
- Orthopaedic emergencies
- Managing patients in a busy orthopaedic unit
- An introduction to elective orthopaedics

1. Attending referrals in A & E as first point of call

- Will be first on to take calls from A & E
- Will be supported by a more senior trainee as well as a consultant

2. Attending and participating in trauma conferences and receiving rounds

- Presenting cases at the meeting
- Having an input as to the overall management of the patient
- Maintaining a perspective between surgical and medical expediencies for an individual patient
- Building up an experience base from the discussions they are attendant to

3. Attending the Operating theatre

- Organising a trauma list
- Liaising with theatre staff
- Liaising with radiographers
- Liaising with anaesthetists
- Scrubbing and assisting
- Carrying out a range of procedures under supervision
  - Closed manipulation of fractures
  - Application of acute casts and slabs
  - Setting up a femoral neck fracture on the operating table
  - Doing an angled screw plate
  - Performing Hemiarthroplasty
  - Fixing a simple fracture such as an olecranon or a less complex ankle fracture

a. Mastering a limited range of common trauma situations

- Manipulation of most closed fractures and dislocations
- Fixed angle screw plate for neck of femur fractures
- Fixing a simple ankle fracture
- Applying a simple external fixator
- Doing a tension band

4. Basics of care of the elderly

- Dehydration
- Electrolyte imbalance
- Common medical problems
- Arranging for ongoing care
- Rehabilitation team awareness

5. **Post operative patient management on a ward**
    - Fluid balance
    - Surgical complications
    - Bleeding
    - Infection
    - DVT and embolism
    - Dislocation
        - Medical complications
    - Chest pain
    - Stroke
    - Collapse
    - Pneumonia etc
6. **Attending fracture clinics**
    - Management of closed fractures
    - Recognising complications and what to do
    - Knowing when to refer or defer to a more experienced or expert opinion
    - Applying a secondary cast and or a brace
    - Being able to communicate with colleagues in and out of hospital regarding patient management
        - Being able to write clear notes
        - Dictate and check a succinct letter to the GP
7. **Preadmission assessments**
    - Work with the preadmission team
    - Supervise situations where the protocol is in question
    - Anticipate problems and trouble shoot
8. **Attending selected orthopaedic clinics**
    - Be exposed to assessment of any of a number of common problems such as arthritis
    - Be able to take a history
    - Be able to examine a patient
    - Generally
    - Musculoskeletally
    - Be able to participate in discussions about management
9. **Acquiring basic anatomical and patho-physiological knowledge**
    - Germane to surgery in a general sense
    - Germane to the levels required to train as an orthopaedic and trauma surgeon to the level of CCT

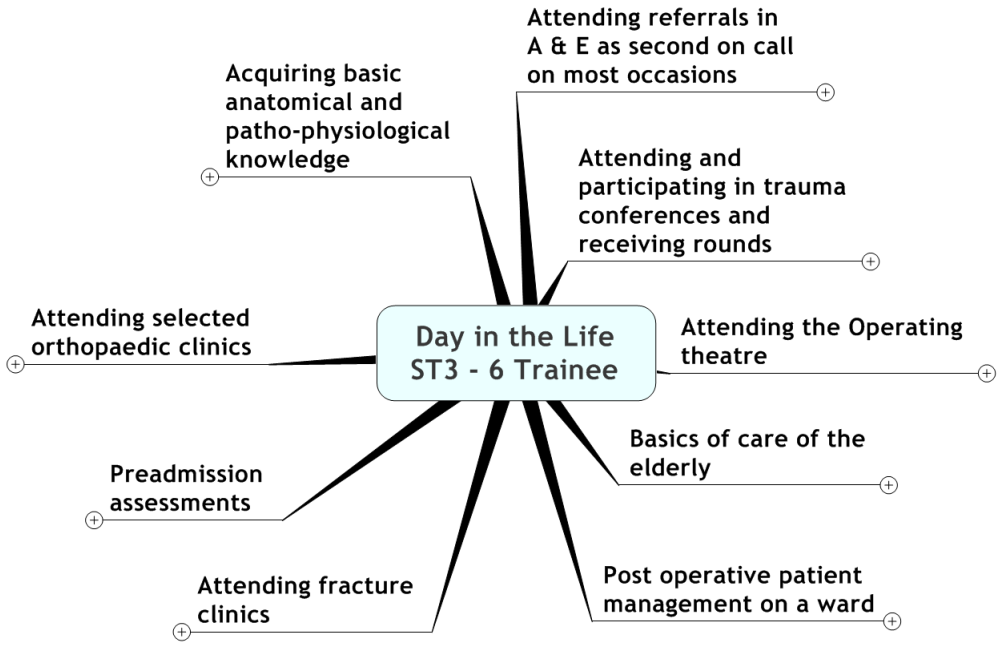
ii. ST3 – 6 Overview

This is the stage when the trainee obtains many of the operative orthopaedic competencies. They will also acquire both in and outpatient diagnostic and management skills and will supervise the day to day ward work of the Foundation and ST1/2 doctor

The intermediate phase includes further training in trauma and the introduction of sub-specialist modules for example ankle and foot, hand, shoulder and elbow, hip, knee, spine and children's surgery. The precise shaping of the modules will differ in different training programmes. Most training posts will be attachments to one or at most two trainers. A training post is likely to be a combination of general orthopaedics and "orthopaedics with an interest" in one of the specialist areas.

The majority of posts include trauma on call according to a roster which would normally be supervised by a number of different trainers during an attachment. This provides an opportunity to receive feedback from more than one source, during a training interval, this is to be encouraged. Occasionally posts will contain no trauma commitment, but this is unusual. Overall approximately fifty percent of training experience should be allocated to the specialist subjects and fifty percent to trauma.

Over the intermediate training interval the majority of the examples of modular training outlined above should be covered.



1. **Attending referrals in A&E**
   - Working with consultant as a member of polytrauma team
2. **Attending and participating in trauma conferences and receiving round**
   - Presenting cases and discussing complexities
   - Supervising the overall management plan
   - Making decisions about the balance of medical and surgical problems
   - Building on an experience base from the discussions
3. **Attending the operating theatre**
   - Organising an elective list
   - Liaising with theatre staff
   - Liaising with radiographers
   - Liaising with anaesthetists
   - Scrubbing, assisting and performing elective surgery with increasingly light supervision Carrying out a range of elective procedures depending on modular attachment
     - Performance based assessment procedures to level 4 (see procedures sheet)
     - Other procedures to levels prescribed if the opportunity presents itself.
   - Carrying out a range of trauma procedures under decreasing levels of supervision
     - Performing some trauma procedure to the point of mastery Increasing competence in a range of Open Reductions and Internal Fixation
   - Nailings of lower limb long bones
   - Full range of ankle fractures
   - Increasingly supervising ST1/2 trainees in their tasks
   - Attending and participating in trauma conferences and receiving rounds
   - Acknowledging limitations in complex fractures and knowing when to refer
4. **Basics of surgery for the elderly**
   - Advanced surgical decision making relating to aspects of elderly care e.g. surgery for osteoporotic fractures
     - Surgery in the elderly mentally infirm
     - Surgery in ASA group 3 and 4 patients

5. **Post operative patient management on a ward**
    - Fluid balance
    - Surgical complications
        - Bleeding, Infection, DVT and embolism, Dislocation
    - Medical complications
        - Chest pain, Stroke, Collapse, Pneumonia etc
6. **Attending fracture clinics**
    - Management of closed fractures
    - Treating complications
    - Knowing when to refer or defer to a more experienced or expert opinion
    - Applying and adjusting fracture position in a secondary cast and/or a brace
    - communicating with colleagues in and out of hospital regarding patient management
        - Write clear notes
        - Dictate and check a succinct letter to the GP
7. **Preadmission assessments**
    - Work with the preadmission team
    - Supervise situations where the protocol is in question
    - Anticipate problems and trouble shoot
8. **Attending selected orthopaedic clinics**
    - Gaining experience of assessment of any of a number of common problems such as arthritis
        - take a history
        - examine a patient
    - Generally
    - Musculoskeletally
        - participate in discussions about management
9. **Acquiring basic anatomical and patho-physiological knowledge**
    - Germane to surgery in a general sense
    - Germane to the levels required to train as an orthopaedic and trauma surgeon to the level of CCT

iii. ST7 – 8 Overview

The final phase is assumed to occur in the last one to two indicative years of the programme, assuming that by then all the necessary competencies outlined in the curriculum have been acquired. During this period trainees have a number of choices.

The purpose of this phase is for the Trainee to consolidate their skills in the generality of T&O surgery and practice and to extend their expertise in one or more of their areas of special interest. This period enables the trainee to further develop their decision making skills under guidance based on the solid grounding of knowledge skills and attitudes obtained in the earlier phases. It prepares the trainee for entry onto the Specialist Register and for the role of team leader required as a consultant in the NHS.

The most likely choice training attachments may be a combination of one of the following:-

- A reprise in one of the modular components revisiting existing training places on your rotation to study in more depth. For example, ankle and foot, hand, shoulder and elbow, hip, knee, spine and paediatric.
- Visits to another specialist in the trainees declared field of interest in your existing programme. This is only likely to apply in larger programmes
- Fellowships within other UK programmes or in national training accredited posts for specialist training – these are well recognised in particular disciplines particularly hand surgery, children's orthopaedics and spinal surgery.
- Unrecognised UK "Fellowships" must obtain recognition from PMETB .This will probably be delegated to deaneries or the SAC Trainees must be aware that it is essential to check with programme directors and the SAC when considering less formal "Fellowships" to ensure that they have the recognition which means that they can provide appropriate level of experience for the training in the competencies they require.

- Fellowships abroad in specialist areas. Such posts **MUST** be discussed and approved by the SAC in advance and prospective provisional recognition must have been given for the attachment to be approved by the deanery. At the end of the fellowship abroad a report must be submitted for approval by the SAC. The trainee **MUST NOT** assume that this period of training will be automatically recognised.
- A period in research. If a trainee has already spent a period in research and sought to have it approved for training a second period is unlikely to be recognised unless it has a substantial clinical element. It is vital that the trainee checks with the SAC if such a proposal is forthcoming. The SAC wishes to support academic development but within the context of training.
- The Trainee would be required to successfully complete the Intercollegiate Specialty Examination in Trauma and Orthopaedics during this last phase of training.

The emphasis on this final phase of training is that it is Trainee focused and Trainee led and owned. Trainees are encouraged to fashion a programme which suits them. An initial dialogue with the Training Programme Director followed by checking with the SAC will ensure a smooth process towards CCT.

iv. Academic T & O Surgery

There is a network of T & O academic departments which enjoy a variable degree of stability, often threatened by the relatively short term strategies enforced on universities by the Research Assessment Exercise. T & O surgery is particularly vulnerable because outcomes from orthopaedic surgical developments may not occur for between seven and ten years.

Musculoskeletal medical teaching, despite it being intuitively a significant part of medical education spanning general practice, traumatology as well as specialist surgery also has variable representation across medical schools.

The curriculum must therefore a) encourage academic T & O activity and b) be as flexible as possible in permitting motivated trainees to pursue an academic career in research and or teaching. This issue is presently under discussion by the SAC and an illustrative report is included as appendix E.

Specifically we would encourage trainees who wish to follow an academic route to do so once selected for T & O training after F2. Bearing in mind the phases, the best time to follow academic studies is after the early years phase once the discipline has been well sampled and the trainee is settled in their projected career pathway. The modular nature of training here is ideally suited to a very flexible programme often required by an academic pursuing research and with the vagaries of funding associated with it. We also support the Walport report encouraging proactive appointments of motivated and talented clinical academic surgeons.

“Academic Clinical Fellows” have recently been appointed in a very small number of T&O units. An exercise in collaborating with these departments to produce a set of common standards and syllabus is ongoing at present.

10. Assessment & Feedback

a) INTRODUCTION

The curriculum is designed to provide clear outcomes at all stages. It includes elements germane to the whole of surgery in the early years and becoming increasingly specialised towards a competency model mapped back to "Good Medical Practice" in the context of T & O in later stages. The assessment and feedback mechanisms are fashioned to enable trainees to monitor their progress against these outcomes through a series of learning agreements which will be reviewed at regular intervals by the designated trainer and the trainee through a process of informal day to day encounters supported by formal and regular educational appraisals.

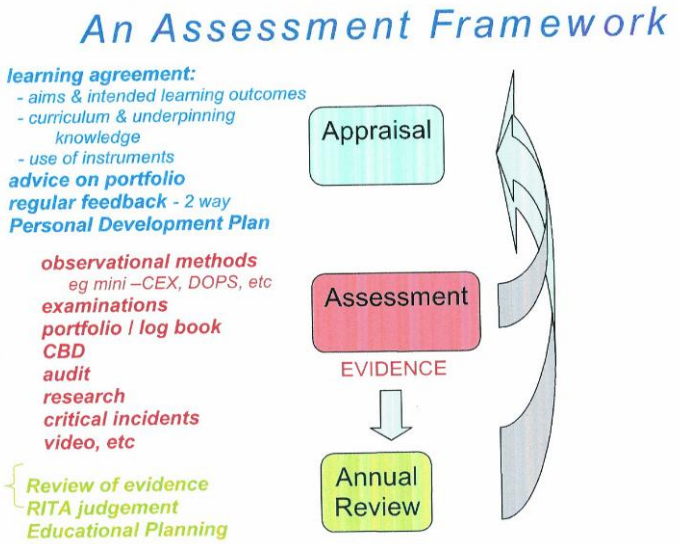
The assessment framework is constructed along the lines proposed by the PMETB sub-committee on workplace based assessment and illustrated below (Ref PMETB Jan 2005). The feedback process has three stages.

- Reaching a learning agreement and reviewing it – educational appraisal
- Structured assessment in the workplace
- An annual review which has two components

    a. A review of the evidence of progression achieved as a result of stages one and two described above. The annual review is a high stakes event and will include Deanery and SAC nominated external scrutiny – it is also likely to be a paper-based or virtual process for most trainees

    b. An educational review between trainee and designated members of the local training committee (ARCP/RITA) which will plan the next stage of training or any remedial action recommended as a result of the high stakes review. This second stage is entirely formative and designed to encourage progression.

This is summarised in the diagram below:



Workplace Based Assessment: A paper from the PMETB Sub-committee on Workplace Based Assessment; January 2005

The only exception to the above process will be in ST1 when at least two high educational stakes reviews will be necessary to ensure the trainee remains comfortable with their chosen career and to permit both trainers and trainees to reflect on progress or suggestions for the need for counselling or career change in a minority of cases.

b) THE LEARNING AGREEMENT

Learning agreements (described in detail in Section 9 of this document) are the central agenda setting tool for the trainer and trainee. They form a link between the short-term learning opportunities within a specific attachment and the curriculum as a whole.

In ST1 and 2 the learning opportunities permit scrutiny of an aptitude and motivation in surgery in the general sense and through progressive exposure to trauma, T & O in particular. This period of training can be seen as progressive over the necessary time period.

After ST2 the modular nature of training in T & O dictates that learning occurs as a result of reflection on the experience within an attachment defined by the specialty interests of a trainer. These learning opportunities have been articulated in the stage templates in ST3-6 in particular (see Section 9) i.e. in this phase the training is modular although the general acquisition and educational trajectory overall can be seen as progressive.

The learning agreement enables the trainer (in consultation with the trainee) not only to monitor their learning continuously but also to review their progress against the overall curriculum. It is essential that both trainers and trainees utilise the learning agreement to maintain the overall progression in acquiring the generic skills and judgment required of a surgeon in addition to the specific skills and knowledge acquired in any particular attachment. The selection of assessment tools within the learning agreement (e.g. PBAs) must be made with the intention of sampling the trainee's growing competence with a reliability and scope which ensures learning overall is quality assured.

c) THE INSTRUMENTS OF ASSESSMENT

In general assessment will take place in the workplace where possible, using an agenda set by the learning agreement and regular educational appraisal as described above. Where appropriate, knowledge and its application will be assessed by formal examinations. Progression will be determined by the series of reviews which will take into account all the evidence presented in a portfolio. The reviews will occur at least twice a year in ST1 and usually annually thereafter. The elements which provide evidence of progression will be looked at in an integrated manner ensuring the outcome based curriculum has been addressed satisfactorily by a trainee in all aspects. All the components discussed in the curriculum must be achieved at the standards laid out in this curriculum.

