BSc in Surgery and Anaesthesia 2011-2012

**Module 3: Innovation Training and Safe Delivery of Surgical Technologies**

In-course Assessment: Dragon’s Den presentation

Date: Friday 27 January 2012

Time: 1300-1600 hours

Venue: 9th Floor Lecture Theatre Laboratory Block Charing Cross

This is the first of two in-course assessments and will contribute 50% of the in-course assessment marks for Module 3.

The aim of this brief is to ‘pitch’ to a panel of ‘Dragons’ to secure their interest and support for a proposal which answers a clinical problem. Details of the topics and the groups are given below. You will need to give evidence to support your idea and will be questioned by the Panel.

You can use any props or devices but PowerPoint presentations and posters are not permitted.

You will be given 10 minutes to present and 5 minutes for questions. Each member of the team must present and be prepared to answer questions on any part of the presentation. You will lose marks for presentations which are under or over 10 minutes. Marks will be awarded for professionalism, teamwork, originality and delivery. Students will be in attendance for all the presentations to support their colleagues.

**Group 1**

**1. Port-site Herniae**

The occurrence of herniae from port sites following laparoscopy is a cause of post-operative morbidity for a significant number of patients. Patients commonly present with bowel obstruction, though may also present with ischaemic or dead bowel within the hernia sac. At the end of the laparoscopic procedure, it may be difficult to close all port sites, leading to the potential of future problems. Whilst there are some devices and techniques used to close the port-site, they are either ineffective, cumbersome to use, or expensive.

***Brief:*** *to design a safe, easy to use, cheap and effective tool to aid in the closure of port sites following laparoscopic surgery.*

**Group 2**

**2. Surgical ergonomic platform**

During minimally invasive surgery, operators are forced to adopt an uncomfortable posture in order to perform the tasks required. Back pain, neck pain, and neuropraxia of the upper limbs are not uncommon in surgical operators. This can lead to significant periods of time off work, and thus loss in productivity for the employing facility. Telerobotic surgery has developed an ergonomically appropriate platform for surgical practitioners, though is outside the reach of most hospitals.

***Brief:*** *to develop an ergonomically appropriate platform to enhance the posture of minimally invasive operators during surgery*

**Group 3**

**3. Surgery skills trainer**

In the developing world, surgery is still considered an expensive luxury. Beyond metropolitan centres, the facilities are primitive with regard to equipment types and sterilization techniques. It is not unusual for operative procedures such as skin lesion removal, amputation and trauma wound debridement to be performed by non-medical practitioners. The skills for these procedures are acquired through repeated practice, and may utilize sub-standard equipment. This is obviously unsafe, and can lead to unnecessary morbidity.

***Brief:*** *to design a multi-functional surgical skills toolkit, which is re-usable, portable and includes a training package.*

**Group 4**

**4. “Valuing” hip surgery outcomes for young patients**

Hip arthroplasty is among the most commonly performed orthopaedic procedures, and the results are excellent. Over 90% of patients have excellent pain relief and improved ability to perform routine daily activities. This is largely down to the fact that hip surgery has long been used to treat elderly patients over 60 years. However, because of the success in older patients hip surgery is becoming increasingly common in younger and more active populations between 30-50 years. Yet our understanding of the factors that lead to and influence surgical outcomes, and the measurements used to quantify surgical outcomes, are based on studies of elderly patients. Therefore the concerns of young and active patients, e.g. lifestyle, are not taken into consideration by current valuations of surgical outcomes.

***Brief:*** *devise a method(s) for accurately measuring treatment outcomes is hip arthroplasty patients.*

**Group 5**

**5. A new retractor for robot-assisted unicondylar knee replacement**

During unicondylar knee replacement, retraction of the soft-tissues is essential to allow access to the joint for the robotic burr and the implants. Currently, either a self-retaining retractor or two Langenbeck retractors are used. Each is suboptimal. The handles of the self-retainer can obscure the view of the robot screen or impinge on the anterior bone pins. The Langenbecks rely on a human surgical assistant. The new retractormust afford the surgeon an adequate view of the joint. It should not require a surgical assistant. The device should not block the view of the screen, nor interfere with the bone pins. It must be removable quickly and ideally with one hand. The design should be transferable to conventional unicondylar knee replacement.

***Brief****:* *Design a retractor for robotic unicondylar knee replacement.*

**Group 6**

**6. A New Approach to Femoral Stem Alignment For Total Hip Replacement**

Total hip replacement (THR) is a common and successful surgical intervention for patients with painful hip arthropathy refractory to conservative treatments.

The success and longevity of THR depends on patient, implant and surgical factors. Surgical factors include orientation of the femoral component of a THR.

Currently standard practice includes preparing the femoral canal but frequently the stem can be placed anterior to posterior or in varus alignment.

***Brief****: Design an intramedullary alignment guide which would prevent mal-position of the uncemented femoral component whilst not interfering with the implant itself.*