

Strategy for Incorporation of Cataract Surgery Simulation into Ophthalmic Surgical Training (OST) in Health Education England working across Yorkshire and the Humber

Introduction

A VRmagic EyeSi has been part of cataract surgery training in Yorkshire and the Humber since 2009 and is administered by Training Program Director for Simulation. The first EyeSi is currently located in Leeds. A second EyeSi was purchased in 2011 and is expected to stay in York. A third EyeSi was acquired for Sheffield in 2013.

The EyeSi is a simulator for intraocular surgery. The Leeds and Sheffield EyeSi will simulate both cataract and vitreoretinal surgery. The York EyeSi is cataract only. Each version comprises a 3D virtual reality interface incorporated into a physical operating microscope with foot pedal control. The microscope is mounted over an operating table supporting a model eye which is mobile within a model head. The user holds surgical instruments which can be inserted into the model eye and interact with the realistic tissues simulated within. Powerful computer software interprets movements of the foot pedal microscope controls, cataract operating machine controls and instrument movements within the model eye. These actions cause realistic reactions in the simulated tissues of the eye such that a whole cataract operation can be performed and scored and reviewed. No outcome is predefined and complications will occur with poor surgical technique. The EyeSi includes pre-programmed courses beginning with relatively abstract tasks which aid development of more complex motor skills in a stepwise manner.

Use of the EyeSi is compulsory for all trainees in OST. Defined targets in the EyeSi courseware must be reached. Descriptions of the EyeSi can be found at <http://www.vrmagic.com> and more detail about the EyeSi Courseware educational concepts and design in the Surgery Simulator Educator's Guide to Courseware 2.0.

New Entrants at ST1

ST1 trainees in YHD must complete the Royal College of Ophthalmologists (RCO) microsurgical skills course. This course introduces surgical skills in a wetlab environment in addition to an introduction to the EyeSi housed at the RCO. Completion of the course is a pre-requisite for scrubbing and operating in an ophthalmic operating theatre.

In the first month of ST1, HEYH OST trainees must also attend the compulsory cataract simulator and biometry course in York, Leeds or Sheffield. This course lasts includes

1. Orientation and care of the EyeSi
2. Familiarisation with the basics of EyeSi use
3. Provision of a unique username, password and training log
4. Aims of the EyeSi courseware
5. Future learning targets and timeframe

Progress is assessed using training log reports and observation by a trainer whenever possible. A final report is generated by the trainee for inclusion in the Educational Supervisors Report prior to ARCP1. Each ST1 must complete EyeSi courseware 2.0 Cataract Courses CAT-A and CAT-B before ARCP1. Individual trainers might expect an ST1 to complete CAT-A or both CAT-A and CAT-B prior to attempting live cataract surgery, although this is not yet compulsory.

ST2

In their second year of OST trainees must progress through CAT-C and CAT-D courses. Completion of this training will be assessed from their training log at ARCP2.

ST3 and above

From 2013 all trainees are expected to spend at least 10 hours of logged simulator time updating their simulator skills annually. Trainees may choose to introduce additional challenges during this training time; for example, they may sit temporally if they have previously sat at the head; they may learn to operate with their non-dominant hand; they may use the vitreo-retinal head & software. The training log report should be generated for inclusion in the educational supervisors report & uploaded to the eportfolio for consideration at the ARCP.

Senior trainees may also use up to half of their logged simulator time to train more junior trainees. Teaching is included in the OST curriculum (HS9) and is necessary for CCT. This will provide some evidence to map against this learning outcome. In order to evidence this activity the 'trainer' should document the time spent on each episode of training and reflect on the session. They should ask their 'trainee' to document & sign feedback for the session; both the clinical aspects of the training given & their communication & training style.

Trainees in difficulty

The EyeSi has been used to good effect for retraining trainees entering at ST3 and above who have been struggling with cataract surgery. Specific and tailored additional targets with more direct supervision are offered in remedial training using the EyeSi.

Booking system

The simulator can be used by one trainee at a time. There is a side display for an observer and it is not a waste of time for trainees to work in pairs (though they should each work within their own login) and critically appraise each other's technique. Trainees book slots during office hours. Details of how to book are found on the School of Ophthalmology website.

http://www.yorksandhumberdeanery.nhs.uk/ophthalmology/educational_programme/simulation

Equipment problems are reported immediately to the local simulator training lead via the relevant secretary or simulation centre staff.

It is not possible to use the EyeSi without a valid login. Access to the Simulator Suite itself is by ID swipe card.

Finance and replacement

HEYH provided funds for the purchase of the EyeSi.

Current use of the EyeSi generates additional income from OST study leave budget at a rate of £25 per session per trainee, to a maximum of £125 per trainee per year. Income and cost of repairs have been similar, to date.

The Deanery funds 0.25 PA to the Training Program Director for Simulation, currently Fiona Bishop, for administering the EyeSi.