T & O recognises the need to test skills and knowledge relevant to the general practice of surgery in the early years of training. The reasons for this are three fold:

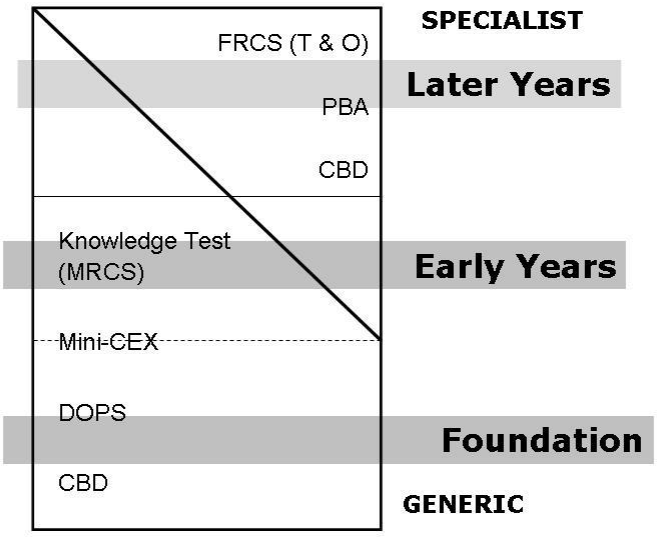
- Surgeons are primarily 'doctors who do surgery' and must acknowledge the skills and knowledge (built on undergraduate and Foundation training) which consolidate this principle.
- An individual's aspirations in relation to surgery may turn out to be unrealistic or they may wish to change their careers and need educational credit.
- To enable individuals to focus on the breadth of medicine as well as the depths of surgery to the benefit of their patients.

With this in mind the early assessments consist largely of elements carried forward from Foundation, applied in the context of the generality of surgery; and set within the learning agreement for any attachment. This will be found in the utilisation of Mini CEX, DOPs and 360 degree instruments such as PAT. We also plan to utilise case based discussions depending on the outcomes of ongoing pilots.

As trainees progress assessments will focus increasingly on the T & O context but still conceptualized in all aspects of Good Medical Practice. If a trainee is felt to be deficient in an element of GMP then any of the early years instruments may be reintroduced at any time during training.

The assessment strategy is illustrated below.

The early years instruments are common to all 9 disciplines of surgery with the exception of Procedure Based Assessment instruments specific to the T & O specialist components laid out in the curriculum. Early assessments will test transferable skills, knowledge and attitudes germane to surgery in general. The early test of knowledge encompassed in a revised test similar to the basic sciences element of the current MRCS will be predominantly germane to the whole of surgery, but some elements may be specific to T & O such as anatomy and surgical pathology.



A full guide to all early years instruments can be found on the Modernising Medical Careers website at www.mmc.nhs.uk/pages/assessment:-

CEX (Clinical Evaluation Exercise)
A direct observation of clinical skills on the ward or in outpatients by a trainer of a trainee; e.g. history taking, physical examination, discharge work up. Usually the trainer and trainee will agree in advance (generally triggered by the trainee) that an opportunity will be found in an imminent event such as a clinic to observe part of a patient interaction. The trainer becomes an observer and assessor and marks the trainee using the checklist shown in Appendix (a). These checklists are generic. Multiple encounters are needed by multiple assessors (four different ones) over time in order to provide a valid and reliable measure of clinical performance. The trainee is encouraged to self and peer assess using the instruments when opportunities arise.

DOPS (Direct Observation of Practical Skills)
Initially these will build from Foundation skills outlined in the Foundation curriculum commonly agreed. For surgery in a general sense a basket of potential DOPS is described in the Intercollegiate Surgical Curriculum Project including some specific to T & O.

The concept is simply that commonly performed straight forward procedures will be observed in operating room and clinic or ward settings. This would include suturing, applying a cast, injecting a joint for example plus other techniques not encountered in foundation years but relevant to surgery.

CBD (Case Based Discussion)
A focused discussion on the trainee's recent entries in a patient's notes to explore clinical thinking and management. This will follow in future years.

PAT (Peer Assessment Tool)
A type of Multi-Source Feedback or 360º appraisal which measures performance across the domains of Good Medical Practice. Raters should include surgical staff of a variety of grades, plus nurses, anaesthetists and allied health professionals selected by the trainee. The aggregate ratings are compared with self-assessments and used to provide feedback on behaviours and skills.

PBA (**Procedure Based Assessments)**
Procedure Based Assessments are direct observations of surgical skills in intermediate and advanced procedures such as total knee replacement or open reduction and internal fixation of fractures. Either a part or the whole of the procedure can be assessed, including obtaining consent and developing a management plan.

Workplace based assessment opportunities will occur in the environments described in Section 9 – learning opportunities sub-section (c). They form the mainstay of assessment beyond ST2 and are discussed in detail below. Samples of PBA tools can be found in Appendix (d).

The design of the PBA has the following criteria:-

- A PBA can be applied to many procedures, theoretically, but in order to ensure validity and high levels of reliability each PBA has tightly controlled descriptors of good and bad practice in each of the domains of observation.
- Only behaviours are measured – it is not possible to second guess or interpret assumed intentions or beliefs.
- Procedures are selected as PBAs on the basis that they are indicative of a wide range of activity. The internal elements of PBAs are also selected on the basis that they are indicative of performance throughout the procedure. NB: A PBA is not a checklist of how to perform the procedure (see Appendix (c)).
- The range of proposed PBAs are descriptive of T & O activity in general and are not designed to accredit particular procedures, but rather to indicate an educational trajectory in the discipline as a whole. As indicated earlier this has been triangulated in terms of frequency with the T & O log book.
- Elements within specific PBA are cross-referenced to all PBAs. This enables a variety of observers in a number of contexts to increase the validity of the assessments.
- Assessment is both global and domain specific with a view to providing triangulation with transferable skills, such as communication and also in order to provide precise feedback as to why a global rating overall has been given. This is described below.
- The PBA Summary Sheet (see Appendix (d)) shows the trainee's development at a glance. The cross-referencing function of PBAs reveals areas that may require attention e.g. a trainer who is good technically but a poor communicator.

The indicative PBAs for T & O are as follows:-

1. Carpal Tunnel Decompression
2. Digital and Palmar Fasciectomy
3. Diagnostic Arthroscopy & simple Arthroscopic Procedures
4. Total Knee Replacement

5. First Ray Surgery
6. Total Hip Replacement
7. Lumbar Discectomy
8. Compression Hip Screw for Intertrochanteric Fracture Neck of Femur
9. Hemiarthroplasty Intracapsular Fracture Neck of Femur
10. Application of Limb External Fixator
11. Operative Fixation of Weber B Fracture of Ankle
12. Fixation of Patella Fractures by Tension Band Wiring + Olecranon
13. Intramedullary Nailing for Femoral or Tibial Shaft Fractures
14. Tendon Repair

In development:

- Shoulder Diagnostic Arthroscopy & Subacromial Decompression
- Shoulder Hemiarthroplasty
- Paediatric Non-accidental Injury
- Paediatric Irritable Hip

As part of the trauma based early years elements of the curriculum certain procedures in Procedure Based Assessments including fixation of an ankle fracture, management of a closed fracture and the internal fixation of an extra capsular fracture of the hip will be mandatory.

Beyond ST2 the PBAs will be agreed during educational appraisals, depending on a trainees needs and the realistic expectation of this being available within the context of an individual trainer's practice, as part of the learning agreement. The PBAs selected will be related to a particular attachment, however, all PBAs give indications of more generalized progression as indicated through the summary sheets. It cannot be over emphasized how important it is to view the PBAs holistically and not to see them as assessments of competence in a single procedure.

In order to progress to CCT the majority of PBAs recommended above should be achieved to level 4 (that expected of a consultant in the NHS). We acknowledge that at present some procedures may be difficult to experience frequently enough to achieve reliable measures in an individual procedure but sampling across the PBAs is to make an overall judgment feasible. Trainers and trainees need to make maximum use of learning opportunities. The utilization of such opportunities is and will continue to be monitored through triangulation with the log book.

d) LOGBOOK

1. The history of the eLogbook

In 1998 the BOA Logbook Project was launched in the Northern Deanery of England.

In November 2000 the Faculty of Medical Informatics in the RCSEd offered to assist in developing the Logbook concept into an integrated Orthopaedic Trainee management and analysis system. In December 2000 the BOA, the Orthopaedic SAC and the Royal College of Surgeons of Edinburgh agreed to work together to:-

1. Develop a specification for the data to be collected
2. Develop a specification for the Logbook analysis
3. Raise funds for the Logbook development via the BOA with sponsorship subsequently obtained from the JBJS, the Charnley Trust, the Wishbone Trust and from Smith & Nephew, Johnson and Johnson and subsequently from Biomet Europe.

During the following 2 years a number of beta versions of the logbook were trialled in UK deaneries, allowing an openly based critique to refine the workings of the project.

In July 2003 the Orthopaedic SAC held discussions with the Joint Committee on Higher Surgical Training about making the eLogbook compulsory for Trauma and Orthopaedic trainees. This was approved together with annual payments by trainees of £30 per year.

Since October 2003 the eLogbook has been working uninterrupted with very few problems. In April 2004 the JCHST was given an on-line presentation of the Trauma & Orthopaedic eLogbook and it was agreed that it should be further developed to cover all surgical specialties. The Chairman of the JCHST also indicated that future development should be regarded as an Intercollegiate product and that it was likely that the emerging web based curriculum and the eLogbook would be linked. The JCHST Committee resolved that the eLogbook design should indicate its Intercollegiate nature and the crests of all four Colleges were added accordingly. To reinforce this, in Dec 2003, the Chairman of JCHST wrote to Professor Wallace asking him to make it clear in any further correspondence that the future development of the eLogbook should be regarded as an Intercollegiate project and that the Edinburgh College was undertaking this work on behalf of the JCHST.

In September 2005 a paper was published describing the features of the eLogbook and how the information entered was and could be used in the future.

(Sher L, Reed M, Calvert P, Wallace WA, Lamb A (2005) Influencing the national training agenda: the UK and Ireland Orthopaedic eLogbook and operative training in trauma orthopaedic surgery evidence from Logbooks. **JBJS (Br) 87-B: 1182-6)**.

From January 2006 a complete ePortfolio, which includes the eLogbook was launched for all UK Surgical Specialties and in April 2006 the ePortfolio was extended for use by medical students, PRHOs and SHOs.

By May 2006 the Trauma & Orthopaedic eLogbook included 428 distinct Trauma and Orthopaedic operation descriptions and users had loaded onto the database over 1.25 million operations in which they had been involved.

Data indicating average numbers of procedures performed by T & O trainees in 2007 were published and allow trainees and training committees to benchmark experience. In trauma operating trainees recorded they performed 612 operations and assisted in a further 141 in the years equivalent to ST3 to ST8 in total. In elective operating trainees performed an average in 612 operations and assisted at a further 412.
(S.S. Jameson, A. Lamb, W.A. Wallace, J.L. Sher, C. Marx , M.R. Reed (2008) Trauma experience in the UK and Ireland: Analysis of orthopaedic training using the FHI eLogbook Injury, Int. J. Care Injured 39, 844—852).
(SS Jameson, A Lamb, WA Wallace, JL Sher, C Marx, MR Reed (2009) Orthopaedic training experience in the UK and Ireland: An analysis using the Elogbook. The Surgeon, 1 August 2009, pp. 243-49). By October 2009 over 7 million operations have been entered across all specialties with 20,000 operations being added in Trauma and Orthopaedics every week.

2. The Functions of the current eLogbook/ePortfolio

Varying levels of access are available to the detailed data on the eLogbook website which ultimately belongs to each of the users who have uploaded the data.

- Trainees and trainers can have access to their own and normalized data
- Training Programme directors can access all trainee and trainer consolidated data in a particular programme and are able to study data of their own trainees when they are out of programme in the UK
- The SAC Chair has access to all UK trainee and Trainer data

The provision of the relevant data to the relevant groups above has allowed quality assurance for training programmes to allow detailed assessment of each training post. This is particularly in relation to PMETB quality assurance standard domain 5 - Sufficient practical experience must be available within the programme to support acquisition of competence as set out in the curriculum.

3. What the eLogbook/ePortfolio offers to SpRs in Trauma and Orthopaedics

The eLogbook allows the SpR user an opportunity to document all the operations which they attend and the extent of their involvement in the operation. This is coded using the JCHST coding scheme which is as follows:-

A	=	Assisted at the operation
S-TS*	=	Supervised – Trainer Scrubbed
S-TU	=	Supervised – Trainer Unscrubbed but in Theatre
P	=	Performed operation (not supervised in Theatre)
T	=	Training a more junior trainee

plus an added field of:-

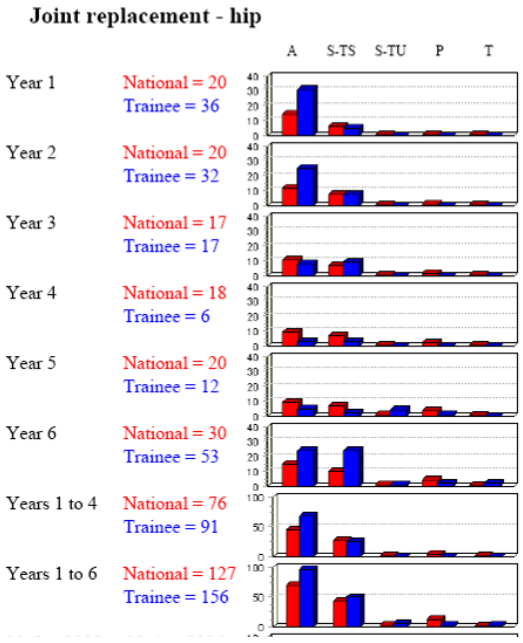
O	=	Observed

(* in Orthopaedics the trainee must perform at least 70% of the operation to satisfy this code)

Consolidation reports are easily produced demonstrating the surgical experience of the user/trainee to date or during a particular attachment, or, for example highlighting key procedures such as “Total Hip Replacement” or “Total Knee Replacement”.

A unique technique has been developed to “normalize” the data as described below:-

The trainee’s uploaded information is interrogated and compared with the data uploaded by their peers in the same year of training, and at the same stage of training. This allows the trainee and the ARCP/RITA panel to compare each individual’s operative experience with a comparable deanery or their national (UK) peer group. Comparisons of numbers of operations attended, the extent of surgical exposure and the level of supervision can now be made and this is highlighted by bar charts such as the one shown below.



4. What the eLogbook/ePortfolio offers to Trainers in Trauma and Orthopaedics

The eLogbook produces a mirror trainer "footprint" every time a trainee logs an operation. In this way a training profile of procedures undertaken and patterns of training soon emerge for individual trainers. This consolidated data can be accessed by both the trainer and by the Training Programme Director and the SAC.

5. What the eLogbook/ePortfolio offers to Training Programme Directors in Trauma and Orthopaedics

The data available to the Training Programme Director allows scrutiny not only of an individual trainee's experience but of training patterns by trainers for trainees at varying stages of their careers. This can be vital "hard data" in understanding satisfactory and unsatisfactory progress on the part of a trainee or even demonstrating an unsatisfactory training environment and an uncommitted trainer.

6. What the eLogbook offers to the SAC in Trauma and Orthopaedics

The Chair of the SAC has the capacity to examine individual trainees, trainers, Training Programmes and even national trends in the practice of Trauma and Orthopaedic surgery. One example has been the ability to demonstrate if there is any potentially deleterious effect of an Independent Sector Treatment Centre (ISTC) on the elective surgical experience of trainees working in adjacent NHS hospitals.

The data has demonstrated that training posts at the ST1 and ST2 level can be configured correctly and deliver more operative opportunity than the old SHO grade. It also demonstrated that poorly configured posts offer less operative training. (Jameson SS, Gupta S, Khan A, Lamb A, Sher L, Wallace WA, Reed MR Has MMC improved early years training in T&O. Glasgow Meeting of Orthopaedic Research, 2009).

