Participation in Research
Guidance for awarding the CCST in Orthodontics

Recommendation for the award of CCST in Orthodontics and the recognition of the research component of training as part of this process

Background
In order for a trainee to apply to the General Dental Council (GDC) for the award of a Certificate of Completion of Specialist Training (CCST) and entry to the GDC Specialist list in Orthodontics, there must be evidence of:

- Satisfactory completion of the 3-year full time (or less than full-time equivalent) orthodontic training programme;
- Successful completion of the Membership in Orthodontics examination; **and**
- Satisfactory completion of the Health Education England (HEE) RCP process.

Participation in research within the Orthodontic curriculum
In the GDC-approved curriculum, it is expected that a specialist orthodontic trainee will have made a contribution to advancing scientific knowledge through the participation in research and/or evidence-based practice during their training. This activity contributes to the high-quality evidence base within the specialty and facilitates continual development of the scientific and clinical knowledge base in orthodontics.

Participation in research and/pr evidence-based practice for orthodontics will be achieved by successful completion of:

Route 1: Taught Clinical Masters, MRes, Doctorate or equivalent university higher degree in Orthodontics that involves an original research project undertaken during the specialty training programme; or

Route 2: An authored contribution normally, but not exclusively, within the speciality of orthodontics incorporating several of the above components and undertaken during the specialty training programme, based on original research, systematic review or a quality-improvement project and accepted for publication in a PubMed-listed journal; or delivered as an oral presentation by the trainee to a national or international conference; or

Route 3: Successful completion and approval of an NHS research ethics application undertaken during the specialty training programme with the trainee demonstrating direct involvement in the subsequent research project.

The research component of the programme serves to further the trainees' research experience to a level that is far more meaningful than critical appraisal skills alone. These additional skills include, but are not limited to, research integrity, research ethics, understanding the complexities of designing research studies, data collection, data interpretation, discussing new findings in the context of existing literature, understanding study limitations, and determining steps for further work. The projects undertaken are also expected to add to the orthodontic evidence base, provide equivalence with many international orthodontic training programmes and maintain the global reputation of UK orthodontic training. Additionally, managing the balance of research and clinical work commitments during a training programme, serves to build time-management skills at a specialist level, something that is required for all clinicians, regardless of the environment in which they ultimately work. The research learning outcome maps to Module 5.5.3 (Research experience) in the National Orthodontic Programme syllabus.

The interpretation of this by the Joint Committee for Postgraduate Training in Dentistry (JCPTD) and the Specialist Advisory Committee (SAC) in Orthodontics is that, as part of the objectives of the

training programme, a trainee should be capable of interpreting the scientific literature, undertake research activities, and prepare oral and written presentation of their research findings.

Assessment of participation in research

Research progress should form a key part of the RCP process and the trainee's assigned AES should be called upon to ensure that a clear plan for satisfying the research component of the curriculum is in place within the first six months of training, with clear identification of the research supervisor/s and an initial report detailing the trainee's progress within the relevant route at each RCP. It is particularly important that planned output/s for **Routes 2 and 3** are established at this stage and the RCP should be satisfied that these represent equivalence to those for **Route 1**. Careful monitoring by the RCP will be particularly important for those trainees satisfying the research and/or evidence-based practice component through **Routes 2 and 3**. There should be a specific academic panel member appointed to the RCP with responsibility for the assessment of research progress. It is particularly important for **Routes 2 and 3** that the RCP panel are satisfied that an authored contribution made by the trainee for a particular project has been a significant one, particularly for larger multi-investigator projects. Guidelines for authorship based upon the recommendations of the International Committee of Medical Journal Editors are included in the footnote below.

The suggested weekly timetable for an orthodontic trainee provides 1 session of protected research time – it should be ensured that a relevant protocol and delivery plan is in place early in the training pathway and at the latest, within six months. This will ensure that research time is not wasted.

Formal research milestones should be in place for reference at the RCP, which will allow the panel to monitor research progress. A rudimentary schedule is detailed below (with a degree of flexibility) to act as a guide.

The assigned AES should alert the Training Programme Director and the Postgraduate Dental Dean as soon as possible of any situations where a trainee's research progress is judged to be failing to meet the research milestones.

Footnote: International Committee of Medical Journal Editors guidelines for authorship https://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html

The ICMJE has developed criteria for authorship that can be used by all journals, including those that distinguish authors from other contributors. Contributors who meet fewer than all 4 of the these criteria for authorship should not be listed as authors, but they can be acknowledged.

- Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
- Drafting the work or reviewing it critically for important intellectual content; AND
- Final approval of the version to be published; AND
- Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

In addition to being accountable for the parts of the work done, an author should be able to identify which co-authors are responsible for specific other parts of the work. In addition, authors should have confidence in the integrity of the contributions of their co-authors.

Guidance for RCP Assessment of Participation in Research

Timing of RCP	Minimum progress expected if undertaking Route 1	Minimum progress expected if undertaking Route 2	Minimum progress expected if undertaking Route 3
Within 12 months of starting	Supervisors identified. Protocol agreed, ethical approval and R&D processes (where necessary) underway, critical appraisal of literature complete, sample size, material and methods agreed.	Supervisors identified. Protocol agreed, ethical approval and R&D processes (where necessary) underway, critical appraisal of literature complete, sample size, material and methods agreed. **Clear identification by the RCP panel of the defined contribution of the trainee to satisfy Route 2**	Supervisors identified. Protocol agreed, ethical approval and R&D processes (where necessary) underway and defined role in the subsequent project established. **Clear identification by the RCP panel of the defined contribution of the trainee required to satisfy Route 3.**
Within 24 months of starting	Project approvals complete. Data collection and analysis underway.	Project approvals complete. Data collection and analysis underway.	Project approvals complete.
Within 30 months of starting	Appropriate discussion and conclusions made. University project likely to be completed to the satisfaction of the academic supervisor within 5 months.	Appropriate discussion and conclusions made. Paper likely to be in a format ready for submission to a peer reviewed Pub-Med listed journal to the satisfaction of the supervisor within 5 months.	Evidence of clear role in subsequent active research project.
By end of training period (usually 36 months)	Project complete and dissertation/thesis submitted to the relevant university. Oral examination pending or complete (if appropriate).	Authored contribution, based on original research carried out during the training period, accepted by a Pub-Med listed journal.	Submission completed and approved by the RCP panel.