

Teaching Development Grant: Assessing the Non-technical Dimensions in Practical Procedural Skills

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## Clinical procedures performed on conscious patients

- A crucial part of the duties of newly qualified medical graduates (interns)
- Although technical skill is obviously an essential part of such procedures, effective interaction with the patient and with other health care workers is just as important



## Simulators in health care training

- At present, many procedures are taught on simulators or bench-top models in skills centres
- By practicing repeatedly within a safe environment, learners at all stages can gain necessary technical skills without placing real patients in jeopardy





## **Problems with simulations**

- Practicing technical skills out of context may give an oversimplified and misleading picture of the non-technical skills (e.g. professionalism, doctor-patient communication) that are necessary for successful completion of the tasks
- Interns often find themselves in difficulties when they have to carry out interventions on actual patients, especially those who are anxious, angry, disabled, or unable to understand the language of the doctor

# Patient-focused simulation (PFS)

#### SIMULATED PATIENT



BENCH-TOP MODEL OR ITEM OF MEDICAL EQUIPMENT

A PROFESSIONAL ACTOR PLAYING A SPECIFIC ROLE BASED ON ACTUAL CLINICAL CASES



## Essence of PFS

- PFS places procedural tasks in a clinical context by combining bench-top model or item of medical equipment with a real patient
- This hybrid approach combines the safety of simulation with the authenticity and unpredictability of a real patient encounter
- Scenarios can be designed to include range of patient behaviours, and the level of challenge can be adjusted as required
- SPs provided feedback from the patient's viewpoint, highlighting a perspective that is often overlooked in clinical skills teaching and assessment

Table 1 Procedures, tasks and contexts for integrated procedural performance instrument (IPPI) including all participants' ratings of realism (mean and standard deviation)

			Realism score	
Procedure	Technical task	Clinical context	Mean	SD
1 Urinary catheterization	Insert a urinary catheter	Anxious elderly man in retention of urine	4.3	1.42
2 Venepuncture	Take blood from arm	Tired anaemic patient in outpatients who has been kept waiting	4.4	1.23
3 Intravenous infusion	Insert intravenous cannula and set up infusion	Blind patient who has become dehydrated	4.4	1.24
4 Respiratory function testing	Measure peak flow and perform spirometry	Co-operative patient receptive to clear instructions	3.8	1.45
5 Using a nebuliser	Administer nebulised bronchodilator	Anxious wheezy patient with poor command of English	4.7	1.06
6 Administering oxygen	Administer oxygen at a specified concentration	Distressed breathless patient	4.6	1.07
7 Performing an ECG	Perform an electrocardiogram and interpret findings	Patient with chest pain, presenting with his anxious wife	4.8	1.28
8 Intramuscular injection	Administer intramuscular antibiotics	Angry and aggressive patient with infected foot and penicillin allergy	4.3	1.39
9 Subcutaneous injection 1	Administer subcutaneous enoxaparin	Deaf patient with history of DVT, about to undergo surgery	4.3	0.810
10 Subcutaneous injection 2	Give subcutaneous injection of insulin and instruct patient in technique	Newly diagnosed insulin-dependent diabetic	4.2	1.411
11 Blood cultures	Take blood for culture	Intravenous drug user, hepatitis B carrier, with unexplained fevers	4.1	1.212
12 Wound closure	Close a laceration with interrupted sutures under local anaesthesia	Patient who fell and sustained arm laceration while drunk	4.7	1.2

KNEEBONE R ET AL. MED EDUC 2006; 40: 1105-1114.