Recent data has suggested a significant drop in operative training cases per year with the introduction of shift patterns to support the European working time directive and further examination of this data in the coming years is seen as vital for quality assurance of the national training programme (PMETB standard domain 5). (Jameson SS, Gupta S, Khan A, Lamb A, Sher L, Wallace WA, Reed MR The effect of changes to trainee working patterns: analysis of operative experience. British Orthopaedic Association National Congress 2009)

7. Conclusions

The eLogbook has already proven to be a valuable tool in monitoring and influencing exposure of trainees to operative surgery in the specialty of Trauma and Orthopaedic Surgery. It is one of a number of unique tools developed by Orthopaedic Surgeons for Orthopaedic Surgeons (including OCAP and the ePortfolio) and is now finding a place in the other surgical specialities in the UK.

e) OCAP ONLINE

The T & O curriculum is now fully available and fully integrated with the well established logbook. All assessments and records may be completed online and information generated for RITA/ARCP interviews. Illustrative screenshots from OCAP online are contained in Appendix (h) and in addition a series of comprehensive PowerPoint guides are available on the OCAP website (www.ocap.org.uk).

The electronic delivery system for the T & O curriculum has been designed to mirror the original paper based version. This is partly to facilitate the transfer of learning for trainers and partly to allow a paper "back-up" for the curriculum activities should access to computers be difficult for whatever reason. The same login system is shared with the eLogbook and the two systems are fully integrated to allow seamless transitions between logbook and other assessment activities and reflective records.

Key features of OCAP Online include:

- Online trainer profiles, together with the facility for trainees to support their trainer in creating them
- Updateable knowledge and skills profiles for trainees to record and reflect on progress
- Simple entry systems for PBA and other assessments
- A one-click validation system for all records

- PBA (and other assessment) summaries in graphic formats to easily track competence progress
- A reflective journal linked to all elements
- Programme directors pages that allow summary reports of trainee activities
- Screenshots illustrating aspects of OCAP online are included as Appendix (h).

f) Formal Tests of Knowledge Relevant to the Training of a Surgeon

Before the end of ST2 we will expect a trainee to demonstrate knowledge in the basic surgical sciences (germane to all surgery), anatomical knowledge of sufficient depth to facilitate training in T & O and specific patho-physiological and biomechanical knowledge relevant to musculoskeletal surgery. The early years curriculum earlier in this document forms the syllabus for the MRCS exam.

As this assessment is designed specifically to test knowledge and to a limited degree application of knowledge then this aspect of progress should be assessed by the most reliable methods available. The evidence strongly supports an MCQ and EMI model of not less than three to four hours and three hundred questions long (ref Van der Vleuten 1996).

The application of knowledge and its use in judgement will be assessed in the final T & O FRCS examination.

g) Feedback

The regular reviews of progress, known as Educational Appraisals, (at least 3 per 6 month attachment) to be made by trainers and their trainees will be informed by the workplace based assessments and are designed to provide considered feedback (in addition to that provided at the end of a PBA) as soon as possible in the learning and teaching cycle. They also contribute evidence to the portfolio for more formal appraisal during Formal Educational Reviews (ARCP/RITA).

The regular Educational Appraisals will be primarily enabling processes, designed to encourage the trainee through feedback. There is no maximum limit to the amount of informal feedback and assessment that a trainee may receive during an attachment.

Usually more formal workplace based assessment episodes (e.g. PBAs) will be triggered by trainees who feel ready to move on. Occasionally a trainer may trigger a workplace based assessment either to encourage confidence or occasionally to highlight concerns.

i. The educational appraisal – short loop feedback

Short loop feedback should be ongoing between trainee and designated trainer through workplace based instruments as described above. A minimum of three distinct medium term reviews of progress will be made:-

- At the beginning of a designated training attachment when the learning agreement will be finalised.
- Half way through the attachment when progress against outcomes will be checked and the contract modified if necessary (goals should remain realistic).

  Finally the evidence in the trainee's portfolio supporting the agreed achievements relative to the learning agreement will be reviewed between trainer and trainee. This will be presented as part of the Formal Educational Review (ARCP/RITA).

ii. Annual review- long loop feedback

A longer loop feedback will follow the high stakes summative element of the annual Formal Educational Review (ARCP/RITA). This will be designed to plan progression. The end of training interval Educational Appraisals between designated trainers and trainees will generate a view as to whether the learning agreements were achieved and so progression is or is not recommended. The final Educational Appraisal at the end of a training attachment will be a very important event and as such will be a prominent component of the portfolio presented for annual review.

The evidence supporting an agreed position about progression will include:-

- The workplace based instruments as described above. Sufficient evidence should be provided to ensure the instruments provide valid and reliable assessments. Measures are in place to ensure this is underway. In summary we believe the instruments chosen are rational, have face validity and are reliable in the numbers which approximate in current evidence to those described by Norcini and Holcombe (personal communication). Our own evidence on validity has been published and reliability data is currently being formalised (Appendix (c)).
- A log book of surgical experience. This is described in detail above. The key procedures on which PBAs are based are tracked to the log book and all the procedures and expected level of achievement defined in the syllabus on Sections 6-5 to 6-6.
- Evidence of achievement of summative exams. As indicated a test knowledge will occur in ST1 - ST2 and the candidate must show evidence of having the level of knowledge which permits training. An exit examination is in place for the purposes of quality assurance.
- Evidence of reflective practice through a critical appraisal of study leave, courses etc.
- Evidence from previous ARCP/RITAs.

The annual review (Formal Educational Review) will carry out a paper review of all the evidence and confirm for the trainee whether progress has been made.

The review process at deanery level must ensure transparency, clarity and feedback designed to inform progression wherever possible. It should not only facilitate setting a minimum standard, or recommend remediation but also permit strong candidates to demonstrate excellence and mastery.

This review should ask three core questions about the conduct of the process before dealing with any specific elements of the learning agreement. These are:-

- On reflection were the goals set in the learning agreement reasonable?
- Have there been any unanticipated constraints such as illness, systems failures etc?
- Has the relationship between trainer and trainee been conducive to achieving a realistic and objective appraisal of progress?

If these issues (which are rarely likely to be of concern) are dealt with then the agreement goals can be compared to the evidence provided in the workplace assessments. It is the role of the first part of the annual review to ensure that the agreed position between a trainee and his or her trainers over the year is a reasonable one. If in doubt they may interview trainees and their trainers. If the position is accepted then the trainee will go to the second half of the process of educational planning with a designated member or member of the training panel agreed with the training programme director.

The second phase of the annual review will determine what needs to be next achieved according to the overall blueprint. The details of how this will be delivered must be discussed in a face to face interview with the trainee by representatives of the local training committee and ideally an external appraiser nominated by the SAC.

h) APPEALS

A trainee will be able to appeal at various stages of the assessment process.

In the first instance if a trainee disagrees with a workplace based assessment judgment they should first discuss it with the assessor (who is likely to be their assigned trainer) acting in a different capacity. Both trainer and trainee should sign off an agreed position.

If a position cannot be agreed the trainee should be able to have a confidential and non prejudicial discussion with the programme director. The programme director may ask for an independent assessment after a discussion with the trainee.

At both these levels the aim should be dispute resolution in adult – adult relationships.

Should a trainee remain dissatisfied they must take up the matter with the local deanery utilising local appeals mechanisms. The local Dean must remain the final arbiter.

If a trainee is dissatisfied with the annual review this would be a matter for the local Dean to resolve through their own transparent mechanisms.

i) THE END POINT OF TRAINING

Training will be deemed complete when the trainee has populated the curriculum knowledge and procedures maps/ syllabi appropriately and to a standard defined in the levels of the individual domains of the syllabus. The outcomes must fulfil the requirements of Good Medical Practice. These are described in terms of a blueprint to these learning outcomes below. The description of the outcomes in terms of a practicing orthopaedic and trauma surgeon are described in Section 11-1.

j) KEY ROLES IN ASSESSMENT

The central stakeholder is the trainee who must be responsible for their own learning supported by the designated trainers and the head of the training programme who is accountable to the School of Surgery which represents the Deanery. Those responsible for training and assessing the trainee are ultimately responsible to patients in ensuring newly trained surgeons comply with the best standards that ensure safety and indeed excellence in Good Medical Practice in the context of orthopaedic surgery.

i. The trainee

The trainee will be responsible for the contents and probity of their portfolio. Failure to keep accurate and honest information will be regarded as a professional disciplinary matter, which could ultimately in serious cases of fraud or plagiarism result in reporting the individual to the fitness to practise committee of the GMC.

All workplace based assessments agreed as triggered by trainer and or trainee must be retained whatever their outcome. Where an assessment is unsatisfactory repeated assessments will be required until a satisfactory standard is reached. Trainees must appreciate that a record of unsatisfactory assessments which ultimately show improvement and success can be a positive experience in reflective learning. Likewise trainees who reach a satisfactory standard early are encouraged to continue to trigger assessments in order to demonstrate continuing improvement and progress to mastery and excellence.

It is the responsibility of the trainee to ensure the training programme director and the School of Surgery are fully appraised of contact details, address etc as well as personal health issues and any ongoing disciplinary matters involving the Medical Defence Unions or the GMC.

The trainee will be responsible for completing and storing information and evidence in their portfolio with a view to informing the educational appraisal process and any examination board which represents compulsory testing of trainees.

The trainee will be solely responsible for the payment of fees and subscriptions deemed necessary to complete training.

ii. The Designated Trainer

The designated trainer must complete learning agreements and reviews according to the set protocols. They will work in partnership with trainees to give timeous feedback and ensure all appropriate documents are signed and validated. With the trainee they should ensure the evidence prepared for educational review is appropriate, complete and meets all standards of probity. Difficulties with completing learning agreements for whatever reason must be made clear to the trainee and the training programme director.

The designated trainer will also be carrying out assessments and must be clear when that is the role they are fulfilling and that a particular workplace event should be recorded. All trainers who carry out assessment must have been trained and be competent in the application of the instruments described.

iii. The Training Programme Director

The training programme director is responsible for the whole programme and accountable locally to the School of Surgery and nationally to the SAC in T & O. The training programme director is the first port of call should a trainee have difficulty – either personally or with their designated trainer. They will be the first point of appeal should a trainer and trainee have any kind of difficulty or dispute. Their aim should be to resolve disputes as quickly and effectively as possible.

iv. The Specialist Advisory Committee

The SAC will provide external quality assurance of the programme as described in Section 12 of the document.

v. The Deanery and School of Surgery

The School of Surgery is expected to be the repository for T & O training programmes ultimately. In the meantime deaneries will deliver training programmes through local training committees in T & O chaired by Programme Directors appointed through SACs with Deanery support.

k) BLUEPRINTING AND SAMPLING OF ASSESSMENT TO THE CURRICULUM-ACHIEVING INTEGRATION

Outcome Medical Practice	**Assessment Method**				
	CBD	Mini-CEX	Mini-PAT	PBA	Knowledge Test
Good Clinical Care/Maintaining Good Medical Practice					
Relationships with Patients					
Working with Colleagues					
Teaching & Training, Appraising & Assessing					
Probity, Health					

The whole curriculum has been mapped back to GMP and examples are included as Appendix (f).

It is essential that the assessments be they workplace based or summative in the case of set examinations provide a fair spectrum of appraisal of all aspects of skills, knowledge and attitudes required of a T & O surgeon practising as leader of an on call team and delivering emergency and elective services as defined in section 11(sub section b3) of this document.

The blueprint of assessment methodology mapped back to Good Medical Practice is shown below and relates back to the outcomes in terms of clinical, professional and management activities laid out in Appendix (f).

The challenge for the examination board is to provide an exam blueprint which reciprocates with the other assessment methodologies which themselves sample broadly across the curriculum but by necessity will inevitably be less systematic and more opportunistic.

In terms of integration of assessment the right amount of assessment overall must be achieved without leaving gaps in the sampling across the blueprint. Workplace based assessment should map back to the procedure and knowledge syllabi in ensuring that contextualised application of knowledge and testing at the peak of Miller's pyramid occurs. In terms of formal summative tests a fair sampling of real clinical problems will be balanced with clinical scenarios which test clinical situations commonly encountered. This will also provide triangulation with workplace based assessments. It will also generate an overall profile of a trainee's ability across the spectrum of the syllabus which is appropriately sampled.

I) TRANSITION TO LIFELONG CONTINUOUS PROFESSIONAL DEVELOPMENT AND RECORDING PRACTICE IN A PORTFOLIO

At the point of exit a trainee will be considered fit to practice as part of a team leading the receiving and management of trauma and emergencies etc as described in Section 11. However we accept that the selected specialist interest will require further development.

We expect that the transition to lifelong learning will be seamless and be a natural transition for someone steeped in the philosophy of our curriculum which pivots around the values of professionalism and reflective practice.

The criteria of CPD were laid out by the senate of surgery in their position paper (”Monitoring Your Performance” Senate of Surgery publications 2004). The criteria and standards for CPD are presently under review as part of the revalidation project. The next goal for a newly appointed consultant will be to receive accreditation for a declared area of expertise which we expect to occur post CCT (and so out with the scope of this curriculum and PMETB). We expect this to be acquired through peer review of the portfolio and not through set piece examinations.

The end point of lifelong professional learning will be the point at which (many years past retirement in most cases) a surgeon ceases to maintain an interest in, or contribute to, the profession.

11. Exit Criteria

a) Specialty Advisory Committee (SAC) Statement of Outcomes

At the end of training a number of factors will be in place; a trainee will have a number of satisfactory ARCP/RITAs which will demonstrate to both professional colleagues and the public the level of training required to work as an independent consultant surgeon in T & O.

In order to satisfy the ARCP/RITA G process the trainee's portfolio must contain a number of mandatory elements

- A complete set of mandatory learning agreements which have been satisfactorily discharged
- Sufficient workplace PBA's to make a reliable assessment that a satisfactory standard has been reached
- Attendance certificates for professional development courses
- Evidence of publications and presentations
- Legal documents
- Evidence that during their training the trainee has satisfied the intercollegiate specialty examinations board
- E-log book consolidation data
- Evidence that the programme director has scrutinised the e-log book and is satisfied that it contains a range and number of operations necessary in order to carry out the duties of the modern Orthopaedic Surgeon
- Evidence that the programme director has scrutinised the learning agreements and PBA's and has sought and received evidence of satisfactory progress and completion of training from those trainers who have been involved in those assessment processes.

After the completion of the ARCP/RITA G process the SAC will recommend to the JCHST that a CCT be issued by PMETB

b) Certificate of Completion of Training (CCT)

At the end of training a CCT will be awarded when the trainee has satisfied PMETB that they have been trained in the generality of Orthopaedics and Trauma, assessed as having completed the competencies laid out in the Orthopaedic and Trauma curriculum and having the attitudes, skills, and judgement of a surgeon capable of independent practice.

The SAC recommendation to PMETB for the award of the CCT will take into consideration that:

1. The syllabus is for the generality of Trauma and Orthopaedics and this will have been assessed in the summative intercollegiate specialty board exam which trainees must have completed by the end of their training. This exam forms part of the trainee's portfolio which also includes work place based assessments and the evidence of previous learning agreements and ARCP/RITA assessments. The Portfolio will have been assessed in its entirety at the final ARCP/RITA G assessment prior to the recommendation of the award of the CCT.

2. Towards the end of their training in the generality of the discipline the overwhelming majority of Trainees will have developed a subspecialty interest which will have been assessed in the work place both pre and post CCT and is likely to be formally assessed in a subsequent peer review process.

3. Such an individual would then be able to join and lead a multidisciplinary team which would receive, assess and go on to definitively manage the majority of patients who needed emergency treatments. They would provide a similar service for a range of common Orthopaedic conditions. In both Trauma and Orthopaedic

services they would recognise the need to refer rarer and specific conditions for more specialised definitive management.

12. Management of Quality Assurance (QA) of Programme

a) GMC Sanctioned Visits

In the past the SAC (T & O) was responsible (reporting to JCHST) for the QA of training programmes in the United Kingdom and Ireland. Standards for training were laid down by the SAC. Traditionally such inspections are carried out at five year intervals together with trigger visits for any problem areas within those training programmes. The SAC has appointed a liaison officer responsible for each area throughout the United Kingdom and Ireland.

The GMC (previously PMETB)has taken over this role with a changed format. The GMC use a 'sample check' of hospitals within a Deanery training programme. The PMETB also sanction trigger visits where problems are perceived, at the request of the Deans or the programme directors.

In addition to representatives from the specialty, lay persons have, as in the past, joined the inspection team.

The Postgraduate Deans will continue to monitor this process and the SAC will continue to assist the Deanery in this task.

b) GMC Quality Assurance

The General Medical Council (GMC) is the independent statutory body that regulates postgraduate specialty training in the UK following the merger of the Postgraduate Medical Education and Training Board (PMETB) with the GMC in April 2010.

