

Application of a Virtual Patient scenario to undergraduate anaesthesia teaching

Lester AH Critchley, Joseph YC Leung,
Shekhar M Kumta, Alex LK Yung.

Anaesthesia & Intensive Care
Learning Resource Centre
Faculty of Medicine, CUHK



17 Oct 2008

eLearning Expo 2008

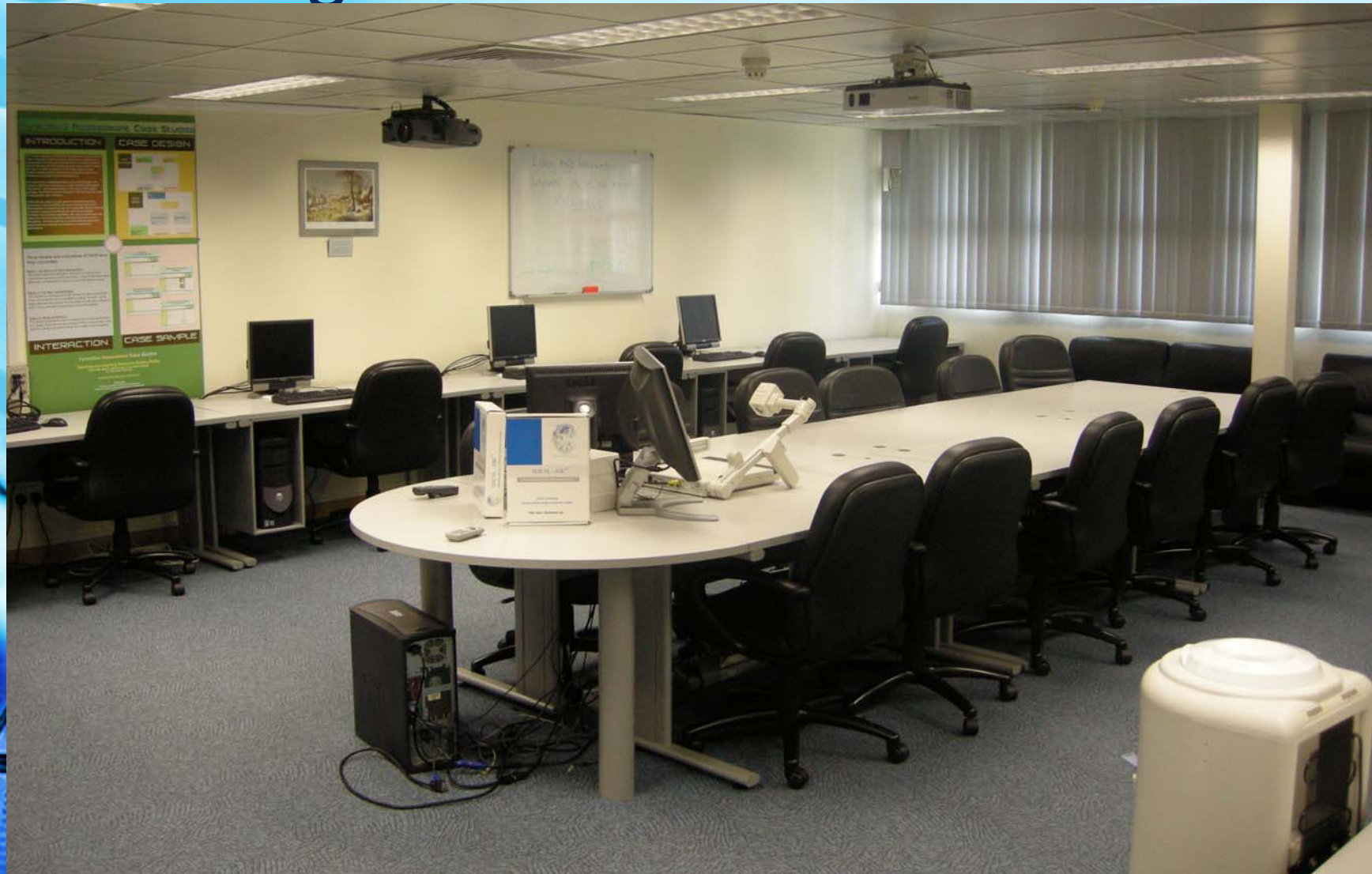
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Computer laboratory at the Learning Resource Centre



What is a virtual patient?

