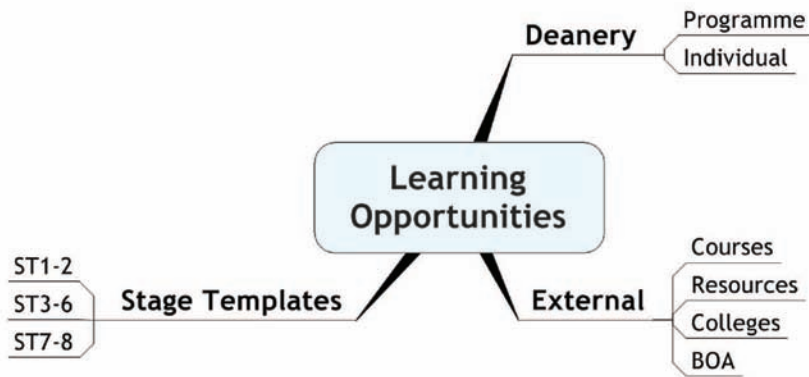


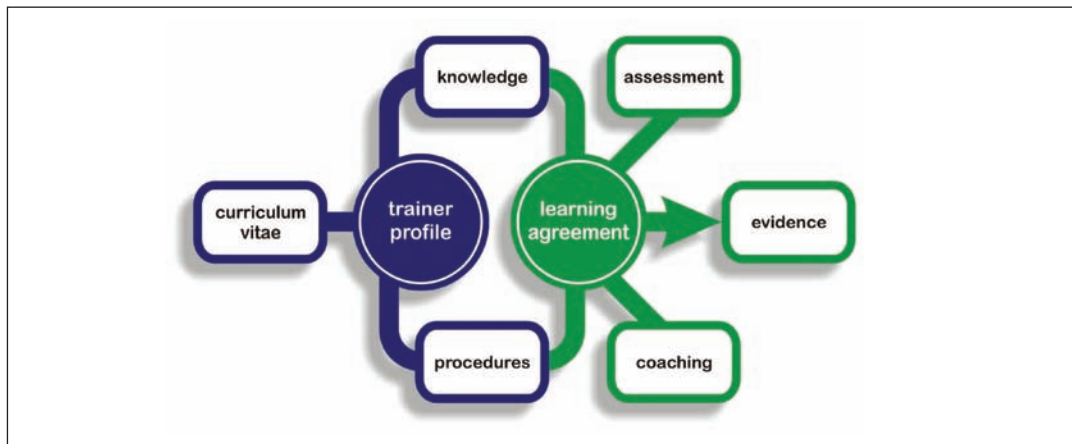
5. Learning Opportunities



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:



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 (RITA).

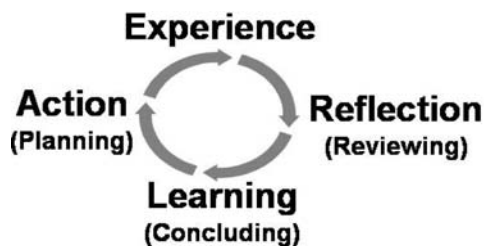
As the Orthopaedic Curriculum develops it is planned that adjustments will be made to the Learning Agreements through the mechanism of the trainer profile (and potentially through a trainee profile). The profiles and forms used throughout the learning agreement will in the immediate future be linked to the trainees’ e-logbook so that at a yearly formal Educational Review (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 will also offer 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 (c).

b) MODELS OF LEARNING

i. 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

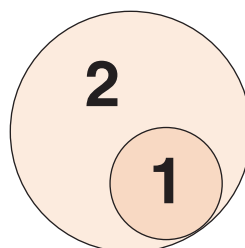


David Kolb's learning Cycle illustrates the importance of reflection in the learning process. Without the key activities of reflecting and drawing conclusions learning is reduced to a series of events with no connection to changes or improvements in behaviour or competence.

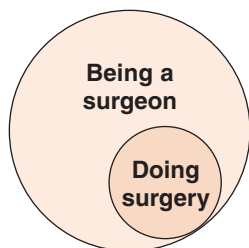
The T&O curriculum encourages reflective learning on the part of both trainer and trainee in the learning agreement. All trainers are required to reflect on their own practice in the production of a trainer profile which is shared with each trainee at the start of an attachment. The trainee in turn uses this profile to reflect on their own progress to date, sharing this with the trainer if 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.



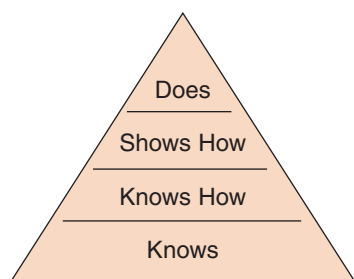
Similarly it is not enough for a surgical trainee to learn the specific details of clinical work (doing surgery) without simultaneously extending their competence in being a surgeon, a much wider activity.



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

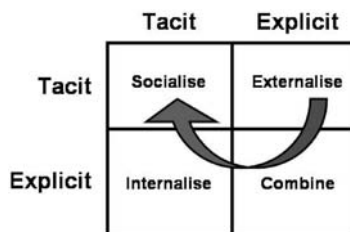


George Miller provided a framework for assessment in his pyramid model. In Miller's view a portfolio of assessments need to be used to evaluate the trainee at different levels.