The GMC has responsibility for the development of training, entry, curriculum and assessment standards and the approval of posts and programmes. In each of these areas it directly or indirectly seeks appropriate consultation from deaneries and colleges. The two key areas of GMC quality assurance revolve around the national surveys of trainees and trainers and deanery-wide visits as set out in the GMC's Quality Framework for Specialty Training. The GMC has also published an Operational Guide for the Quality Framework, detailing the practical implementation of the quality framework.

The GMC generic trainee survey, developed with COPMeD, currently covers all medical specialties and it is anticipated that it will operate on a biennial basis.

Deanery-wide visits are defined by the GMC as 'high level, light touch,' and focus on the quality management processes of deaneries. It is anticipated that the regional visits will review an individual deanery every five years. The visiting panel is selected from a pool of agreed GMC visitors, which can include some SAC members. Where Deanery visits highlight serious training issues, the GMC has the facility to trigger smaller, focussed visits with trusts.

c) Logbook Monitoring

The trainees in T & O currently use the BOA – Edinburgh Logbook the data contained in which belongs to the trainee. Certain key individuals within the training programme have access to that data with the permission of the trainee:

- The programme director has access to the data from the area they administer.
- The SAC liaison officer has access to the trainees' data in their region of responsibility.

- The SAC chairman has access to all programmes throughout the United Kingdom and Ireland.

This gives the SAC a powerful tool to access all data allowing programmes to be compared both from the perspective of both the range and number of procedures carried out. An individual trainee will be evaluated on the basis of how he or she compares with the national average for any given procedure.

Consolidation evidence will be provided in whatever form the Deans and the PMETB require.

d) TRIANGULATION BACK TO EXAMS

The SAC are represented on the Intercollegiate Examination Board responsible for setting the content and standard of the FRCS (T & O) examination. Examination questions are set and mapped against the Clinical Knowledge syllabus laid down within the curriculum. The clinical component of the examination is also expected to follow the profile of the curriculum.

The SAC are provided, through the Examination Board, with a breakdown of individual marking performances of the examiners. Examiners with a marking profile at the extreme of the distribution of the marks can be identified and the pass rate of individual programmes can be compared. Such data is always interpreted in context and is never disseminated in its raw form.

e) EDUCATIONAL MONITORING

Individual Trainee Appraisal

The Educational Appraisal meeting at which the learning agreement is agreed and reviewed must be done on at least 3 occasions, the beginning, middle and end of the attachment. Job plans, courses and general progress can also be discussed at this point along with any personal issues.

Contracts can be reviewed and changed according to individual circumstances in consultation with the programme director. Trainees must also return their feedback to the Deanery using the relevant ("green") assessment forms.

This Educational Appraisal process can be formalised at any time by the invitation of a member of the Deanery if necessary. Such meetings are documented in an open and transparent manner (once or twice per year).

The Annual Review (ARCP/RITA)

This is a formal review process held on a regular basis (once per trainee per year). It is controlled by the Post Graduate Dean. Evidence of progress of training must be demonstrated at this meeting by the portfolio. The portfolio includes:

- Logbook reports
- PBA Summary sheets
- Course record
- Trainers report
- Exam evidence (if appropriate)
- Record of research
- Record of audit
- Record of publications
- Record of presentations

Any courses or specific future development for the trainee can be planned at such a meeting.

The core ARCP/RITA team consists of the Programme Director, the Regional Advisor and the Post Graduate Dean (or representative). In addition a member of the university department and a member of the STC are normally included. A trainer can be invited to discuss a particular trainee if necessary on an open, transparent procedure basis. The SAC liaison officer should be present at the ARCP/RITA process, particularly when there are perceived problems within the programme.

13. FACULTY DEVELOPMENT

The faculty (trainers, clinical supervisors, assigned educational supervisors …) who deliver the curriculum are clearly central to that curriculum's success. The 2006 T & O curriculum in its A5 format was warmly received by the entire T & O community but there is clearly a wide variation in the approaches taken by trainers in delivering it. OCAP has had no access to funding for faculty development but in the absence of such funding the following measures have been taken:

a) Briefings

All T & O training programmes have been offered a curriculum briefing. Many (though not all) have taken up the offer. A briefing involves a session of between 1-3 hours with trainees and trainers, in which the basic principles of the curriculum in its written and online form are explained with most of the session being allocated to questions and discussion.

b) PowerPoint guides

The OCAP website contains guides in PowerPoint format on all aspects of the curriculum. This offers trainers and trainees the opportunity to review (together or separately) the curriculum tasks in a format with which they are familiar and in such a way that all processes are broken down into a step-by-step approach.

c) Training the Trainers: Essentials of the T & O Curriculum

This is a one-day course delivered at the BOA Congress each year. It not only covers an introduction to the basics of the curriculum but also gives trainers the tools to identify their own skills and plan their own personal development in acquiring a broad base of training competencies.

Trainer compliance: as part of the TtT Essentials course trainers are required to review their own compliance with the PMETB standards for trainers. It is our intention to eventually build a compliance questionnaire into the trainer profile pages of OCAP Online.

14. Further Work and Development

As indicated from the start this is a living curriculum and will change when it is rational to instigate developments which are evidence based either directly from our own monitoring or through a review of current best practice. Quality assurance will be designed to enhance the curriculum. We also acknowledge we have particular pieces of work to complete.

These include:-

- Ongoing review and development of the PBAs
- Further validation and reliability testing of the assessment instruments
- Further blueprinting such that workplace based assessments integrate with formal tests and examinations
- The competency proving of trainers
- Assessment of professional skills competencies
- Development of an "academic" syllabus
- Further development of OCAP Online
- Design and development of advanced curriculum modules

We anticipate a sustained programme of work prioritising the need to ensure that assessment instruments would stand up to challenge in any disputes.

Ongoing review and development of the PBAs

Our ongoing consultation in pilots in Northern and North Western Deaneries and with our trainees and some trainers on a panel suggest we should extend the range of PBAs in some specialty specific areas. This has been alluded to in the list on PBAs in the assessment section.

Further validation and reliability testing of the assessment instruments

Pilot testing of PBAs and a triangulation exercise with the logbook has confirmed that the PBAs have at least face validity. Funding was received by a Sheffield team lead by Jonathan Beard for a reliability and validity study of PBA's across disciplines. The study has recently been completed and is expected to report in the immediate future.

Further blueprinting such that workplace based assessments integrate with formal tests and examinations

We have illustrated a curriculum map which can be linked to good clinical practice and can indicate where examinations can define the best methodologies for testing knowledge in particular. The challenge will be to consolidate the whole map onto a living blueprint which can define the scope and depth of assessment by ensuring workplace based assessments appropriately triangulate with set piece examinations. The tension between undue overlap and assurance of sufficient assessment to indicate reliability is still a challenge to be met. We do not however feel alone in this deficiency and would welcome opportunities to share best practice and solutions with other medical disciplines.

The competency proving of trainers

We have alluded to the essential "buy in" by busy practicing orthopaedic surgeons who understand their obligations to training. However we have also alluded to current tensions between that necessity and the need to deliver timeous, high quality and accountable service. In general the best trainers are the best practitioners, but formulating that competency is a challenge.

We again acknowledge that we are not alone and we are anxious to reach agreement through PMETB on how we might assure training competency over and above what we have achieved so far. Whatever the vital educational imperative to achieve this it cannot be divorced from current tensions in political and terms and conditions of service issues.

We welcome the PMETB standards for trainers and hope in the near future to develop material on standards for "trainer-training" courses to help trainers in the T & O community to not only select wisely from the increasing number of courses that are becoming available but also to explore every means of developing, maintaining and accrediting their skills as trainers, eg accreditation of prior learning, online modules, in-service projects, etc.

Assessment of Professional Competencies

Clinical Skills will be assessed in the workplace and so must "professional" skills. The same constraints apply and so a similar assessment method must be developed.

It remains our intention to identify a series of "indicative activities", for example:

- Giving a presentation
- Writing a report
- Chairing a meeting
- Conducting a briefing session

Plus others to cover range of professional skills

Each activity will have an Activity Based Assessment (ABA) in a similar format to the existing PBA, with competence statements that can be mapped across a wide range of activities.

A pilot version of such a form is in development using the validated Non Operative Technical Skills in Surgery (NOTSS) system from the RCSEd/University of Aberdeen project. Full details of NOTSS can be found on the website (www.abdn.ac.uk/iprc/notss).

Academic syllabus

Academic Clinical Fellowships (ACFs) and Clinical Lecturers (CL) have very recently been appointed in T & O as a consequence of the Walport report. ACF's are aimed at those who, at the early stages of their specialty training, show outstanding potential for a career in academic medicine. Entry can be at ST1, 2 or 3, and includes allocation of an academic NTN. CLs are aimed at doctors with a PhD/MD who already have specialty training experience. They will usually already have an NTN. CLs apply for further research funding and do postdoctoral research whilst working towards completion of specialty training. A syllabus for Integrated Clinical and Academic Training in Trauma and Orthopaedic Surgery is in discussion and preparation at present. A paper summarising the present position is included as Appendix (e).

Further development of OCAP Online

Although many features of OCAP Online are already in place and continue to be refined as a response to user feedback, there are a number of aspects still in development:

- The reporting module will allow users to export their information in a variety of customisable formats. This will not only meet the needs of the slightly varying ARCP across the UK but also enable greater lifelong use of the information in personal development and career planning.

- The programme directors pages will eventually take the form of a desktop alert system (part of our vision since 2002) which will regularly survey training activity and generate visual alerts for the programme director together with summaries and overviews for inclusion in reports.

- OCAP Mobile has formed part of the vision of OCAP since its inception. A Palm based version of the logbook has been available for some time, it is intended to extend that functionality to other platforms for the whole of the T & O curriculum. The 2006 curriculum document is already available for the iPhone in Mindmap format.

Design and development of advanced curriculum modules

We are in the process of engaging the subspecialty societies and organisations within Trauma and Orthopaedics to draw together more detailed syllabi and materials for the later years of training and in particular for advanced training fellowships.

15. Appendices

a) Sample Assessment Tools

- **Case-based Discussion (CbD)**

Intercollegiate Surgical Curriculum Pilot

Case-based Discussion (CbD)

Please complete the questions using a cross: ☒ Please use black ink and CAPITAL LETTERS

Trainee's surname:

Trainee's forename:

GMC Number: Hospital:

Trainee level: ST1 ☐ ST2 ☐ ST3 ☐ ST4 ☐ ST5 ☐ ST6/7 ☐

Specialty: ☐ Cardio ☐ General ☐ Neuro ☐ O&M ☐ Otol ☐ Paed ☐ Plast ☐ T&O ☐ Urology

Clinical setting:

Clinical problem category:

Focus of clinical encounter: Medical record keeping ☐ Clinical Assessment ☐ Management ☐ Professionalism ☐

Complexity of case: Low ☐ Average ☐ High ☐

Please grade the following areas using the scale below:	Below expectations for level of training		Borderline for level of training	Meets expectations for level of training	Above expectations for level of training		U/C*
	1	2	3	4	5	6	
1. Medical Record Keeping							
2. Clinical Assessment							
3. Investigation and Referrals							
4. Treatment							
5. Follow-up and Future Planning							
6. Professionalism							
7. Overall Clinical Judgement							

* U/C Please mark this if you have not observed the behaviour and therefore feel unable to comment.

Anything especially good?	**Suggestions for development:**
Agreed action:	

Not at all — Highly

Trainee satisfaction with CbD 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐

Assessor satisfaction with CbD 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐

Have you had training in the use of this assessment tool?
☐ No ☐ Yes: Face to face
☐ Yes: Read Guidelines ☐ Yes: Web/CD Rom

Time taken for observation (in minutes): ☐

Time taken for feedback (in minutes): ☐

Assessor's signature: ..... GMC Number Date: / /
(Educational Supervisor)

Assessor's name:
(Educational Supervisor)

- **Direct Observation of Procedure Skills (Surgical DOPS)**

Intercollegiate Surgical Curriculum Pilot
Direct Observation of Procedural Skills (Surgical DOPS)

Please complete the questions using a cross: ☒ Please use black ink and CAPITAL LETTERS

Trainee's surname:

Trainee's forename:

GMC number: Hospital:

Specialty: ☐ Cardio ☐ General ☐ Neuro ☐ O&M ☐ Otol ☐ Paed ☐ Plast ☐ T&O ☐ Urology

Trainee level: ST1 ☐ ST2 ☐ ST3 ☐ ST4 ☐ ST5 ☐ ST6/7 ☐

Procedure Number: Name of procedure:

Assessor's position: Consultant ☐ SASG ☐ SpR ☐ Nurse ☐ Other HCP ☐ Self ☐

Difficulty of procedure: Easier than usual ☐ Average difficulty ☐ More difficult than usual ☐

Number of times procedure performed by trainee:

Please grade the following areas using the scale below:	Below expectations for level of training		Borderline	Meets expectations	Above expectations for level of training		U/C*
	1	2	3	4	5	6	
1. Describes indications, relevant anatomy, & details of procedure							
2. Obtains informed consent, after explaining procedure & comps							
3. Prepares for procedure according to an agreed protocol							
4. Administers effective analgesia or safe sedation (if no anaesthetist)							
5. Demonstrates good asepsis and safe use of instruments/sharps							
6. Performs the technical aspects in line with the guidance notes							
7. Deals with any unexpected event or seeks help when appropriate							
8. Completes required documentation (written or dictated)							
9. Issues clear post-procedure instructions to patient and/or staff							
10. Communicates with patient & staff in a professional manner							
11. Overall ability to perform whole procedure*							

* U/C Please mark this if you have not observed this aspect and therefore feel unable to comment.

Please use this space to record areas of strength or any suggestions for development

Assessor training? No ☐ Written ☐ Web/CD ☐ Workshop ☐ Time taken for observation (mins): _____
Time taken for feedback (mins): _____

Assessor's surname:

Assessor's signature: ..... GMC Number Date: / /

	Not at all									Highly
Trainee satisfaction with Surgical DOPS	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐
Assessor satisfaction with Surgical DOPS	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐

Acknowledgements: Adapted with the permission of the UK Royal Colleges of Physicians

Surgical DOPS

Completed and available on ISCP Website	Author
Application of a secondary cast in the plaster room during a fracture clinic to a forearm or leg	David Rowley
Insertion of traction pins	David Rowley
Intra articular injections for joint aspiration	David Rowley
Removal of K wire	David Rowley
Opening and closure of a wound	David Rowley
Debriding a simple wound	David Rowley
Excision and direct suture of skin lesion	
Use of Z-plasty	

- **Mini-Clinical Evaluation Exercise (CEX)**

Intercollegiate Surgical Curriculum Pilot

Mini-Clinical Evaluation Exercise (CEX)

Please complete the questions using a cross: ☒ Please use black ink and CAPITAL LETTERS

Trainee's surname:

Trainee's forename:

GMC Number: Hospital:

Trainee level: ST1 ☐ ST2 ☐ ST3 ☐ ST4 ☐ ST5 ☐ ST6/7 ☐

Specialty: ☐ Cardio ☐ General ☐ Neuro ☐ O&M ☐ Otol ☐ Paed ☐ Plast ☐ T&O ☐ Urology

Clinical setting:

Clinical problem category:

New or FU: New ☐ FU ☐ Focus of clinical encounter: History ☐ Diagnosis ☐ Management ☐ Explanation ☐

Complexity of case: Low ☐ Average ☐ High ☐ Assessor's position: Consultant ☐ SASG ☐ SpR ☐ Other HCP ☐ Self ☐

Please grade the following areas using the scale below:	Below expectations for level of training		Borderline for level of training	Meets expectations for level of training	Above expectations for level of training		U/C*
	1	2	3	4	5	6	
1. History taking							
2. Physical Examination Skills							
3. Communication Skills							
4. Clinical Judgement							
5. Professionalism							
6. Organisation/Efficiency							
7. Overall Clinical Care							

* U/C Please mark this if you have not observed the behaviour and therefore feel unable to comment.