- Internet based simulated patient
- Presented as series of story pages
- Integrated with question pages & feedback



Thinking behind virtual patients:

- Illness & treatment take places over weeks / months / years.
- Undergraduate teaching is fragment
 - “Snap shots” of the process
 - Don’t witness the whole disease process
- Virtual environments allow a student to follow a patient’s illness & treatment from start to end.
- The patient’s history and condition is teacher controlled.

What we did:

- Create an Anaesthesia virtual patient (VP) to teach:
 - Peri-operative (Anaesthetic) care
- It covered many of the duties of a junior surgical house officer that our trainee doctors should know
- Determined the best method of delivery:
 - Using existing CUHK/Faculty internet systems

Patient scenario:

- Middle aged lady having surgery
 - Hysterectomy for uterine fibroids
- Number of common medical conditions
 - Diabetes, Hypertension, Anaemia
- Story of her stay in hospital

Outline of VP scenario:

Sections	
1	The outpatient clinic
2	Admission to the ward
3	Preparing to give an anaesthetic
4	The operation and anaesthetic
5	Recovery from anaesthesia
6	Post operative ward care

Topics:

- Anaesthetic assessment clinics
 - Anaesthetic assessment:
 - Airway assessment
 - Consent, etc
 - Patient safety issues:
 - Checks
 - Giving antibiotics
 - Blood administration
 - Preventing hypoxia
- Performing anaesthesia
 - Airway management
 - Intubation
 - Anaesthetic drugs
 - Monitoring
 - Computerized records
 - Reversal
 - Recovery room care
 - Acute pain management
 - PCA
 - Continuous epidurals

Section One: The Pre-admission Clinic

Section 1 Section-2 Section-3 Section 4 Section-5 Section6

Interview with Dr.Chan

Chan "Good morning. Are you Mrs. Shirley Kwok?? (Pic 1)"

Shirley "Yes, I am."

Chan "Mrs. Kwok, did the gynaecology doctor tell you what day you will be having your operation."

Shirley "In four weeks time on the 16th May."

Chan "Did he tell you when you will be admitted to hospital, on the day of surgery or the day before?"

Shirley "He said that the anaesthetist would be making that decision because I am receiving treatment for diabetes and hypertension."

Chan "Oh! What surgery are you going to have done?"

Shirley "A hysterectomy. The doctor told me that I have uterine fibroids. They are rather large, so the only way to remove them is through an abdominal incision. They have been causing discomfort and heavy periods for several months."

Chan "O.K. Have you had any surgical operations before?"

Shirley "Yes, one. When I had my second child, she was delivered by Caesarean section. That was when I developed varicose veins."

Chan "What type of anaesthetic did you receive?"

Shirley "I don't remember. I think that I was put to sleep."

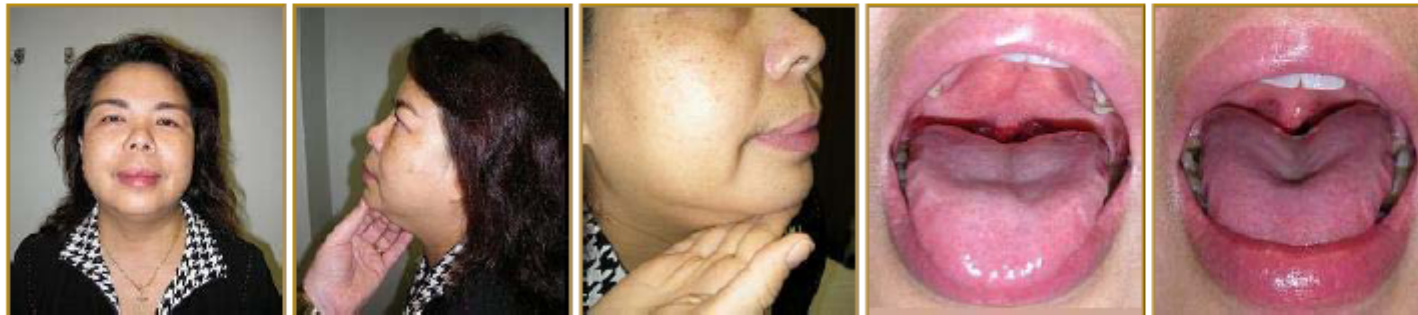


Section Two: Admission to the Ward

[Section 1](#) **[Section 2](#)** [Section 3](#) [Section 4](#) [Section 5](#) [Section 6](#)

