The current Hill Surgical Workshop has been an outstanding success ever since it was commissioned 14 years ago. It has been used intensively by all nine surgical specialties for a wide range of cadaver-based practical skills courses. These have catered for all levels of experience and they provide without doubt the most popular form of support for surgical training that has ever been developed by the College.


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Priority has been given to the first phase of the Eagle Project, in recognition of the steadily rising demand for cadaver-based training and the urgent need for a completely redesigned, new facility. The new surgical skills workshop has been designed to overcome a number of factors that have hampered the efficient running of the current workshop:

> It can accommodate only 20 participants.
> It has small, basic dissection tables, which are not adjustable and are partly concealed by oversized ‘Mayo’ tables.
> The services supplying the tables are cluttered and are delivered both from ceiling and from floor level.
> The audio-visual (AV) and information technology (IT) systems are dated and provide poor images that are rarely used.
> The air conditioning is inefficient and lighting is inadequate.
> There are no facilities for changing and few for scrubbing up.
> The physical separation of the surgical resources team from the body store, the workshop and the preparation areas greatly reduces the team’s efficiency and availability, and increases its workload.

The new surgical skills workshop has been designed from scratch by a team of surgeons, architects, technicians, engineers, designers, users and a project manager, supported by the Raven Department of Education. The aim of this team has been to provide an innovative new facility that builds on our successes by incorporating a wide range of major improvements, including much greater capacity, purpose-built tables, high-tech equipment, optimal lighting conditions, improved air conditioning and an ergonomic, flexible and efficient design.

The chosen design incorporates some of the very latest and best aspects of a wide range of skills laboratories visited in Europe, the US and Australia. Each one of these features has been debated and selected to ensure that the College remains right at the forefront of surgical training. Every aspect of the equipment and layout has been designed with tomorrow’s users in mind. Many improvements have been incorporated into the new facility, which will enhance the quality and relevance of this unique approach to surgical training.

**Purpose-built tables**

The showpiece of the new unit will be eight custom-built stainless steel dissecting tables, positioned around a central demonstrator’s table. These tables will incorporate a range of innovative new features:

> There will be a large, uninterrupted hose-down working surface, which will...
accommodate four participants with ease. These tables will almost double the capacity of each workshop.

The tables will be made with a very robust rigid steel frame, bolted to the concrete floor through a central plinth. This will withstand a force of 240 kg at either end and will support heavy cadaver parts as well as drills, microscopes, clamps and other heavy instruments and equipment.

There will be a full range of services including drainage, suction, compressed air, power, AV and IT together with air conditioning. All of these services will be fed through the central plinth from floor level, providing a working environment uninterrupted by untidy cabling, fixtures and pipework.

Each table will have electric height adjustment. Selected tables will incorporate tops that can be rotated or used for procedures requiring an image intensifier.

There will be an opportunity to provide feedback on a ‘mock up’ table before the design is finalised.

High-tech equipment

The design team has created an environment that mimics a modern operating theatre and anticipates future technology and techniques. A number of new features have been incorporated that reflect these principles, including wall-mounted boom arms that can be positioned to lie within easy reach of each table. They will be height-adjustable and will carry a wide range of equipment and services.

Each boom arm will be designed to support an instrument tray, a ‘lapstack’, a camera and a flat screen. They will also supply AV, fibreoptic and IT terminals as well as equipment for image-guided surgery. The AV and IT system will provide a two-way link between the central demonstrator’s table and a variety of different locations via twin cameras. These will include flat screens at each table, a ‘video wall’ and a full range of departmental and external terminals. The whole system will be controlled using a mobile touch-activated control panel.

Optimal lighting conditions

Course participants struggle with poor lighting in the current surgical workshop but this will be a thing of the past in the new facility. A new lighting system will deliver up to 1,000 lux from banks of ceiling-mounted units, producing a working environment that will be brighter than most operating theatres. A parallel ‘green light’ system is being installed to improve the transmission of images from the central demonstrator’s table. This will create optimal conditions for viewing flat screen images, making them much crisper, clearer and brighter than images viewed under conventional white light conditions.

Improved air conditioning

The system for air conditioning has been redesigned to ensure that odours are extracted from their source of origin while at the same time conserving energy and avoiding environmental pollution. All room air will be extracted directly through small fenestrations in the surface of the anatomy tables so as to provide a constant flow of outgoing air over cadaveric material. This air will be purified by a series of large carbon filters before being recycled through the skills workshop again, avoiding atmospheric pollution.

Ergonomic, flexible and efficient design

For the first time, essential course resources and activities will be co-located...
to maximise efficiency, teaching potential and security while minimising manual handling and turnover time:

Courses will be prepared and taken down using an integrated, purpose-built utility area.

Preserved, fresh and frozen cadaver parts will be stored in a refrigerated anatomy substation located next door to the surgical skills workshop. These features will shorten course turnover time.

Hydraulic transfer trolleys will be used to move heavy body parts, reducing risk to staff and creating a better working environment.

Two well-equipped anatomy demonstration rooms have been designed for small group teaching and can be linked to the main workshop through the use of flexible partitions.

Integrated changing and scrub up facilities will ensure that cadaveric dissection is performed using clean and safe theatre techniques.

Modern video monitoring and swipe card access will provide a secure working environment. Video surveillance of each table anticipates the greater use of monitoring in the selection, assessment and examination of tomorrow’s surgical workforce.

Work on this ambitious project will begin in October 2006 and will be scheduled to minimise the levels of noise and disruption for College staff. The new facility will be commissioned in July 2007, enabling work to begin on phase 2, the new clinical skills unit.

Reference


COURSE PARTICIPANTS STRUGGLE WITH POOR LIGHTING IN THE CURRENT SURGICAL WORKSHOP BUT THIS WILL BE A THING OF THE PAST IN THE NEW FACILITY.

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