Anything especially good?	**Suggestions for development:**
Agreed action:	

Not at all — Highly

Trainee satisfaction with Mini-CEX 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐

Assessor satisfaction with Mini-CEX 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐

Have you had training in the use of this assessment tool?
☐ No ☐ Yes: Face to face
☐ Yes: Written Training ☐ Yes: Web/CD Rom

Time taken for observation (in minutes): ☐

Time taken for feedback (in minutes): ☐

Assessor's signature: ..... GMC Number ☐☐☐☐☐☐☐ Date: / /

Assessor's surname:

Acknowledgements: Adapted with the permission of the American Board of Internal Medicine

- **Mini-PAT (Peer Assessment Tool)**

Intercollegiate Surgical Curriculum Pilot

Mini-PAT (Peer Assessment Tool)

Please complete the questions using a cross: ☒ Please use black ink and CAPITAL LETTERS

Trainee's surname:

Trainee's forename:

Trainee's GMC number: Hospital:

Assessor's name:

How do you rate this trainee in their:	Below expectations for level of training		Borderline for level of training	Meets expectations for level of training	Above expectations for level of training		U/C*
	1	2	3	4	5	6	
Good Clinical Care							
1. Ability to diagnose patient problems							
2. Ability to formulate appropriate management plans							
3. Awareness of their own limitations							
4. Ability to respond to psychosocial aspects of illness							
5. Appropriate utilisation of resources e.g. ordering investigations							
Maintaining good medical practice							
6. Ability to manage time effectively/ prioritise							
7. Technical skills (appropriate to current practice)							
Teaching and Training, Appraising and Assessing							
8. Willingness and effectiveness when teaching/training colleagues							
Relationship with Patients							
9. Communication with patients							
10. Communication with carers and/or family							
11. Respect for patients and their right to confidentiality							
Working with colleagues							
12. Verbal communication with colleagues							
13. Written communication with colleagues							
14. Ability to recognise and value the contribution of others							
15. Accessibility/Reliability							
16. Overall, how do you rate this doctor compared to a doctor ready to complete this level of training?							

* U/C Please mark this if you have not observed the behaviour and therefore feel unable to comment.

Do you have any concerns about this doctor's probity or health? [ ] Yes [ ] No

If yes please state your concerns:

PTO:

Anything especially good?	Please describe any behaviour that has raised concerns or should be a particular focus for development:

Your gender: ☐ Male ☐ Female

Your ethnic group:

☐ British	☐ Bangladeshi
☐ Irish	☐ Other Asian background
☐ Other white background	☐ White and black Caribbean
☐ Caribbean	☐ White and black African
☐ African	☐ White and Asian
☐ Any other black background	☐ Any other mixed background
☐ Indian	☐ Chinese
☐ Pakistani	☐ Any other ethnic group

Which environment have you primarily observed the doctor in?
(please choose one answer only)

☐ Inpatients	☐ Intensive care
☐ Outpatients	☐ Theatre
☐ Both In and Out-patients	☐ Other (please specify)
☐ A&E/Admissions	

Your position: ☐ Consultant ☐ SASG ☐ SpR ☐ Foundation/PRHO ☐ Nurse ☐ SHO ☐ Allied Health Professional ☐ Other (please specify)

If you are a Nurse or AHP how long have you been qualified? ☐ years

Length of working relationship: ☐ months

Have you had training in the use of this assessment tool?

☐ No

☐ Yes: Have read guidelines

How long has it taken you to complete this form? (in minutes)?: ☐

Assessor satisfaction with mini-PAT: Not at all 1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐ 8☐ 9☐ Highly 10☐

Assessor's signature: .....GMC Number ☐☐☐☐☐☐☐ Date: / /

Assessor's name: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Acknowledgements: Mini PAT is derived from SPRAT (Sheffield Peer Review Assessment Tool)

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c) OCAP: PROCESS & PROGRESS (ADDITIONAL INFORMATION)

OCAP is a practical attempt to improve the quality of HST in orthopaedics through the introduction of a competence based portfolio of coaching and assessment tools.

OCAP is a joint programme of the BOA and orthopaedic SAC initiated (using industrial sponsorship) by a group of experienced orthopaedic trainers following the JCHST Working Party report in 2002, based on work going back to the early 1990's. That report recommended that trainees' portfolios should include competence focused assessments covering a wide range of surgical and 'generic' skills. The project has the full backing of BOTA who have provided invaluable input and support.

Assessing Diverse Experience

OCAP's work on competence assessment began with a review of four training centres. Each of these centres delivers its orthopaedic service (and training) in an entirely different "geography". If trainees are to be assessed in the work place then the assessment tools must in some way take into account this difference between the work places in which they are being assessed. These workplaces differ not only in the facilities for education but also in the length of attachments, frequency of supervised sessions and attitudes to training and teaching (naturally some of these factors vary within each centre and between trainers). This work was followed up later with questionnaires which revealed a wide variation in even the most basic aspects of training experience. As changing circumstances reduce the time available for training, and the volume of experience available to the trainee OCAP is an attempt to structure the training experience so that the trainee can derive maximum benefit from it.

OCAP has tried to limit the effect of these differences and maximise training opportunities by creating a "delivery mechanism" within which the assessments sit.

More Paperwork?

Trainees and trainers already face a mountain of paper. Although the OCAP tools will be implemented initially as a set of simple paper based items they have been designed from the start with the potential to fit both desktop PC and PDA environments. Eventually this will not only erode the paperwork mountain but also facilitate audit. However, using an electronic platform does raise technical, training and data protection issues, with which we continue to grapple with increasing success.

Key design features

The core feature of the materials is that they are driven by the trainee and, beyond the initial creation of a trainer profile, they place no extra demands on the trainer. They are competence focused (an assessment of what can be 'observed' in the workplace) and deliberately designed with an open architecture to respond to new developments. The OCAP tools have already been adapted in collaboration with the General Surgery (OPCOMP) team and are seen as a model of good practice by PMETB.

We have been careful to validate the selection and content of the PBA's and continue to ensure that they are not only reliable but also robust and fit for purpose.

Consultation and collaboration have been key features of the OCAP project to date and all feedback on any aspect of the project is welcomed.

Materials can be downloaded from the OCAP website (www.ocap.org.uk) using e-logbook passwords and user names.

d) OCAP: SAMPLE TOOLS

- **Procedure Based Assessment – Total Knee Replacement**

Trauma & Orthopaedics PBA 4: Total Knee Replacement

Trainee:	**Assessor:**	**Date:**
Start time:	**End time:**	**Duration:**
Operation more difficult than usual? Yes / No (If yes, state reason)		

Score: **N =** Not observed or not appropriate **U =** Unsatisfactory **S =** Satisfactory

	Competencies and Definitions	Score N / U / S	Comments
I.	**Consent**		
C1	Demonstrates sound knowledge of indications and contraindications including alternatives to surgery		
C2	Demonstrates awareness of sequelae of operative or non operative management		
C3	Demonstrates sound knowledge of complications of surgery		
C4	Explains the perioperative process to the patient and/or relatives or carers and checks understanding		
C5	Explains likely outcome and time to recovery and checks understanding		
II.	**Pre operative planning**		
PL1	Demonstrates recognition of anatomical and pathological abnormalities (and relevant co-morbidities) and selects appropriate operative strategies/techniques to deal with these e.g. nutritional status		
PL2	Demonstrates ability to make reasoned choice of appropriate equipment, materials or devices (if any) taking into account appropriate investigations e.g. x-rays		
PL3	Checks materials, equipment and device requirements with operating room staff		
PL4	Ensures the operation site is marked where applicable		
PL5	Checks patient records, personally reviews investigations		
III.	**Pre operative preparation**		
PR1	Checks in theatre that consent has been obtained		
PR2	Gives effective briefing to theatre team		
PR3	Ensures proper and safe positioning of the patient on the operating table		
PR4	Demonstrates careful skin preparation		
PR5	Demonstrates careful draping of the patient's operative field		
PR6	Ensures general equipment and materials are deployed safely (e.g. catheter, diathermy)		
PR7	Ensures appropriate drugs administered		
PR8	Arranges for and deploys specialist supporting equipment (e.g. image intensifiers) effectively		
IV.	**Exposure and closure**		
E1	Demonstrates knowledge of optimum skin incision / portal / access		

Competencies and Definitions		Score N / U / S	Comments
E2	Achieves an adequate exposure through purposeful dissection in correct tissue planes and identifies all structures correctly		
E3	Completes a sound wound repair where appropriate		
E4	Protects the wound with dressings, splints and drains where appropriate		
V.	**Intra Operative Technique**		
IT1	Follows an agreed, logical sequence or protocol for the procedure		
IT2	Consistently handles tissue well with minimal damage		
IT3	Controls bleeding promptly by an appropriate method		
IT4	Demonstrates a sound technique of knots and sutures/staples		
IT5	Uses instruments appropriately and safely		
IT6	Proceeds at appropriate pace with economy of movement		
IT7	Anticipates and responds appropriately to variation e.g. anatomy		
IT8	Deals calmly and effectively with untoward events/complications		
IT9	Uses assistant(s) to the best advantage at all times		
IT10	Communicates clearly and consistently with the scrub team		
IT11	Communicates clearly and consistently with the anaesthetist		
IT12	Demonstrates familiarity and understanding of the use of alignment jigs		
IT13	Understands tibial and femoral referencing		
IT14	Understands flexion and extension gap balance		
IT15	Demonstrates ability to achieve a balanced tibial femoral and patellofemoral implantation		
IT16	Demonstrates ability to cement the components into place		
VI.	**Post operative management**		
PM1	Ensures the patient is transferred safely from the operating table to bed		
PM2	Constructs a clear operation note		
PM3	Records clear and appropriate post operative instructions		
PM4	Deals with specimens. Labels and orientates specimens appropriately		

Global summary

Level at which completed elements of the PBA were performed		Tick as appropriate	Comments
Level 0	Insufficient evidence observed to support a judgment		
Level 1	Unable to perform the procedure under supervision		
Level 2	Able to perform the procedure under supervision		
Level 3	Able to perform the procedure with minimum supervision (would need occasional help)		
Level 4	Competent to perform the procedure unsupervised (could deal with complications)		

Signatures:

Trainee:	Assessor(s):

- **Procedure Based Assessment Validation Worksheet**

Procedure-Based Assessment Validation

Specialty: Trauma & Orthopaedics	Procedure: PBA 4: Total Knee Replacement

Competencies and Definitions		Positive Behaviours (doing what should be done)	Negative Behaviours (doing what shouldn't be done)	Negative – Passive Behaviours (not doing what should be done)
I.	**Consent**			
C1	Demonstrates sound knowledge of indications and contraindications including alternatives to surgery	Explains using examples relevant to the patient: ▪ Principle benefit of operation ▪ Subsequent improvement of function ▪ Limitations of surgery ▪ Consequences of not having surgery	Expresses unrealistic views of the improvement in function expected following the procedure	Fails to point out the limitations of the operation
		Indicates pain relief as principle, aim of operation and improvement of function being subsidiary to that. Discusses limitations of activities relative patients age and specific requests	*Glosses over potential difficulties related to activities such as kneeling or playing sport*	*Fails to point out limitations of a TKR in very active patients, particularly patients who require considerable bending*
C2	Demonstrates awareness of sequelae of operative or non operative management	Describes consequences, agrees expectations and checks patient understanding	Is over confident in describing consequences, reinforces patient's unrealistic expectations	Fails to mention key inevitable consequences
		Show through discussion they can understand the long term issues around wear and loosening, risks of infection and specific limitations regarding movement and kneeling	*Overrides legitimate concerns patient may have*	*Not discussed the risk of infection. The long term effects in terms of loosening*
C3	Demonstrates sound knowledge of complications of surgery	Explains in priority order the complications likely to occur in terms of commonality and in terms of seriousness	Spends time explaining rare complications and fails to mention commoner ones	Misses out one or more major complications when explaining to trainer or patient
		Describes infection as the principle problem followed by the much more remote risk of dislocation and indicates the problems of the		

Competencies and Definitions		**Positive Behaviours** (doing what should be done)	**Negative Behaviours** (doing what shouldn't be done)	**Negative – Passive Behaviours** (not doing what should be done)
		potential stiffness and the need for rehabilitation		
C4	Explains the perioperative process to the patient and/or relatives or carers and checks understanding	Describes what will happen throughout the management of the condition indicating clear post operative milestones giving a rough idea of time involved and specifying who will do what. Questions the patient to check that their expectations are realistic and they have understood fully	Uses technical terms, explains too quickly and does not check understanding	Misses out common events, particularly those likely to happen in the early post operative period
		Discusses the likely length of stay. The need for post operative physiotherapy and rehabilitation and that the knee replacement gradually shows dramatic improvement followed by a more gradual improvement		
C5	Explains likely outcome and time to recovery and checks understanding	Expresses sensible prognosis and clearly has knowledge of the current outcome data	Expresses over optimistic outcomes and glosses over realistic difficulties	Fails to check that the patient has understood by actively listening to the patients reiteration of what is being said to them
		Able to articulate realistic likelihood of longevity of the knee implant showing clear knowledge of the current outcome data	*Expresses over optimistic outcomes in terms of high levels of function for example playing sport and kneeling and squatting*	
II.	**Pre operative planning**			
PL1	Demonstrates recognition of anatomical and pathological abnormalities (and relevant co-morbidities) and selects appropriate operative strategies/techniques to deal with these e.g. nutritional status	Articulates the realistic clinical findings against any investigative findings and achieves a balance between the two	Describes an operative plan without the full use of the clinical and investigative material	Fails to take into account specific medical conditions that might limit the technical choices
		Looks at the standing x-ray both AP and lateral and in discussion indicates the likely prosthesis to be used and is able to defend their position	*Simply indicates they will use the routine prosthesis irrespective of whether that is appropriate or not*	*Having for example noted calcification on the artery still intends to use a tourniquet without being able to defend that position*
PL2	Demonstrates ability to make reasoned	Draws, writes or iterates a	Does not take into account	Fails to check the notes for relevant

Competencies and Definitions		Positive Behaviours (doing what should be done)	Negative Behaviours (doing what shouldn't be done)	Negative – Passive Behaviours (not doing what should be done)
	choice of appropriate equipment, materials or devices (if any) taking into account appropriate investigations e.g. x-rays	pre operative plan	investigative findings when planning or selecting the equipment	or unexpected findings
		Takes standing x-rays AP and a standard lateral	*Does not check that the AP film is a true standing film*	*Fails to check the lateral x-ray, in particular the patella position and makes all the decisions on an ill defined AP x-ray*
PL3	Checks materials, equipment and device requirements with operating room staff	Either personally visits or rings up the operating theatre to check on equipment availability	Delegates the task to a more junior team member with no plans to check the instruction has been carried out	Fails to communicate with the theatre staff
PL4	Ensures the operation site is marked where applicable	Personally marks the site	Delegates the task of marking the site to a junior doctor or nurse	Fails to check that the site has been marked
PL5	Checks patient records, personally reviews investigations	Ensures that the relevant information such as investigative findings are present, checks wristband	During the procedure asks theatre staff to look something up in the notes	Fails to check notes to ensure all information is available that is needed
		Ensures that the x-rays are placed on the viewing box at the time of the operation		
III.	**Pre operative preparation**			
PR1	Checks in theatre that consent has been obtained	Checks the consent form in the notes	Leaves the consent checking to nurses or junior medical staff	Makes no effort to check the consent form in the notes
PR2	Gives effective briefing to theatre team	Checks with nurse that they have all equipment needed ready to hand and discusses planned actions	Complains when something not available during the procedure. Asks for something which results in theatre staff to go on a hunt for it	Makes no attempt to discuss operation with team
		Checks with the theatre that they anticipated range of implants in the pre operative plan are in fact available		
PR3	Ensures proper and safe positioning of the patient on the operating table	Prior to scrubbing supervises the positioning of the patient	Delegates the task to a theatre orderly and does not check	Concentrates on the process of scrubbing up while the patient is being transferred onto the operating table
		Arranges for the patient to be placed in a supine position with appropriate supports for the foot and protects the		