### STUDENT IS ASKED TO APPLY A DRESSING TO COVER THIS WOUND

THIS IS A "WOUND" SILICONE PROSTHESIS WHICH IS STUCK ON TO THE SKIN



REALISTIC, ONE COULD TEST STUDENT'S RESPONSE TO THE SP'S REACTIONS

#### Integrated Procedural Performance Instrument (IPPI)

- A powerful learning and assessment tool developed at the Imperial College, London
- Maps the practitioner's performance from the viewpoint of a patient as well as an expert clinical assessor
- Provides a multi-faceted assessment of procedural skills under 11 defined domains

Focuses on holistic performance

Teaching and assessing skills



An Integrated Procedural Performance Instrument (IPPI) for learning and assessing procedural skills

Roger Kneebone, Debra Nestel, Fernando Bello and Ara Darzi, Department of Biosurgery & Surgical Technology, Imperial College London

C linical procedures performed on conscious patients are a crucial part of health care. These range from apparently straightforward interventions such as taking blood or inserting a urinary catheter, to complex surgical procedures under local	part of such procedures, effective interaction with the patient and with team members is also crucial. Indeed, the technical aspects of a procedure may often present less of a challenge than managing the wider clinical situation,	skills centres. Although such simulations offer a useful intro- diation for beginners, practising out of context can give an over- simplified aud misleading picture of what such procedures entail. This can lead to difficulties when learners have to carry out inter-	Scenarios are assessed by expert clinicians, SPs and the participants themselves
anaesthesia. Although technical skill is obviously an essential	At present, many procedures are taught on benchton models in	ventions on actual patients, ornerially those who are anyings	

Blackwell Publishing Ltd 2008. THE CLINICAL TEACHER 2008; 5: 45–48 45

## **Essence of IPPI**

SP WITH A FAKE ARM ATTACHED FOR ASSESSMENT OF VENEPUNCTURE



CLINICAL ASSESSORS IN REMOTE LOCATION VIEWING AND RATING IPPI ASSESSMENTS



- □ IPPI provides a series of PFSs (real patient + bench-top model/equipment)
- No assessors are present within the scenario rooms, creating a heighted sense of realism
- Each procedure is rated from three perspectives learner, patient, and expert clinical assessor
- Participants receive detailed formative feedback after the session

### ON-STAGE DEMO OF CENTRAL VENOUS CANNULATION SIMULATION



#### AMEE 2009, MALAGA, SPAIN





# Domains for assessing student performance

- 1. Introduction/establish rapport
- 2. Explanation of intervention, including patient's consent to proceed
- 3. Assessment of patient's needs before procedure
- 4. Preparation for procedure
- 5. Technical performance of procedure
- 6. Maintenance of asepsis
- 7. Awareness of patient's need during procedure
- 8. Closure of procedure, including explanation of follow-up care
- 9. Clinical safety
- 10. Professionalism
- 11. Overall ability to perform the procedure (including technical and professional skills)

#### **Opportunity to Enhance Educational Experience**

□ The Very Basic Course (taught in Year 5):

- Provides students the opportunity to perform common procedures and challenges them on tasks relevant to internship
- We could add realism mimicking the authenticity provided by patient interaction
- □ CUHK-Pre-Internship Training (after Final MB):
  - Is too late in the curriculum & Does not address the broader behavioural attributes necessary for competence in practical procedures
  - There is a strong need to develop resources to provide authentic training for holistic competency in common practical procedures

## Project objectives

- To incorporate PFS in the training of Year 3 and Year 5 medical students
- 2. To train SPs to provide a range of clinically authentic behaviours and difficulty levels for PFS
- 3. To develop an IPPI relevant to local needs, using PFS incorporated into practical tasks relevant to internship practice
  - Blood taking, setting up venous access, pleural tapping, wound suturing, male and female catheterisation, lumbar puncture and spinal aspiration, wound cleaning and dressing, bandaging and splinting extremities

## Patient Adaptable Devices (PADs)

PADs are crucial to the authenticity of the simulation

These are devices worn by the SP



WE HAVE HAD OUR 1ST GRANT HOLDER'S MEETING THERE ARE LOGISTIC CONCERNS OPPORTUNITY TO BE CREATIVE WELCOME PARTNERS