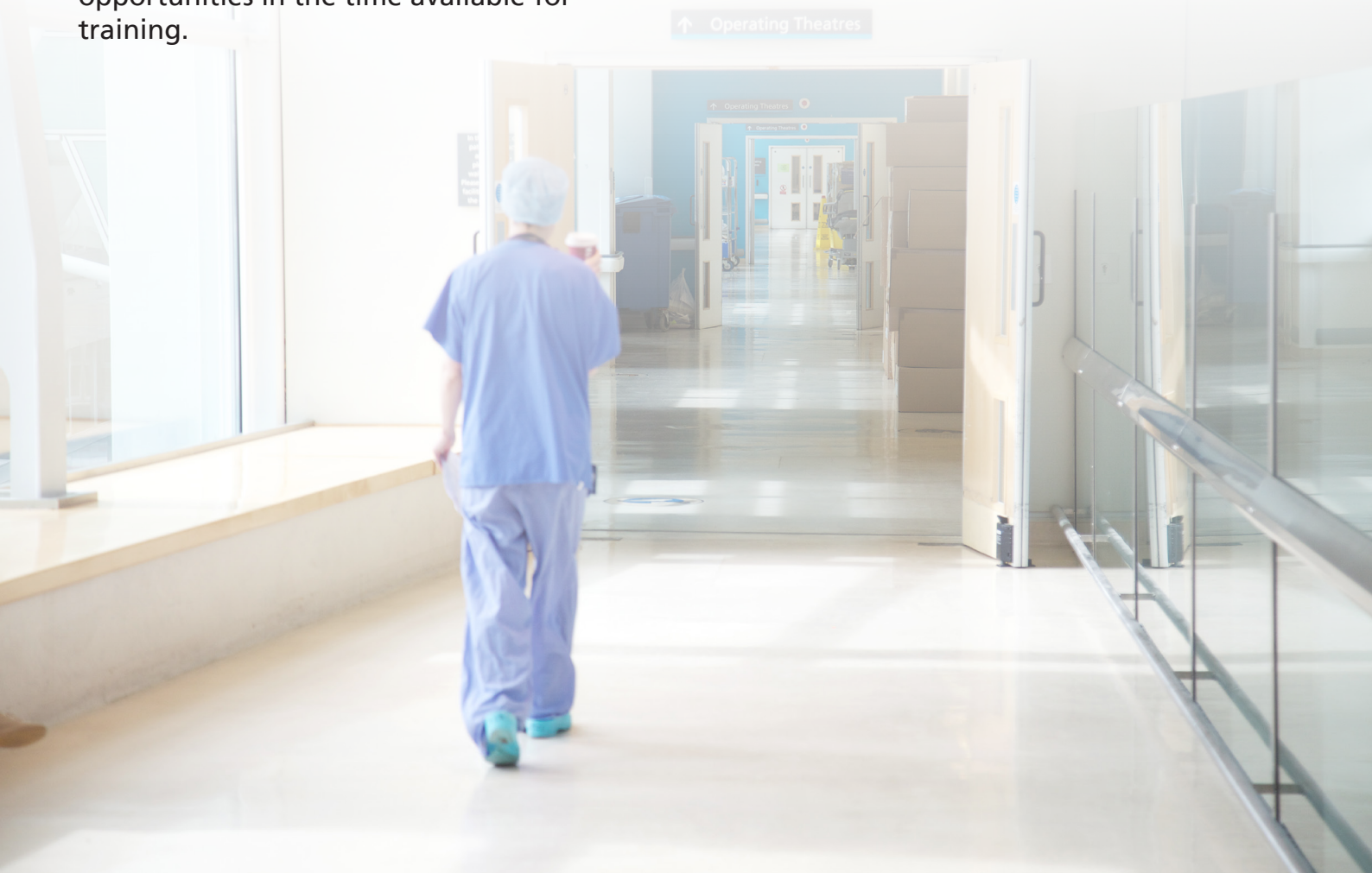


Case Study: Cadaveric Surgical Skills Workshop

University Hospital of South Manchester (UHSM) has developed a simulated surgery workshop using a novel whole body fresh frozen cadaveric model to enhance the operative surgical training for the Core Surgical Trainees in a safe environment.

UHSM piloted a series of Cadaveric Surgical Skills Workshops as a part of the [Better Training Better Care \(BTBC\)](#) programme initiative which aimed to develop sustainable and adoptable models to maximise learning opportunities in the time available for training.