Competencies and Definitions		Positive Behaviours (doing what should be done)	Negative Behaviours (doing what shouldn't be done)	Negative – Passive Behaviours (not doing what should be done)
		other leg. Personally supervises the process		
PR4	Demonstrates careful skin preparation	Personally paints the operative field and ensures the material covers the whole surface	Paints (or supervises) the operative field leaving gaps or inadequate coverage	Delegates painting to an unsupervised member of the team or fails to check that the area has been adequately painted
PR5	Demonstrates careful draping of the patient's operative field	Drapes (or supervises draping of) the operative field to adequately expose site ensuring only prepared site is exposed	Exposes an inadequate area for the incision/access	Fails to secure drapes adequately
PR6	Ensures general equipment and materials are deployed safely (e.g. catheter, diathermy)	Checks with the anaesthetic nurse that the diathermy has been placed well away from any existing metal implants	Delegates the task unsupervised to the anaesthetic nurse or orderly	Fails to brief the team if metalware is in place in the other limb
		Ensures the tourniquet is sufficiently high to give proper access to the knee. Checks with the anaesthetic nurse that the diathermy has been placed well away from any existing metal implants	*Does not check the tourniquet position ensuring access e.g. Delegates the task unsupervised to the anaesthetic nurse or orderly*	*e.g. makes team aware presence of metalware in the other limb or THR on same side*
PR7	Ensures appropriate drugs administered	Checks notes, liaises with anaesthetic team to ensure prescribed drugs administered	Assumes drugs have been administered without checking	Fails to check with anaesthetic team that drugs have been administered
PR8	Arranges for and deploys specialist supporting equipment (e.g. image intensifiers) effectively	Briefs and discusses with the team where equipment is to be placed relative to the operative field	Takes no regard of where equipment is placed such as diathermy scabbard and/or places it in a position where the devices can't be used safely	Ignores the set up procedure in the immediate pre operative period and has a conversation with a third party
		Personally ensures that the stabilizers and sandbags are properly position so that a suitable degree of flexion can be satisfactorily obtained		
IV.	**Exposure and closure**			
E1	Demonstrates knowledge of optimum skin incision / portal / access	Verbally states or marks with a pen the anatomical landmarks prior to	Makes an incision that is clearly too small or too large	Does not extend an incision when struggling for access

Competencies and Definitions		Positive Behaviours (doing what should be done)	Negative Behaviours (doing what shouldn't be done)	Negative – Passive Behaviours (not doing what should be done)
		making the incision		
E2	Achieves an adequate exposure through purposeful dissection in correct tissue planes and identifies all structures correctly	Gives a running commentary to the trainer of the structures encountered	Describes the structure encountered in the dissection in the wrong location	Tries to maintain the standard approach despite the fact that access is proving difficult
E3	Completes a sound wound repair where appropriate	Closes each layer without tension	Ties very tight sutures, clearly strangulating soft tissue	Leaves too large a gap between sutures so that structures are not properly opposed
		Ensures the knee flexes whilst sutures are in place		*Fails to check that the knee can be flexed after the reconstruction*
E4	Protects the wound with dressings, splints and drains where appropriate	Personally supervises the application of the wound dressing	Walks away from the operating table without briefing the assistant or the nurse what they require to cover the wound	Fails to specify required dressing
V.	**Intra Operative Technique**			
IT1	Follows an agreed, logical sequence or protocol for the procedure	Justifies actions at any point in procedure	Spends a lot of time removing superfluous tissue	When a difficulty is encountered fails to complete manoeuvre
IT2	Consistently handles tissue well with minimal damage	Personally places self retaining retractors and checks whether the skin is under tension	Pulls and tears tissue. Allows the wound edges to become dry	Fails to recognise tissue damage
IT3	Controls bleeding promptly by an appropriate method	Responds calmly by applying pressure initially. Briefs the team about what will need to be done – e.g. asks assistant to be ready for diathermy	Grabs in a non systematic manner at soft tissue and indiscriminately applies diathermy. Continues with a dissection despite welling up of blood in the field	Fails to act calmly. Fails to brief team. Fails to control blood flow.
IT4	Demonstrates a sound technique of knots and sutures/staples	Draws soft tissue together without tension and forms proper reef knots	Pulls tissues tight so that the tissues blanche. Lets a wound edge gape or pulls one layer of tissue under another	Fails to use the correct method or technique
IT5	Uses instruments appropriately and	Asks for instruments in a timely	Uses an instrument for a purpose it is	Fails to ask for correct instruments at

Competencies and Definitions		Positive Behaviours (doing what should be done)	Negative Behaviours (doing what shouldn't be done)	Negative – Passive Behaviours (not doing what should be done)
	safely	manner anticipating what is needed	not intended. Takes whatever is given to them then complains	the correct time
IT6	Proceeds at appropriate pace with economy of movement	Lets the nurse know what is to be done or needed next	Stops and starts, picking things up and then putting them down without using them. Spends a long time on a task not appropriate to the pace	
IT7	Anticipates and responds appropriately to variation e.g. anatomy	When encountering something unexpected stops and verbalizes concerns with the team	Persists in a task that is proving difficult and has to be stopped	Fails to recognize anatomical variation and has to be stopped
IT8	Deals calmly and effectively with unexpected events/complications	Verbalises that there is a problem and briefs the team what needs to happen next	Verbalises negative concerns and issues conflicting instructions. Tries to continue inappropriately (has to be stopped)	Fails to brief the assistant adequately
IT9	Uses assistant(s) to the best advantage at all times	Briefs assistants and places them and the instruments where they are needed	Accepts whatever assistant does irrespective of whether or not appropriate	Fails to brief assistant and expresses irritation when positions are not what are required
IT10	Communicates clearly and consistently with the scrub team	Sets positive tone with appropriate greeting. Asks for instruments clearly. Informs as to next steps. Asks for instruments by correct name	Uses rough or inappropriate tone of voice or words. Uses slang or 'local' descriptions of instruments	Gives no greeting, does not ask for anything (but expects to be given it)
IT11	Communicates clearly and consistently with the anaesthetist	Sets positive tone with appropriate greeting. Sets clear goals and expectations	Proceeds with next step of procedure without anaesthetic advice (where required)	Fails to inform anaesthetist of key phase requiring anaesthetic cooperation
IT12	*Demonstrates familiarity and understanding of the use of alignment jigs*	*Clearly indicates to the nurse what instrument is required next in the sequence of jigs. In particular indicates whether they will proceed down a femoral or tibial route first*	*Responds aggressively to being offered the wrong jig because it is not that which they asked for.*	*Does not ask positively for exactly what they require in terms of jig in the appropriate sequence*
IT13	*Understands tibial and femoral referencing*	*Iterates clearly that they are using anterior posterior or transcondylar referencing principles in the use of the jigs*	*Enable to iterate a firm conclusion as to what referencing system they are using*	*Places the jig with no obvious regard to femoral rotation*

Competencies and Definitions		**Positive Behaviours** (doing what should be done)	**Negative Behaviours** (doing what shouldn't be done)	**Negative – Passive Behaviours** (not doing what should be done)
IT14	*Understands flexion and extension gap balance*	*Uses the blocks to indicate they are balancing the flexion and extension gap and uses associated rods*	*Fails to use alignment devises to demonstrate balance*	*Fails to check the position of the anatomical axis*
IT15	*Demonstrates ability to achieve a balanced tibial femoral and patellofemoral implantation*	*Places trial components and patella component included if appropriate. Carries out a thumbs off test*	*Makes no attempt to use the trial implants to check position and flexion extension.*	*Goes straight from blocks to final implants without using appropriate range of provisionals*
IT16	*Demonstrates ability to cement the components into place*	*Briefs the nurse when ready to insert cement. Places the cement on the bone and/or the implant without using too much or too little. Pushes the components into place with the appropriate devices. Removes excess cement and ensures the cement is retained under compression until it is demonstrably set at the implant interface*	*Continues to flex and extend the knee before the cement is set.*	*Fails to ensure that the articulating surfaces are free of cement before it goes hard and does not retain compression on the implant until the cement is demonstrably set*
VI.	**Post operative management**			
PM1	Ensures the patient is transferred safely from the operating table to bed	Personally takes part in the transfer of the patient from the operating table to the bed.	Leaves the operating room prior to the transfer	Fails to check patient once they are in bed
		Checks the patients leg is lying comfortably and that there are palpable distal pulses and capillary filling		
PM2	Constructs a clear operation note	Makes a legibly written or clearly dictated note	Writes illegibly, mumbles on dictaphone	Fails to write or dictate anything at all
PM3	Records clear and appropriate post operative instructions	Writes in clear text a list of post operative instructions in the notes	Gives verbal instructions to a passing nurse	Fails to write anything in the notes at all
PM4	Deals with specimens. Labels and orientates specimens appropriately	Personally arranges specimens for pathologist	Delegates checking labels to junior	Does not label specimens

- **Trainer Profile:**
  a) Mini CV

CLARE MARX FRCS

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PERSONAL NOTES

I trained at University College London and after SHO jobs became a registrar and then Senior registrar in London on the Westminster UCH and RNOH rotation. My fellowship was at the Brigham and Women's Hospital Boston MA in Arthroplasty surgery.
In 1990 I became a Consultant at St Mary's and St Charles' Hospital London with a special interest in lower limb Arthroplasty. During this time I was involved with and wrote one of the original modules for the STEP distance learning course for the Royal College of Surgeons and organised the introductory course for the clinical students at St. Mary's
I taught and ran ATLS courses in London and then Ipswich.
In 1993 I moved to Ipswich where I have continued to practise predominately lower limb arthroplasty. I am a member of BHS and BASK
I was Clinical director for Orthopaedics for 4 years, Chairman of the LNC and Chairman of the Medical Staff Committee.

ORGANISATIONS / WIDER RESPONSIBILITIES

Presently
Chairman of the Specialist Advisory Committee in Trauma and Orthopaedic Surgery (2006-2008)
-Currently writing the T&O Curriculum for PMETB
-Planning T&O Specialist Training with MMC
Chairman of the Quality Assurance working group of the Intercollegiate surgical curriculum project.
Member of the Board and Examiner for the Intercollegiate Specialty Exam in Trauma and orthopaedics
Member of the Council of the British Orthopaedic Association
I have undertaken Professional standards reviews and reported for the health Service Ombudsman.

PUBLISHED WORK

Papers with reference to Hip and knee replacements

ESSENCE OF PRACTICE

My elective practice is now almost entirely devoted to adult lower limb primary and revision arthroplasty. The practice attracts difficult primary and revision problems and tertiary referrals.

In addition there is a regular on call Trauma duty.

EXPECTATIONS OF TRAINEES

I'm looking for trainees who are	I am irritated by trainees who are
Keen to learn and involve themselves with the clinical and organisational aspects of the attachment, and who are prepared to question and discuss my clinical decisions.	Untidy, disorganised, unforthcoming and arrive late for clinical duties.

b) Procedures Profile

A J Banks PROCEDURES PROFILE

Trainee:				Post/Post No:
Trainer 1: A J Banks				GMC No:
Trainer 2:				Year of Training:
Trust:				Attachment Start Date:
Target Dates:	A:	B:	C:	Attachment End Date:

***Notes**:*
Trainee to list experience level before 1st meeting using "A"
Both to agree on realistic end of attachment target using "C" at first meeting
This to be revised at mid attachment meeting "B" if necessary, with explanatory notes on learning contract form.

Procedure	Assessment				
	1	2	3	4	5
Trauma					
HIP					
Dislocated hip					
Dislocated hip closed reduction					
Dislocated hip open reduction +/- fixation					
Extracapsular fracture					
Extracapsular fracture CHS / DHS					
Extracapsular fracture intramedullary fixation					
Extracapsular fracture other fixation					
Intracapsular fracture					
Intracapsular fracture hemiarthroplasty					
Intracapsular fracture internal fixation					
Intracapsular fracture intracapsular fracture THR					
FEMUR					
Diaphyseal fracture					
Diaphyseal fracture intramedullary nailing					
Diaphyseal fracture plate/screw fixation					
Fasciotomy for compartment syndrome					
Subtrochanteric fracture					
Subtrochanteric fracture intramedullary fixation					
Subtrochanteric fracture plate/screw fixation					
Supracondylar fracture (not intraarticular)					
Supracondylar fracture (not intraarticular) DCS / blade plate etc					
Supracondylar fracture (not intraarticular) intramedullary fixation					
KNEE					
Acute haemarthrosis arthroscopy					
Acute ligament repair					
Intraarticular fracture distal femur ORIF					
MUA +/- POP					

Procedure	Assessment				
	1	2	3	4	5
Patella dislocation closed reduction +/- open repair					
Patella fracture ORIF					
Patella tendon repair					
Quadriceps tendon repair					
Tibial plateau fracture					
Tibial plateau fracture arthroscopically assisted fixture					
Tibial plateau fracture ORIF with plates & screws					
Tibial plateau fracture treatment with circular frame					
TIBIA & FIBULA					
Diaphyseal tibial fracture					
Diaphyseal tibial fracture external fixation (including frame)					
Diaphyseal tibial fracture intramedullary nailing					
Diaphyseal tibial fracture MUA & POP					
Tibial shaft plating					
Fasciotomy for compartment syndrome					
Tibial non-union					
Tibial non-union circular frame management					
Tibial non-union intramedullary nailing +/- bone grafting					
ANKLE					
Ankle fracture / dislocation					
Ankle fracture / dislocation MUA & POP					
Ankle fracture / dislocation ORIF					
Pilon fracture					
Pilon fracture ORIF					
Pilon fracture with circular frame					
Tendoachilles repair					
FOOT					
Amputation toe / ray for trauma					
Metatarsal fracture ORIF					
Phalangeal fracture MUA +/- K wire +/- ORIF					
Tendon repair					
TRAUMA GENERAL					
Removal foreign body from skin / subcutaneous tissue					
Removal K wires or skeletal traction					
Removal metal					
Split skin graft					
FOREARM					
Fasciotomy for compartment syndrome					
Fracture distal radius					
Fracture distal radius external fixation					

- Learning Agreement Form:

Learning Agreement Record

Trainee:	**Trust:**	**Year of Training:**
Trainer 1:	**Post/Post No:**	**Attachment Start Date:**
Trainer 2:	**GMC No:**	**Attachment End Date:**

1. Practicalities	**MEETING 1 --/--/--**	**MEETING 2 --/--/--**	**MEETING 3 --/--/--**
	Discussed Y / N		
a) Review timetable and on-call rota			
b) Explore practicalities of attachment (Planned absences, conferences etc for both Trainer and Trainee)			
c) Agree dates for future meetings • Mid-term review • End of attachment			
d) Discuss future Plans and Career Aspirations			
2. Educational Objectives and Assessments Summary (see overleaf for detail)			
f) Have the targets within the Learning Agreement been achieved? Y / N (please specify any actions or recommendations for future attachments)			
3. Trainee End of Attachment Reflections			
a) Significant experience in addition to routine training (courses, meetings etc)			
b) Reflections on total attachment experiences			
c) Conclusions drawn from attachment			
d) Plans, targets & personal goals for next attachment			

2. Educational Objectives and Assessments	**MEETING 1** --/--/--	**MEETING 2** --/--/--	**MEETING 3** --/--/--
	Discussed Y / N (plus notes in addition to Trainer Profile)		
a) Applied Clinical Skills (Procedure Profile)			
b) Applied Clinical Knowledge (Knowledge Profile)			
c) Professional & Management			
d) Audit / Research Activity			
e) Assessments: • Identified & Reviewed?			
• Completed (whole or in part?)			
• PBA Summary Sheet completed?			

Signatures:

Trainers:	**Trainee:**	**Date:**

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■ ANNOTATION

Assessment of performance in orthopaedic training

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The reliable measurement of performance is a problem faced by training authorities worldwide. At a recent international orthopaedic conference, none of a group of experienced orthopaedic educators could report significant progress on this issue.

The current Record of In Training Assessment (RITA) process which relies on simple assessment forms filled in by trainers and trainees is regarded widely as inadequate and lacking in objectivity. More robust evidence is needed.

The Orthopaedic Competence Assessment Project (OCAP), a combined initiative of the Education Committee of the British Orthopaedic Association and the Specialist Advisory Committee (SAC) in Trauma & Orthopaedics was given the remit to improve training through a competency-based portfolio of coaching and assessment tools. These instruments had to be easily understood by a range of trainers and trainees, not time-consuming and simple to apply.

OCAP recognises the need for a battery of tools to address the different aspects of performance. These have been described by Miller[1] who refers to different levels of assessment which are best tested in different ways (Fig. 1). In Miller's pyramid, 'knowing' and 'knowing how' are reliably tested in well-defined examination formats and set-piece assessments, such as clinical examinations and orals can monitor 'shows how'. However, 'does' requires real-time assessment and it is to this need that OCAP has responded.

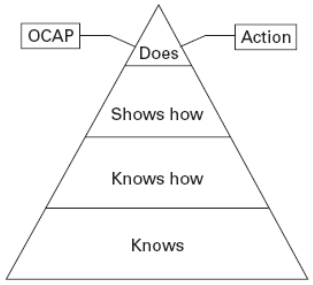

Fig. 1

Miller's pyramid.

Any assessment needs to be valid and reliable. Validity is well served by real clinical situations. Reliability, which is equally important, requires a tool which is practical, consistent and easy to repeat.

