



INTERNATIONAL JOURNAL OF CLINICAL SKILLS



A Peer Reviewed International Journal for the Advancement of Clinical Skills
- *'docendo ac discendo'* - *'by teaching and learning'*



In this issue:

.....
Studying living anatomy: the use of portable ultrasound

Clinical reasoning and interactive board-games

Inter-professional simulation

Communicating with confused elderly patients

The African Working Time Directive

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The International Journal of Clinical Skills looks forward to contributing positively towards the training of all members of the healthcare profession.

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Foreword

Head of Clinical Communication King's College London



Since its inception, the International Journal of Clinical Skills (IJOCS) has provided a unique platform for the teaching and learning of clinical skills in a variety of healthcare disciplines. It has become a well established peer reviewed Journal publishing a diverse range of clinical skills articles.

The Editorial Board consists of people active in the field of clinical skills teaching and this is reflected in the journals philosophy to encourage sharing of ideas and practice. Pertinent contributions aim to meet the current needs of researchers and practitioners.

Clinical skills teaching is going through a definite 'growth spurt' at present with increasingly responsive models, manikins and e-learning programmes - not dismissing financial investment that comes along with this. High quality clinical simulation is becoming more sophisticated as a teaching and learning methodology. The need to equip health professionals with the skills and competencies to improve patient-safety is one of the drivers behind this growth. However, alongside the purchase of the 'Sim'-men/women/babies and linked e-learning, let's not forget the importance of personal

interactions through faculty support, i.e. experienced clinical teachers. In addition, simulated patients and the delivery of interprofessional sessions, bring clinical simulation closer to the realms of reality and validity, for both undergraduate and postgraduate health professionals.

The use of simulated patients, relatives and carers is well established in clinical communication education. More recently, additional interesting and innovative approaches to clinical communication teaching are in various stages of substantive core curricula and special study activity across medical schools in the UK.

The IJOCS is now established in the world of clinical skills publications by providing a niche specific arena that welcomes quality research, thereby promoting excellence in healthcare internationally. The wide range of papers covering research, discourse and reflection in clinical education and practice, plus the inclusivity of interprofessional approaches in one publication, raises the validity of this journal. There remains room for research based evidence to support teaching and practice of patient-centred clinical learning. The IJOCS welcomes additions to the literature that encourage critical debate.

Without doubt, the International Journal of Clinical Skills has continued to exceed its original ambitions and I wish it growing success.

A handwritten signature in black ink that reads "Elaine Gill".

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Development of inter-professional simulation in the acute paediatric clinical setting

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Abstract

The National Service Framework for Children (UK) recommends that regular scenario based teaching is undertaken by those working in acute paediatric settings. Simulation can increase exposure to clinical situations. It is a practical approach to education for medical and nursing staff in which the management of paediatric critical incidences can be demonstrated.

The Derby Hospitals National Health Service Foundation Trust (UK) previously had split site working; the simulation suite and the Children's Hospital were located five miles apart on different sites. Our original paediatric simulation programme was poorly attended as the logistics of releasing staff for training, with added time for travel across sites, were not cost effective or practical. The project discussed in this paper was devised to encourage and develop a diverse inter-professional simulation programme throughout paediatrics, concentrating on management of the acutely unwell child. We discuss why a clinically based simulation programme was developed, how it was achieved and the findings from the participants' evaluations.

Thirteen simulations took place over 14 months in acute paediatric settings, providing 55 inter-professional evaluation results. 83% of participants 'strongly agreed' it was useful to have the simulation practice in the Children's Emergency Department or Children's Wards, with the remaining 17% 'agreeing'. This research suggests a sustainable method of delivering clinically based training, incorporating an inter-professional approach. A fundamental aspect of the project was the opportunity for participants to work together as a team whilst managing an acutely unwell child and receiving consultant led feedback on communication and clinical skills, as well as overall management of the event.

Background

The opportunity to use simulation as a component of medical and nurse training is increasingly on the agenda for many health care institutions. The provision of training in this format is, however, generally dependent upon simulation facilities and the availability of staff to participate in the simulation. There is a reality that in many trusts and educational establishments, aspects such as cost effectiveness, maintenance and logistics [1, 2] influence the accessibility to this advanced training modality.