These multi-professional surgical workshops allow Core Surgical Trainees (CSTs) to develop skills in a safe environment which could be transferred to the clinical setting. It also allows trainees to receive constructive feedback on their performance from consultant trainers.



Key Outcomes

- Fresh frozen cadaveric simulation fulfils the requirements for simulation as part of the surgical curriculum (ISCP) and with careful planning, costs compare favourably to other models
- It is a safe environment in which to train, give feedback and develop skills transferable to the workplace
- The educational value of the course was assessed using a validated and modified Dundee Ready Educational Environment Measure (DREEM) score which indicates the workshops to be of Excellent Educational Value ((Roff et al., 1997 - See Supporting Material)
- An in-house feedback questionnaire confirms that (see Appendix 1)
 - 100% of the CSTs found the workshop either useful or a very useful learning tool
 - 100% of the trainees rated the quality of un-embalmed human tissue similar or very similar in comparison to handling live tissue in the operating theatre
 - 97% of the trainees felt that simulated cadaveric workshops was either useful or very useful to improve their surgical skills and confidence (See Appendix 1)

Background

University Hospital of South Manchester NHS Foundation Trust provides acute hospital services and community services across South Manchester and beyond. It has 950 beds and employs around 5,900 members of staff including those employed by its Private Finance Initiative partner South Manchester Healthcare Limited.

The Cadaveric Surgical Skills workshops are organised by a project support officer and the clinical lead is a Consultant General Surgeon.

Simulation is strongly recommended as part of the curriculum on Intercollegiate Surgical Curriculum Programme (ISCP) for surgical training. For more information please visit <https://www.iscp.ac.uk/>.

Cadaveric Surgical Skills Workshop is a multi-professional surgical course that allows Core Surgical Trainees (CSTs) to develop skills in a safe environment which could be transferred to the clinical setting.



At this workshop the whole theatre environment is simulated, providing trainees with an opportunity to learn and gain skills in a setting very close to real life theatre environment. The Operating Department Practitioner (ODP) Trainees, supervised by their educational facilitator, act as scrub staff. The World Health Organisation (WHO) safety checklist (Appendix 2) is carried out and simulated sterile field is marked Under the consultant supervision. CSTs performed index procedures and complete Workplace Based Assessments (WBAs) on the ISCP during the day.

This workshop was initially piloted for Core Surgical Trainees based at University Hospital of South Manchester. It is hosted at the state-of-the-art facility - Manchester Surgical Skills and Simulation Centre in the Medical School of University of Manchester.

Funding has now been secured to support delivery of this event over the next three years for over 161 CSTs based in NHS hospitals across the North West of England.

The workshop is organised by a Band 4 administrator based at University Hospital of South Manchester and the accountability lies with the consultant surgeon.

In June 2012, University Hospital of South Manchester was chosen as one of the 16 NHS pilot sites to host [The Better Training Better Care \(BTBC\) programme](#) initiative funded by Health Education England (HEE). This programme aimed to develop sustainable and adoptable models to maximise learning opportunities in the time available for training. The UHSM pilot developed a surgical training model that provided ring-fenced dedicated training lists (BTBC lists) for Core Surgical Trainees using existing resources in order to improve training in operative surgery.

With the approval of HEE, a portion of the funding received for the BTBC Lists pilot was diverted to develop a cadaveric simulation training workshop for Core Surgical Trainees. Between April 2013 and October 2015, UHSM piloted a series of cadaveric skills workshops to evaluate the feasibility and educational value of simulated operations on human whole body fresh frozen cadavers for Core Surgical Trainees to compliment BTBC lists.

Key Aims

The key aims of this Cadaveric Surgical Skills Workshop were to create an affordable simulated surgical training model that will:

- Allow Core Surgical Trainees (CSTs) to develop skills in a safe environment which could be transferred to the clinical setting
- Provide consultant supervised training and immediate feedback to CSTs
- Promote a multi-professional learning and training environment

Key Stages of Set-up

Key stages in setting up and running this workshop were:

- An application for funding was submitted to the local educational, training and workforce planning authority (in this case Health Education England, working across the North West) as well as an application for funding to support the workshop
- Appointed a clinical lead and administrators to organise and manage the workshops
- Chose a facility that had the licence to use fresh-frozen cadaveric tissue simulation for surgical training and the appropriate equipment

- Conducted a pilot series of small workshops on small group of trainees from specific specialties to produce a programme that is reasonable and potentially affordable. Careful timetabling of procedures and use of material for concurrent workshops helped reduce the cost
- Produced a database of trainers who are interested in teaching on the workshop. Engaged with a surgical tutor of each specialty to obtain a list educational/clinical supervisor if necessary - trainers attend the workshop as a part of their Supporting Professional Activities (SPA) time
- Obtained a list of trainees from educational, training and workforce planning authority and allocated a place for each trainee specific to their themed specialty

How it Works

Each Cadaveric Workshop makes use of five Fresh Frozen Whole Body Cadavers across three days and runs 10 different surgical specialty programmes which include; General, Vascular, Trauma & Orthopaedics, Breast, Otolaryngology (ENT), Urology, Cardiothoracic, Plastics, Oral & Maxillofacial and Neurosurgery.