The instruments described below follow the principles of Miller[1] and Norman.[2] In this arti-

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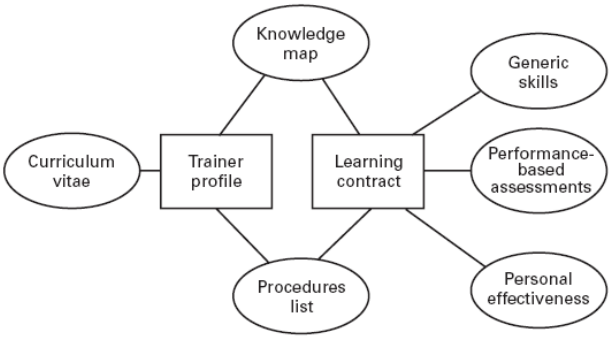

Fig. 2

Diagram of the Orthopaedic Competence Assessment Project system and tools.

PROCEDURES PROFILE

Procedure	Assessment				
	1	2	3	4	5
Hip					
Slipped upper femoral epiphysis					
Slipped upper femoral epiphysis open reduction		A			G
Slipped upper femoral epiphysis pinning		A			G
THR					
THR cemented		A			G
THR hybrid	A			G	
THR surface replacement	A			G	
THR uncemented		A			G

Fig. 3

An extract from Procedures Profile showing trainee's estimate of their position at start (A) and goal (G) for end of attachment (1, know about; 2, seen; 3, managed with help; 4, managed; 5, confident to manage).

KNOWLEDGE PROFILE

Topic	Progress plan			
	1	2	3	4
Hip				
Clinical assessment				
▪ A sound knowledge of clinical assessment of the hip, lumbosacral spine and knee. Particular reference should be paid to the gait, the Trendelenburg sign, limb length, loss of movement and deformity at the joint			A	G
▪ The trainee needs to be well informed of current opinion regarding aetiopathogenesis, clinical presentation and appropriate investigation of:		A		G
o Proximal femoral fractures (intracapsular, extracapsular) and simple fracture dislocations of the hip			A	G
o Osteoarthritis and the inflammatory arthropathies		A	G	
o Perthes' disease		A	G	
o Slipped upper femoral epiphysis		A	G	
o Septic arthritis		A	G	
o Osteonecrosis		A	G	
o Soft-tissue conditions around the hip (snapping hip, gluteus medius tendonitis, etc)		A	G	

Fig. 4

An extract from Knowledge Map showing trainee's estimate (A) of their position at start and agreed goal (G) for end of attachment (1, knows of; 2, knows basic concepts; 3, knows generally; 4, knows specifically and broadly).

cle, we describe the instruments, their validation and how reliability might be ensured.

OCAP instruments (Fig. 2)

The package consists of two types of instrument: agenda setting/coaching, and assessment.

The agenda-setting instruments of the trainer profile have been piloted and found to be acceptable in two large training programmes in the United Kingdom. The assessment instruments are also complete in terms of validity, but reliability studies are ongoing. The personal effectiveness instruments which coach and test generic skills are at an early stage of development.

How OCAP works. In advance of an attachment, trainers and trainees exchange information about themselves. A trainee's portfolio is shared with the trainer who provides a personal profile for the trainee. This profile is easily formatted from a database of 'knowledge' and 'procedures' and

Table I. List of performance-based assessments

1	Clinic activity in trauma and orthopaedics
2	Debridement of a wound
3	Carpal tunnel decompression
4	Digital and palmar fasciectomy
5	Diagnostic arthroscopy and simple arthroscopic procedures
6	Total knee replacement
7	First ray surgery to the foot
8	Total hip replacement
9	Lumbar discectomy
10	Compression hip screw for intertrochanteric fracture neck of femur
11	Hemiarthroplasty intracapsular fracture neck of femur
12	Application of limb external fixator
13	Operative fixation of Weber B fracture of ankle
14	Fixation of patella fractures by tension band wiring
15	Fixation olecranon fractures by tension band wiring
16	Intramedullary nailing for femoral or tibial shaft fractures
17	Tendon repair
18	Closed management of fractures

outlines the surgical training available in an attachment. The profile describes the procedures the trainer performs regularly and the knowledge base to underpin this activity. Both parties then meet at the start of the attachment and draw up a learning agreement of which the key objectives are: to identify the trainee's level of knowledge and experience; to set realistic goals and expectations for the attachment; to agree the knowledge which should be acquired during the attachment and to define those aspects of the trainee's performance to be assessed at the end of the attachment.

The agreement needs regular review by both parties, including a formal review at mid-attachment. However, plans may have to change according to circumstances. For example, a target may become unrealistic due to unforeseen circumstances such as ill health or prove to be overly optimistic. At the end of the attachment, the goals need to be compared with achievement. This comparison provides evidence for the summative RITA.

Figure 3 is an extract from a Procedures Profile showing a trainee's estimate (A) of their position at start of attachment and the goal for the end of the job (G).

Figure 4 is an extract from a Knowledge Map which similarly compares a trainee's estimate of their position at the start and finish of an attachment.

Performance-based assessments

A cornerstone of OCAP is the collection of performance-based assessments. These are formal, structured assessments of clinical activity (including surgical performance). They take a holistic approach, including understanding a problem, communicating, planning, operating and ensuring clear post-operative instructions.

Performance-based assessments identify and capture relevant activity, which is performed in sufficient numbers

Table II. The core content of performance-based assessments

I		Consent
	C1	Demonstrates sound knowledge of (contra) indications
	C2	Demonstrates sound knowledge of complications of surgery
	C3	Demonstrates awareness of specific problems at surgery generated by the disease being treated
	C4	Explains the peri-operative process to the patient and/or relatives and checks understanding
	C5	Explains likely outcome and time to recovery and checks understanding
II		Pre-operative planning
	PL1	Demonstrates recognition of anatomical and pathological abnormalities and operative strategy to deal with these
	PL2	Ability to make reasoned choice of appropriate device (if any) using appropriate investigations e.g. x-rays
	PL3	Checks equipment and device requirements with operating room staff
	PL4	Where applicable ensures the limb is marked
III		Pre-operative preparation
	PR1	Ensures proper and safe positioning of the patient on the operating table
	PR2	Ensures devices e.g. diathermy and tourniquet are deployed safely
	PR3	Arranges for and deploys supporting equipment e.g. imaging intensifiers effectively
	PR4	Adequately prepares a sterile operating field
IV		Exposure and closure
	E1	Demonstrates knowledge of optimum skin incision
	E2	Demonstrates respect for soft tissues including skin
	E3	Achieves an adequate exposure and identifies all structures correctly
	E4	Completes a sound reconstruction
	E5	Protects the wound properly with dressings and splints
V		Intra-operative technique
	IT1	Follows a logical sequence or protocol for the procedure
	IT2	Adheres to hospital protocols and policies
	IT3	Anticipates and responds appropriately to variation
	IT4+	See individual performance-based assessments for detail
VI		Closing the loop
	CL1	Ensures the patient is transferred from operating table to bed
	CL2	Construct a clear operation note, retaining the equipment documentation and checking x-rays where appropriate
	CL3	Gives documented and sensible post-operative instructions
	CL4+	See individual performance-based assessments for detail

Table III. An example of a logbook correlation

		A	STS	STU	P	T	Total exposure in years 1 to 6	Total actually performed in years 1 to 6
	All elective in Deanery X	353	314	137	190	7	1001	641
	All elective in Deanery X	391	223	84	247	20	965	554
1	Clinic activity in trauma and orthopaedics							
2	Debridement of a wound							
3	Hand – carpal tunnel decompression	4	6	4	40	6	60	50
4	Hand Dupuytren surgery	9	7	1	4	0	21	12
5	Knee arthroscopy with procedure	24	21	23	38	1	107	82
5	Knee arthroscopy	9	10	11	17	1	48	38
5	Shoulder and elbow – shoulder arthroscopy with procedure	10	7	1	1	0	19	9
5	Shoulder and elbow – shoulder arthroscopy	2	2	1	1	0	6	4
6	Joint replacement knee	51	39	5	12	1	108	56
7	Foot and ankle – hallux valgus surgery	13	10	1	7	1	32	18
7	Foot and ankle – lesser toe surgery	5	6	2	6	0	19	14
7	Foot and ankle – midfoot and hindfoot surgery	13	5	1	3	0	22	9
8	Joint replacement hip	62	38	4	12	1	117	54
9	Spine – discectomy	7	2	0	0	0	9	2
9	Spine – decompression	6	2	0	0	0	8	2
10	Trauma – hip fractures (intracapsular)	8	13	7	59	8	95	79
11	Trauma – hip fractures (extracapsular)	3	6	7	47	10	73	60
12	Trauma – application of external fixator	5	5	1	5	1	17	11
13	Trauma – ORIF* ankle	5	10	4	33	4	56	47
14	Trauma – ORIF patella	1	1	0	2	0	4	3
15	Trauma – ORIF olecranon	1	2	1	5	1	10	8
16	Trauma – femoral nails	6	9	3	8	1	27	20
16	Trauma – tibial nails	3	6	1	6	1	17	13
17	Hand – tendon repair	3	3	1	13	1	21	17
18	Trauma – MUA† + Kirschner wiring	3	4	8	59	8	82	71

* ORIF, open reduction and internal fixation

† MUA, manipulation under anaesthesia

A, assisted; STS, surgeon with trainer scrubbed; STU, surgeon with trainer present but unscrubbed; P, surgeon with trainer available but not in the operating room; T, teaching junior surgeon

often enough to allow reliable measurement. They allow data capture through observations of a series of similar events. This is akin to the mini clinical examination and history taking skills (CEX) and simple practical procedures such as establishing an intravenous line which are based on work by Norcini et al.[3] They found that snapshots of clinical activity can be used reliably provided about 15 similar but unrelated events are assessed by properly trained observers. The Royal College of Physicians expects about 40 CEX's to be provided over the five years of Higher Medical Training (personal communication).

OCAP uses a Delphi method (consensus of an expert group) of validating performance-based assessment. We identified 18 activities which were felt by a nominated group of experts to be representative of trauma and orthopaedic surgery. These include work in the wards and clinics, and commonly performed operations (Table I). Each operation is split into domains, including consent, common to pre-operative planning, preparation and surgical technique. Each domain has further components, the majority being all the performance-based assessments and all can be related to the outcomes defined in 'Good Clinical Practice'.[4] In each domain the trainee is required to demonstrate evidence of knowledge and skills (Table II).

In order to validate the performance-based assessment and its domains, meetings of trainers and trainees took place in two regions of the United Kingdom. These were followed up by postal questionnaires. The overwhelming response was that the instruments are relevant, easily usable and supported the impression of the Delphic groups, confirming that the identified performance-based assessments are realistic.

More recently we correlated the current performance-based assessment with the frequency of activity reported in the National Trauma and Orthopaedic Log Book.[5] Table III shows that in general the Delphi method of identifying commonly performed procedures is confirmed. However, there are problems ensuring that the procedures are performed often enough to permit reliable interpretation of data. For example, there was strong consensus that the application of an external fixator contains unique competencies. However, trainees seldom encounter this procedure outside a specialist attachment. As Sher et al[6] point out, unless all training opportunities are used it would be difficult adequately to assess competence in many procedures.

The strengths of OCAP include a consolidation sheet which not only lists procedures but also maps the domains of competency (Fig. 5). This permits a training director to record experience of core procedures and identify progress in the domains. For example, a trainee may be performing well technically but be consistently identified as a poor communicator. Such observations, especially when made

PBA consolidation sheet

Trainee: ______________________________

Trainer(s): ______________________________ **Date(s):** ______________________________

	Technical																																	
	Consent					Pre op planning						Pre op prep'n				Expose close					Intra op tech								Closing loop					
	C1	C2	C3	C4	C5	PL1	PL2	PL3	PL4	PL5	PL6	PR1	PR2	PR3	PR4	E1	E2	E3	E4	E5	IT1	IT2	IT3	IT4	IT5	IT6	IT7	IT8	CL1	CL2	CL3	CL4	CL5	CL6
Indicative procedures (PBA)	Implications & complications	Specific problems	Perioperative	Outcome/recovery		Anatomy & pathology	Devices & investigations	OR staff				Positioning	Device safety	Equipment safety	Sterile field	Incision	Soft tissue	Exposure	Reconstruction	Wound protection	Individual features	Logical protocol	Follows protocol	Variations					Patient transfer	Op note	Post op instructions			

Additional significant experience	Reflections on total attachment experiences	Conclusions drawn from attachment	Plans & personal goals for next attachment

Fig. 5

An example of the performance-based assessment consolidation sheet

by different observers, provide powerful information for appraisal.

The current status of OCAP

OCAP instruments have been reviewed and triangulation studies indicate they are valid. Early work shows they are reliable and further inter-observer studies are under way. Trainers and trainees have been provided with a structure based on conventional educational instruments and given a means of mapping back to core competencies. The evolving synergy with the orthopaedic log book gives strong supporting evidence of training activity.

We now have a curriculum which meets the standards prescribed by national validating bodies and uses practicable language and taxonomy for trainers and trainees.

The authors acknowledge the contribution of the members of the OCAP steering group (Tony Banks, Peter Briggs, Nick Clarke, Chris Howell, John Edge, Alan Norrish, Phil Turner, Keith Willett) and numerous trainers and trainees who continue to make invaluable contributions to the project.

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e) INTEGRATED CLINICAL AND ACADEMIC TRAINING IN TRAUMA AND ORTHOPAEDIC SURGERY

Briefing note for the SAC in T & O from Prof. Damian Griffin, Sept. 2009

Background

In 2005, the Walport report1 described the lack of a coherent career pathway for clinical academics in all specialties and outlined integrated academic training programmes (IATP) to run in parallel with clinical training. This was implemented in England and Wales by a series of competitions run by National Institute for Health Research Coordinating Centre for Research Capacity Development starting in 2006. Universities and NHS Trusts were invited to bid for central funding for IATPs to include Academic Clinical Fellows (ACF) and Clinical Lecturers (CL). T & O was identified as a shortage specialty for clinical academics, and encouraged to apply.

ACFs and CLs

ACFs are aimed at those who, at the early stages of their specialty training, show outstanding potential for a career in academic medicine. Entry can be at ST1, 2 or 3, and includes allocation of an academic NTN. During this time, alongside clinical training, ACFs develop their academic skills and are supported in preparing a grant application for a higher degree (typically a PhD). Taking up funding (including salary) from such an application marks the end point of an ACF. Maximum duration is 3 years and NIHR funding is 25% of base salary.

CLs are aimed at doctors with a PhD/MD who already have specialty training experience. They will usually already have an NTN. CLs apply for further research funding and do postdoctoral research whilst working towards completion of specialty training. Maximum duration is 4 years and NIHR funding is 50% of base salary.

Academic activity of ACFs and CLs can be in research or education, or a mixture of both. All ACF and CL posts must be approved by PMETB to count for specialty training. Ideally, a clinical academic T & O trainee would begin with an academic Foundation programme, obtain an ACF at ST1 or ST3, step out of clinical training for 3 years (around ST4) to complete a PhD, return to clinical training and obtain a CL, then do postdoctoral research whilst working toward CCT. Training would be extended by 3-5 years, assessed and managed through an extended ARCP process. He or she would be strongly placed for competition for a Senior Lecturer post, ideally to be part or fully funded by a Senior Research Fellowship such as those awarded by MRC.

IATPs in T&O

Warwick won the first programme in 2006, with 5 ACFs and 2 CLs to be appointed over 5 years. Newcastle and Stanmore won similar programmes in 2007. Oxford is part of a multispecialty programme, with one ACF in T & O. Leicester has one CL, locally funded as a University matching post. In a few cases (in London), new NTNs were issued from the academic pool, in the remainder, academic NTNs were supplied and equal numbers of NHS

training numbers withdrawn. To date, Warwick has appointed 4 ACFs, of whom 2 have obtained external PhD funding so far. Newcastle have appointed 3 ACFs of whom 2 have obtained funding. Stanmore has appointed 4 ACFs; 2 are applying for funding.

Other routes to clinical academic training

Trainees may take time out for academic training before or during specialty training without entering an IATP. If during training, then this will be designated as time out of programme for research (OOPR). It does not count as clinical training, but the trainee retains their NTN. There are substantial numbers of trainees performing such research training, including the following registered PhD students: Liverpool 4; Newcastle 1;

Nottingham 1; Oswestry 2; Oxford 10; and Warwick 5. Arrangements are different in Scotland, so, for example, Dundee has 2 SHEFC funded posts analogous to ACF.