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.

ii. 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 not required to have completed any formal training but where possible 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. This is discussed in “Further Work and Development” (see section 9-1).

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 Knowledge profile relating to the published syllabus
 - 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 program and 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

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 RITA process. As schools of surgery develop and 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.

External 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

e) STAGES OF LEARNING

i. The Early Years (ST1-2)

All SAC's through JCHST have agreed the generic component of skills and knowledge germane to the generality of surgery (see section 4-3). In addition the Professional and Management syllabus in this document details the generic qualities to be developed and assessed in the delivery of good clinical care. (see section 4-34)

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.

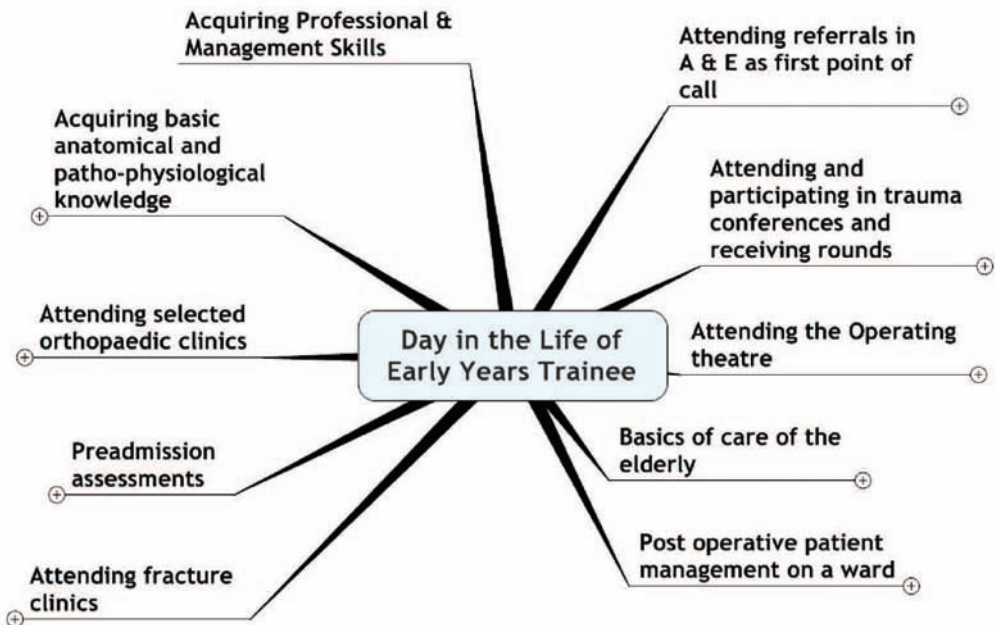
By the end of this fourth postgraduate year (ST2) the trainee should have acquired a sound ability to oversee the day-to-day management of inpatients and the supervision and support of the F1 and F2 doctors. The trainee should by this stage have demonstrated a sound understanding of reflective practice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

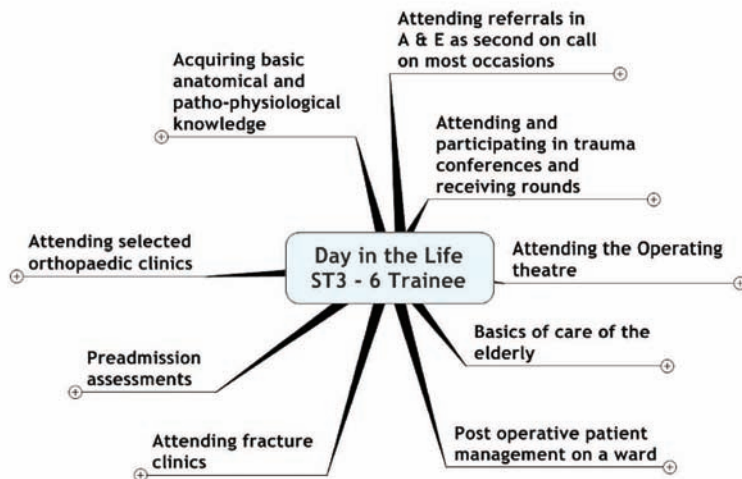
The ST1 module will be entirely devoted to Traumatology and depending on the competencies achieved at least 50-75% of available time in ST2 should be occupied with trauma related duties. By the end of the ST2 year the trainee will be expected to have completed the requirements of the test of knowledge prescribed for early years and the subsection related to T&O 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 pathophysiological 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 T&O 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. We therefore entirely subscribe to the Academy of Royal Colleges position as described in their recent report and reproduced here for ease of use in appendix (e).

Specifically we would encourage trainees who wish to follow an academic route 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.

There is a newly proposed teaching route and we have no experience of this at the moment. We would suggest the outline flow diagrams in appendix (e) could as easily be interpreted for teaching as well as research. All potential academic teachers should pursue their universities teaching and learning qualification policies.