The number of training sessions dedicated for each specialty is dependent upon the total number of trainees in that particular specialty. For example, General surgery is allocated five full day sessions as they have more trainees and ENT is allocated two half a day sessions as they have fewer trainees.

On each day of the workshop:

- Core Surgical Trainees based across the North West participate in a cadaveric workshop
- Operating Department Practitioner Trainees, supervised by their educational facilitators from Edge Hill University, acted as scrub staff

- Key anatomy is demonstrated by an anatomist on embalmed prosections during each specialty specific session
- CSTs perform index operations on cadavers with a Consultant Supervisor scrubbed. During the course of three days a wide variety of procedures are performed including hernia repair, tracheostomy and coronary bypass grafting
- Trainees received immediate feedback from trainers and complete workplace based assessments (WBAs) on the ISCP at the end of each operation
- Course costs are recorded as the cost per operation so costs could be compared to other training models. The costs of the cadavers, anatomist, general consumables and facility hire were added together and divided by the number of operations completed with workplace based assessment across three days
- Educational value is assessed using in-house questionnaires for trainees and trainers (See Appendix 1)
- Surgical registrars were also used as faculty and were observed by their trainees and Observation of Teaching (OOT) completed on the ISCP

Resources

Health Education England working across the North West provided funding of £296,000 to support delivery of the workshop over the next 3 years under the Forerunner Fund scheme.

This funding covers the cost of cadavers, simulation suite, anatomy demonstrator, general consumables and Band 4 administrator.

Key Challenges

Securing funding:

After piloting a series of workshops using the funding provided for the BTBC pilot, further support was required to continue to provide this excellent training for Core Surgical Trainees based across the North West.

To embed the use of the Cadaveric simulated workshops as part of the Core Training Teaching Programme, an application in support of this project was submitted to Health Education England and approved. Once the funding was approved, the number of cadavers used for each workshop was increased and sessions were introduced to provide an opportunity for all the core surgical trainees to attend all surgical specialty specific sessions.

Key Learning

- Fresh frozen cadaveric simulation fulfils the requirements for simulation as part of the surgical curriculum (ISCP)
- Simulation-based training provides a safe environment in which to train, give feedback and develop skills that can be transferred to the workplace
- Careful timetabling increased the number of simulated operations performed with WBAs on the ISCP. The timetable for the workshop was produced by the administrator under guidance of the clinical lead
- Careful planning is required to ensure costs compare favourably to other models. For example, Open Inguinal Hernia Repair Trainer kits can cost £271 whereas the cost of one operation in the workshop is as low as £104
- Costs for this type of training are potentially affordable
- Modified Dundee Ready Educational Environment Measure (DREEM) score indicates that simulated operations using fresh frozen cadavers are of excellent educational value (Roff et al., 1997)



Sustainability

The workshop is organised as a part of the Core Surgical Teaching programme. It runs four times a year and all trainees are allocated a place in their 1st year of training and then again in the 2nd year of the core training programme. Trainers are asked to attend and count this towards their SPA time in appraisal and job plan review.

Next Steps

- Continue to run Cadaveric Surgical Skills workshop for core surgical trainees across the Health Education England North West footprint to provide trainees with an opportunity to develop skills in a safe environment which could be transferred to the clinical setting
- To develop enhanced methods of feedback during surgical training in a safe environment. For example, using video feedback to provide more comprehensive feedback to trainees
- To coordinate cadaveric simulation with workplace based training and learning

Supporting Material

Appendix:

Appendix 1 – Cadaveric Surgical Skills Workshop Feedback Form

Appendix 2 - World Health Organization Surgical Safety Checklist

References:

Roff, S. et al. (1997) 'Development and Validation of the Dundee Ready Education Environment Measure (DREEM)' *Medical Teacher*, (19) 4 pp. 295-299

Relevant Websites:

[Increasing learning opportunities in surgery \(HEE\)](#)

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