The clinical examination

Next he examines Shirley's airway. He asks her to move her neck up and down and from side to side. She has good neck mobility. Her facial profile shows a well formed jaw and chin (Pic 1). He shows the student how to measure the thyromental distance which is more than four finger breaths but she is not a very big person (Pic 2 and 3). Sleepwell has larger than usual hands. He then asks Shirley to open her mouth wide and protrude her tongue (Pic 4 and 5). With a torch he examines the back of her throat. The two tonsillar pillars are difficult to see and uvular can only just be seen above the tongue. She has a nearly full set of teeth which are in good condition. The medical student then repeats the examination and describes his findings to Sleepwell. Shirley is going a slightly to intubate and she is Mallampati grade 2 or possibly 3, as her uvula can only just be seen above the tongue.



[Logout](#) [Back](#) [Next](#)

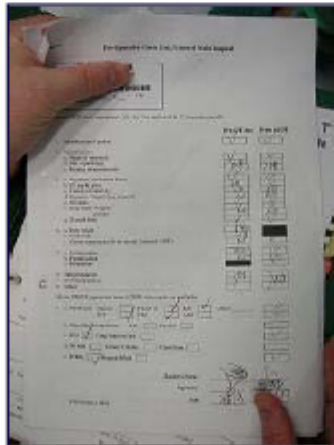
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Section Four: Events in theatre

Section 1 Section 2 Section 3 **Section 4** Section 5 Section 6

Blood loss and transfusion

Once in theatre, but before inducing anaesthesia, the theatre nurse and anaesthetist (Sleepwell) has carefully checked Shirley's details against the operation form (Pic 1). A new style patient identification wrist band with bar code has been



recently introduced by the Hospital Authority (Pic 2). A portable scanner is now being used to verify the patient's identity and to check that the correct unit of blood is given.



The nurse exposes Shirley's wrist band for under the drapes and scans its bar code. The scanner beeps completion. Then she scans the bar code on the blood form. The scanner beeps again. Finally, the barcode on the first unit of blood is scanned. This prompts a small printer unit



Development of the web site:

Joseph YC Leung, BSc.
Research Assistant

17 Oct 2008

eLearning Expo 2008

Evaluation:

- March 2007 – started writing scenario:
- Dec 2007 – first “html” version:
 - Private access website
- Focus group interview
 - Tested on groups (7-10) of final year students
 - 2 to 3-hours working through scenario
 - Dec to April (7-groups)
- Comments used to revise / improve site
- June 2008 – first usable web version

Problems solved:

- Interactive site with questions
- Feedback to user / student
- Make sure students appreciated key points
- Simple way of assessment / no tutor marking
- Track usage

Section Four: Events In Theatre



Question

Compared to written records, what does Sleepwell think about the new computerized record?

- A. A more versatile system
- B. Improved patient safety
- C. More convenient and accurate
- D. Preferred the old written record
- E. Quicker to use and input data

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Section Four: Events In Theatre



Question

What are the advantages of using a computerized anaesthetic record system?

(marked out of 4)

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Section Four: Events In Theatre



Summary Page:

During the operation Dr. Sleepwell's role is very much to monitor Shirley's anaesthetic and prevent anything potentially life threatening from happening. However, he does have to attend to some other important issues, such as record keeping, giving IV drugs and blood products and setting up postoperative pain relief. Safety is a constant issue. The questions and answers are aimed at highlighting key learning points.

Key Learning Points:

- Improved record keeping
- Safe administration of antibiotics
- Evaluation of bloodloss and safe administration of blood
- Setting up IV PCA morphine

Score for this section: 25 (25)

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Section Three A: Preparing The Theatre



Sleepwell prepares the anaesthetic drugs

He also opens the first drawer of the anaesthetic trolley and takes out an ampoule of atropine (Pic 1). He now draws up suxamethonium 100mg and atropine 0.6mg into two separate 2ml syringes, which he labels and stores at the back of the anaesthetic trolley in case of an emergency (Pic 2).