The history of simulation is by now a reasonably well known story, being implemented by industries such as aviation and the military for a number of years. However, simulation in the medical profession is a relatively new concept, being integrated over the past 10 - 15 years into medical education and clinical skills training. This could be attributed to a change in the culture of medical education emphasizing the need for more experiential modalities of learning [3]. Simulation is an area that is diverse and ranges from low fidelity simulation, such as the use of non-computerised mannequins for basic life support, to

high fidelity equipment and mannequins which are able to mimic patient response to physiological insult.

Health care as an industry is reliant upon people, more so than machines, to exercise judgement, execute techniques and make decisions that will influence outcomes for patients [4]. With this in mind, many educational institutions and National Health Service (NHS) Trusts throughout England have taken on board the idea of simulation.

Experiential learning is also recognised as an important factor in the accumulation of knowledge and skills [5] and due to the relatively low incidence of paediatric patients requiring treatment for a life threatening critical illness, the opportunity for doctors to learn the skills essential for managing paediatric emergencies can be infrequent [6].

Simulation provides an opportunity to recreate various aspects of the clinical environment [7] providing a practical approach in learning how to manage critical incidences.

In light of patient safety drives, simulation has the obvious advantage of allowing participants from different professional backgrounds to work together as a team in managing a critical situation. This can occur in a non-threatening confidential environment which will cause no harm to patients.

As an integral aspect of medical education, postgraduate learning and more recently in nurse education, whether it be low fidelity or high fidelity, the majority of simulation is undertaken in a purpose built simulation and clinical skills facility. This paper will examine the development and introduction of a inter-professional simulation program in the acute paediatric clinical setting. The feedback gained from thirteen simulations over a period of 14 months will be discussed in order to establish the value of the simulation.

Why simulation in the acute clinical setting?

The development of simulation in the Derby Hospitals NHS Foundation Trust began approximately 7 years ago; at this early stage there was no simulation suite. Therefore, in order to encourage use of the available equipment, simulations were performed in the clinical settings and the simulation equipment used was aimed at the management of adult patients. However, the programme was found to be difficult to sustain mainly due to the large size of the adult mannequin which introduced practical transportation problems. The copious amount of space required to accommodate all the relevant equipment and the time required to set up simulation was difficult to source and time-table. Therefore, clinically based adult simulation was discontinued and a dedicated simulation suite was developed.

The Clinical Skills Department had previously purchased a Laerdal SimBaby™ mannequin in 2005; this can be programmed with specific scenarios of the 'sick child' or be run by a facilitator who can change the physiological parameters dependant on the illness being simulated and the treatment being given to 'the child'. The focus of this purchase was to encourage a diverse training regime throughout the various departments caring for paediatric patients. There is some suggestion that

simulation is the central point for clinical skills teaching [8], and as a department we wanted to promote simulation and encourage the use of this approach for practical training. The National Service Framework for Children [9] also recommends that regular scenario based teaching is undertaken by those working in acute paediatric settings; consequently, we organised regular simulation sessions for the paediatric medical staff at the hospital.

However, at this time the Derby Hospitals NHS Foundation Trust had split site working. The simulation suite was located at the Derby Royal Infirmary site and the Children's Hospital was incorporated in the Derby City General Hospital, the two sites were approximately five miles apart. The logistics of the paediatric sub-departments releasing staff for training, with added time for travel across sites, was not practical, cost effective or conducive to the provision of patient care. However, these circumstances did have the advantage of encouraging discussion on how best to facilitate use of this expensive, yet extremely beneficial, piece of equipment - SimBaby™. Literature supports that simulation can improve multi-disciplinary working [10, 11] and so this point in time was considered the ideal opportunity to promote the concept of inter-professional learning and keep in accordance with UK Government recommendations for regular paediatric scenario based teaching. The answer in the end was quite obvious – the mannequin would have to be transported and used on-site in the different acute settings at the Children's Hospital.