Assessment

IATP is a major change in the organisation of clinical academic training. It is likely to be the most important route to Senior Lecturer posts and Chairs in the future. Support of these programmes gives T & O the best chance to produce applicants for clinical academic consultant posts that are competitive with other specialties. Replacement of NHS NTNs with academic NTNs leads to frequent and extended gaps in training programmes when ACFs or CLs are doing research, and alienates the NHS consultants on whom the clinical part of IATP depends. Providing academic NTNs as add-ons to programmes where appropriate would have little effect on total T & O numbers (2 or 3 per year). Not all suitable applicants are ready to embark on a clinical academic training programme at ST1 level. Later entry to IATPs, and alternative pathways to PhD training through OOPR provide much needed flexibility. Those who choose to do PhDs before ST1 should be given appropriate credit at ST1 shortlisting. Those who do not wish to undertake doctorate level training, but who are interested in research, may be best advised to undertake taught Masters or Masters by research degrees. MDs have little apparent place in these schemes, carry little weight with Universities (University of London has just withdrawn the degrees of MD and MS), and are not well recognised internationally.

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f) BLUEPRINT SAMPLES FOR EXAM DEVELOPMENT

Orthopaedic Surgery - Higher Surgical Training

Knee	Good clinical care			Communication skills				Maintaining good medical practice		Maintaining trust		Working with colleagues			Teaching and training		Basic sciences								Decision making ??	Research	Professional development				
Competences	History taking, examin., note keeping	Time & risk mgmt., decision making	Life support	With patients	With colleagues	With reports	Giving evidence	Learning	Evidence, audit & guidelines	Professional behaviour	Ethics & legal issues	Team members	Hospital & GP	Hospital & other agencies	Teaching	Presentations	Anatomy	Biomechanics & Bioengineering	Physiology, Biochemistry & Genetics	Bone & Joint disease: Ortho. Oncology	Bone & Joint disease: General	Investigations	Operative topics	Infection, thromboembolism & pain			Management	Leadership	Organisational awareness	Diversity	Learning
Ligamentous, bony & combined trauma																														
Arthritides																														
Inflammatory disease & infection																														
Benign & malignant conditions																														
Deformity																														
Epiphysial disorders																														
Osteochondritis																														
Discoid meniscus																														
Patello femoral & meniscal injury																														

Orthopaedic Surgery - Higher Surgical Training

Knee	Good clinical care			Communication skills				Maintaining good medical practice		Maintaining trust		Working with colleagues			Teaching and training		Basic sciences								Decision making ??	Research	Professional development				
Competences	History taking, examin., note keeping	Time & risk mgmt., decision making	Life support	With patients	With colleagues	With reports	Giving evidence	Learning	Evidence, audit & guidelines	Professional behaviour	Ethics & legal issues	Team members	Hospital & GP	Hospital & other agencies	Teaching	Presentations	Anatomy	Biomechanics & Bioengineering	Physiology, Biochemistry & Genetics	Bone & Joint disease: Ortho. Oncology	Bone & Joint disease: General	Investigations	Operative topics	Infection, thromboembolism & pain			Management	Leadership	Organisational awareness	Diversity	Learning
Instability of knee																														
Ligament def.																														
Synovial disorders																														
Soft tissue injuries																														
Ligament rupture																														
Dislocations of patella/tibia/fibula																														
Fractures of patella/tibia/fibula/ femoral part																														
Internal derangement of knee																														
Infections																														
Inflammation of bursae																														
Synovial disorders																														

g) ST1-2 LEARNING AGREEMENT FORM

Trauma & Orthopaedic SAC ST1-2 review document 160707

Trainee:				Post/Post No:
Educational supervisor				GMC No:
Clinical supervisor				
Trust:				Attachment Start Date:
Target review Dates:	Initial:	Interim	Final	Attachment End Date:

Notes:
mark box 1-4 with "A" as to where you think you started the attachment
mark box 1-4 with "B" for level achieved at end
either enter result of assessments when completed (1-4?) or enter date
If there are additional comments to be made on any element a number should be entered in the "comments" coloumn which corresponds to the comments table at the end of the document.
please write in extra compteencie/procedures you achieved in each area in addition to those listed
return this sheet to your T&O programme director at the end of each attachment

Topics / Competencies	Assessor initials & date(s)	Mini cex	DOPS	CBD	Mini PAT	MRCS	PBA	Other	1	2	3	4	Comments
Generic													
Basic sciences								MRCS Pt 1					
Basic Surgical Skills								BSS course cert					
The Assessment and Management of the Surgical Patient													
Perioperative Care													
Assessment of multiple injured patients including children													
Bleeding diathesis													
Venous thrombosis + embolism													
Nutrition								Case study audit pres					
Academic activity								Audit pres Observed teaching session					
Management of the dying patient													
Endocrine and Metabolic Disorders -													
Child Protection -								Direct observation					
Management of the dying patient													
Endocrine and Metabolic Disorders - Include metabolic bone disease & osteoporosis													
Trauma & Orthopaedics													
Trauma resuscitation													
Approach to multiple injury													
Approach to back pain													
Thromboprophylaxis in T&O													
Approach to the painful joint													
Assessment of the injured joint (knee/shoulder/wrist/hand/ankle)													
Management of open fracture													
Management of painful joint													
Management of painful back													
Cast for wrist fracture / below knee for ankle injury													
Removal of K wire													
Debridement traumatic/infected wound													

Topics / Competencies	Assessor initials & date(s)	Mini cex	DOPS	CBD	Mini PAT	MRCS	PBA	Other	1	2	3	4	Comments
Closed reduction +/- k-wiring of a wrist fracture													
Reducing a trochanteric fracture on traction table													
Approach for application of a DHS.													
Approach to distal fibula for fracture.													
Application of a plate to distal fibula													
Application of DHS for inter-trochanteric fracture													
Simple fractures and dislocations -								Logbook evidence					
Soft tissue injuries								Logbook evidence DOPS – debridement of wound					
Ankle fractures								Logbook evidence, DOPS – approach and plating distal fibula					
Proximal femoral fractures in the elderly -								Logbook evidence, DOPS – approach and application DHS					

[1] Know of [2] knows basic concepts/Seen [3] knows generally/Managed with help [4] knows specifically & broadly / Managed /Target achieved

Topics / Competencies	Assessor initials & date(s)	Mini cex	DOPS	CBD	Mini PAT	MRCS	PBA	Other	1	2	3	4	Comments
Neurosurgery													
Breaking bad news													
Management of spinal cord or cauda equine compression													
Neurological assessment and initial resuscitation of patient with coma or impaired consciousness													
History and examination of a patient with spinal claudication													
Application of skull traction / Burr hole / insertion of intracranial pressure monito													

[1] Know of [2] knows basic concepts/Seen [3] knows generally/Managed with help [4] knows specifically & broadly / Managed /Target achieved

Topics / Competencies	**Assessor** initials & date(s)	Mini cex	DOPS	CBD	Mini PAT	MRCS	PBA	Other	1	2	3	4	Comments
Plastic Surgery													
The multidisciplinary assessment of management of tibial fractures involving skin loss													
Management of patients developing pressure sores													
Assessment and non-operative management of the burns patient													
Examination of the injured hand													
V-Y advancement / SSG / FTSG / Excision & local flap / Digital nerve block / Primary repair of extensor of hand / Primary repair of flexor of hand / Wound exploration & debridement													

[1] Know of [2] knows basic concepts/Seen [3] knows generally/Managed with help [4] knows specifically & broadly / Managed /Target achieved 4/6

Topics / Competencies	Assessor initials & date(s)	Mini cex	DOPS	CBD	Mini PAT	MRCS	PBA	Other	1	2	3	4	Comments
General Surgery													
Superficial sepsis, including necrotising infections													
Venous disease and ulceration													
Nutrition													
Assessment of the acute abdomen history, examination or resuscitation													
Assessment of patients with possible intra-abdominal injuries													
Treatment of benign lesions of skin and subcutaneous tissues													
Diagnostic peritoneal lavage													

[1] Know of [2] knows basic concepts/Seen broadly / Managed /Target achieved [3] knows generally/Managed with help [4] knows specifically & 5/6

End of Attachment

Trainee Reflections
AES Comments/Recommendations
CS Comments / Recommendations

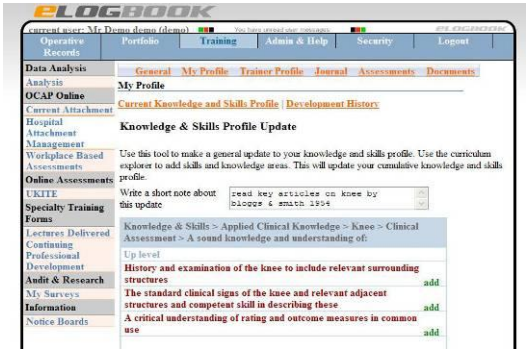
Additional Comments:

Comment No	Comment (trainee or trainer

[1] Know of [2] knows basic concepts/Seen broadly / Managed /Target achieved [3] knows generally/Managed with help [4] knows specifically & 6/6

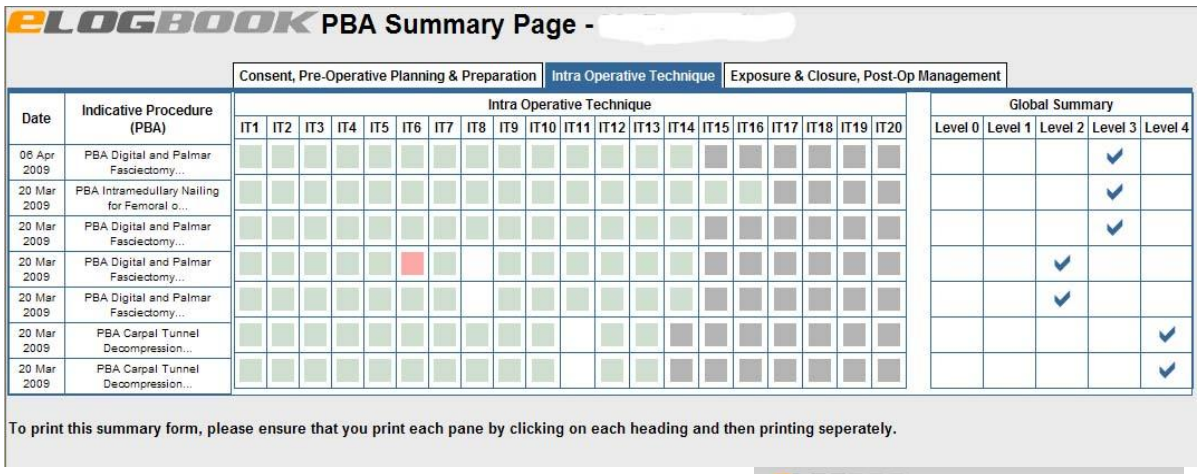
h) OCAP ONLINE SCREENSHOTS

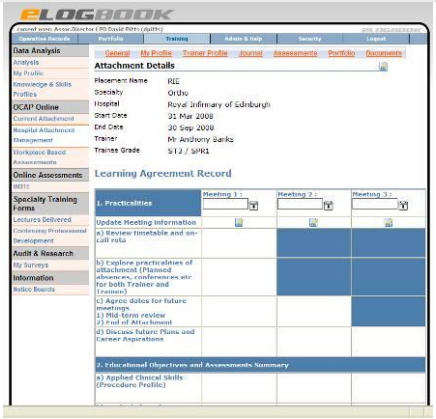
Online trainer profiles, together with the facility for trainees to support their trainer in creating them



Updateable knowledge and skills profiles for trainees to record and reflect on progress

PBA (and other assessment) summaries in graphic formats to easily track competence progress





Online learning agreements

i) FREQUENTLY ASKED QUESTIONS

Selection & Recruitment

1. **Will experience gained in undergraduate electives/attachments be considered in selection for run-through training?**

   Yes. Any extra-curricular experience gained as a student or postgraduate which helps the applicant to fulfil the entry requirements defined in this curriculum will be advantageous. This might include evidence of electives or special study modules where relevant skills, knowledge or attitudes have been enhanced.

2. **Will I be disadvantaged in the selection process if I have not worked in T&O during Foundation 1 & 2?**

   No. The content of your Foundation programme will not be considered. However, evidence of extra-curricular activity relevant to the entry requirements defined in this curriculum may be considered.

3. **Will experience gained in "time limited" training posts be counted towards future selection and progression for run-through training?**

   Yes, if trainees in time-limited training posts ensure that they continue to compile portfolios demonstrating the acquisition of the skills, knowledge and attitudes defined in this curriculum.

4. **What methods of appeal do I have if I believe my experience has not been fairly recognised towards selection or run-through training?**

   Your Foundation posts as such will not be taken into account but extra experience from courses, visits to departments, or voluntary experience can be. You can also submit information from your undergraduate folder. An appeals process will be run by appointing deaneries.

5. **How much importance will be attached to published research and higher degrees for selection into run-through training in T&O?**

   Research may be advantageous where it can be shown to have enhanced the relevant attributes of the applicant as set out in this curriculum. For example a completed project would help to demonstrate commitment. However, research alone will not fulfil all of the entry requirements defined in this curriculum.

6. **Can I sit the MRCS before being selected for run-through training and would this be advantageous in the selection process?**

   The MRCS or what replaced it is unlikely to be available pre selection it would confer no advantage in the selection process.

7. **What would happen if I wanted to change specialties after I have entered run-through training?**

   A trainee is entitled to apply for entry into another specialty at any stage of the training programme depending on the availability of training posts. Whether the trainee is successful will depend on their ability to fulfil the entry requirements of the desired specialty. If successful, the trainee's portfolio will be used to decide the level at which they can enter the desired training programme.

Syllabus and Assessment

1. **Can I progress to ST3 if I have not passed the generic exam in ST2?**

   No. Progression through training depends upon satisfactory completion of assessments at each stage. The exam is an important component of assessment during ST2.

2. **Where can I find evidence of the validity of the new WPBAs such as mini-CEX, DOPS, PATs and PBAs?**

   Mini-CEX, DOPS and PAT are primarily foundation tools that will be carried over into Higher Surgical Training but their use will diminish as HST progresses. PBAs have been developed specifically for Higher Surgical Training and have been extensively piloted in Orthopaedics which is where they originated. Some information on their development and validity can be found in a paper published last September (JBJS ref). In addition there is a more extensively reliability study being conducted in Autumn 2006 which will study the use of the instruments in General Surgery and Orthopaedics.

3. **What happens if I am deemed to be unsatisfactory in a work placed based assessment (WPBA)?**

   The trainee should have the opportunity to retake the WPBA as soon as the trainee and their trainer agree that sufficient further training has taken place. If the trainee continues to be unsatisfactory in WPBAs the programme director and ARCP/RITA panel will decide, on the basis of all the evidence in the trainees portfolio, if the trainee can receive further remedial training or if they should be removed from the training programme.

4. **What do I do if I disagree with the outcome of a WPBA?**

   The outcome should be discussed with the trainer and if necessary the programme director. With the agreement of the programme director the trainee should be permitted to take the WPBA once again with different assessors.

5. **What do I do if I believe the training in a particular attachment to be sub-standard?**

   The problem should first be discussed with the programme director or chair of the local training committee. If this is impractical or unsatisfactory then the trainee should contact the SAC link person for their training region. The trainee should consider collecting supportive evidence such as logbook data, corroboration from other trainees and request that the SAC review previous trainee assessments of the post in question.

6. **Have the rules for taking time out of training for research or personal reasons changed?**

   No. Trainees will still be entitled to request time out of programme. They will need to seek approval, as before, from the programme director, postgraduate dean and SAC.

7. **What happens if I do not pass the Intercollegiate Specialty Exam in ST7 or 8?**

   A trainee will not be able to obtain a CCT without successfully passing the intercollegiate specialty exam. Trainees will need to remain in training until they are successful or in very rare circumstances opt not to complete their training if they are unable to pass the exam.

8. **Can I complete my training in less than 8 years if I achieve my competencies more rapidly?**

   Completion of training will be defined by the issue of a CCT. This can be issued when the trainee can demonstrate to the SAC that they have satisfactorily attained all the competencies defined in this curriculum. It may, therefore, be possible for a few trainees to obtain a CCT in less than eight years.

Comment, criticisms and suggestions for improvement to this document/curriculum are welcomed.

Please address them in the first instance to:

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