He tells the student that occasionally a patient will develop airway difficulties during induction or recovery from anaesthesia and become hypoxic. Usually, the patient has to be rapidly intubated to facilitate ventilation with oxygen. The suxamethonium provides rapid paralysis allowing laryngoscopy and intubation, whilst the atropine protects against the two main side-effects of suxamethonium, severe bradycardia (slowing of the heart rate) and excessive salivation.



Guide to the different type of drugs in the drug draw (see below)

Ketorolac- NASID Analgesic
Tramadol- Analgesic
Ondansetron- Antiemetic
Metoclopramide- Antiemetic
Haloperidol- Sedative
Vecuronium- Muscle relaxant
Phenylephrine- alpha- agonist
Ephedrine- alpha and beta agonist
Propofol- IV anaesthetic agent
Thiopentone- IV anaesthetic agent
Etomidate- IV anaesthetic agent
Atropine- Anticholinergic
Neostigmine- Reversal of muscle relaxants



Pic 1: Drug

Section Three A: Preparing The Theatre



Question

What medical mistakes can befall a patient having an operation that meticulous checking can help to prevent?

Suggest five.

(marked out of 5)

The wrong patient

The wrong operation

Operation on the wrong side

The wrong blood group

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Section Three A: Preparing The Theatre



What medical mistakes can befall a patient having an operation that meticulous checking can help to prevent?

The suggested answer is:

Mistakes include:

1. The wrong patient
2. The wrong operation
3. Operation on the wrong side
4. The wrong blood group
5. The wrong drug given (typically antibiotic)

1 mark awarded for each correct point.
Maximum marks- 5.

Your answer is:

The wrong patient

The wrong operation

Operation on the wrong side

The wrong blood group

The wrong drug given (typically antibiotic)

Compare your answer with the model answer then give yourself a score:

3

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Contents of Virtual Patient:

Sections	6
Web pages	162
Pictures & illustrations	344
Tables & pop ups	57
Summary pages	8
Self-scoring questions	29



ANAESTHESIA FACS CASES



FACS Med5 Two-Week Module

FACS

[Home](#)

[FACS Cases](#)

[Virtual Patient](#)

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[Supplementary Material](#)

Department of Anaesthesia and Intensive Care

Training Objectives

- Anatomy and techniques of thoracic epidural placement
- Management of thoracic epidural anaesthesia and analgesia
- Placement of epidural catheter and anti-coagulant / Aspirin / NSAIDs
- Anaesthetic implication of patients with cirrhosis
- Various surgical approaches of oesophagectomy

New FACS Case

Anaesthetic assessment scenario : anaesthetist receives the operating list for the next day's theatre session. It informs him/her of each patient's name, age, and gender. It also tells him/her where each patient can be found.



FACS Med5 Two-Week Module

The Department of Anaesthesia and Intensive Care provides anaesthesia, pain medicine, resuscitation, and intensive care services for the Prince of Wales Hospital (PWH), a 1,360 bed tertiary referral teaching hospital of the Chinese University (CUHK). There are actually separate CUHK and Hospital Authority (HA) Departments but these are both managed by Professor Tony Gin who is Chairman of the CUHK Department, Chief of Service of Anaesthetics and ICU of PWH and Cluster Co-ordinator (Anaesthesia) of New Territories East Cluster (NTEC). There is overlap of duties but the University Department is mainly responsible for undergraduate and research matters while the HA Department is responsible for all staff and management of the Operating Theatres (OT), Theatre Sterile Supply Unit (TSSU), Central Sterile Supply Department (CSSD) and Intensive Care Unit (ICU).



Virtual Patient

Login ID

Password

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[Section 1](#) [Section 2a](#) [Section 2b](#) [Section 3a](#) [Section 3b](#) [Section 4](#) [Section 5](#) [Section 6](#)

If you are having trouble using the site, especially if you had click "next" but the next page didn't load. You should try closing the browser/ restart your computer and try again, that should solve the problem. And don't worry if the answers are gone, they had already been saved to our server.

If you have any problem regarding the Virtual Patient, feel free to email me at joseph.leung@cuhk.edu.hk
You can also direct your comments about the site to that email address. Thanks!

Note:

For descriptions of the pictures, place the mouse cursor over the picture and a box will show up with the description.

The texts are shown 2 different fonts, if it is shown in this type of font, this is the normal storyline.

If the texts are shown in this type of fonts, it means the info are extra info or whats going through in the mind of the doctor.

E102 7/15/2008 2:24:23 PM

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