Methods

A fundamental component of this project was to assemble a team with the knowledge, experience and enthusiasm to take paediatric simulation forward, facilitate the sessions and debrief effectively. The support and involvement of the Paediatric Consultants was essential. Those whom were already involved heavily in postgraduate education and had experience of scenario teaching via the Advanced Paediatric Life Support Course (Advanced Life Support Group) or similar, were approached. When contacted they were not only supportive, but very enthusiastic to be involved in the project, responding positively towards the concept of an inter-professional approach.

Funding for simulation at this time was directed at medical education, therefore the next step was to promote the paediatric simulation equipment and discuss funding and equipment issues with senior paediatric nursing staff. Simulations were to be run in the acute ward areas and the Children's Emergency Department (CED), therefore access to these settings was crucial, as was the support from senior nurses to release nursing staff from their responsibilities for the duration of the simulation.

In reality medical professionals seldom work alone in acute clinical settings so the success of the project in terms of authenticity and realism of scenarios, depended upon the support and availability of all members of the multi-professional team. The project was received with enthusiasm by the Nursing Department, likely due to the fact that there are minimal opportunities for registered nurses to take part in high fidelity simulations. The inevitable negotiations precipitated

an agreement being reached; this regarded the involvement of nursing staff, as well as the use of on-site consumable equipment, such as non re-breathe oxygen masks, drugs, the resuscitation trolley and other equipment.

Realism of any teaching scenario is vital for the participants' learning experience; this was supported by the involvement of the nursing staff and use of on-site equipment being deployed in real time. Other professionals who would be involved in the management of a critically ill child were also invited to take part, for example, paramedics and pharmacists; however, the inclusion of these professionals was not pre-planned and depended on them being available at the time of a simulation.

Objectives for the participants were as follows:

- Recognition of a critically ill child
- Primary assessment, resuscitation and re-assessment
- Management of clinical priorities and clinical procedures
- Working effectively as a team member or team leader
- Effective communication
- Participation in a debrief
- Consideration of further patient management

The issue of participant assessment was considered, but it was felt that as clinically based simulation has not been previously studied in any length, certainly with regard to assessment of competencies, this should not initially be a factor.

A number of scenarios were developed to encompass a range of conditions that paediatric doctors may face, for example, bronchiolitis, non-accidental injury, the septic baby and the fitting child.

Our aim was to provide the simulation sessions from early as feasible in the doctor's training schemes; all grades of medical staff from Foundation Year 1 to Registrar were included in the simulation. Logistical information regarding the simulations was not provided to the medical staff on induction to their rotation; only that SimBaby™ would be visiting them at some point during their time based at the Children's Hospital.

Medical and nursing students who were on placement to paediatrics within the acute areas were also involved as deemed appropriate by the team leader of that particular scenario.

A mutually agreeable session time was arranged with the Clinical Skills Department, a paediatric area and the senior clinician overseeing the simulation. The scenario commenced with the nursing staff receiving a brief history for the child. Within their remit they commenced management, calling upon the medical staff as soon as help was required. The doctors on duty were 'fast bleeped' or asked to attend a sick child; on their arrival the attending nurses gave a brief patient history and subsequently simulation with the child (SimBaby™) began (Figure 1).

Figure 1: Photograph showing an example simulation scenario with nursing and medical staff



On conclusion of the scenario an immediate debriefing was led by the facilitator, usually a Paediatric Consultant or Specialist Registrar; this assisted the participants to process the experience and help integrate it into their knowledge base [12]. The clinical skills put into practice by the team members were discussed. This included key treatment issues and the effectiveness of interventions, such as ventilations and cardiac compressions. The simulation equipment software allowed for such information to be saved and discussed when appropriate during the debriefing.

Decision making in a stressful clinical situation is acknowledged as being difficult [5] therefore, this and skills such as communication and team working, were a fundamental part of the session debrief.

Results

Post-session debrief the participants were asked to complete a SimBaby™ Scenario Questionnaire, adapted from Bristol Children's Hospital Evaluation Forms. The questionnaire included space for free text comments and 15 questions on a Likert Scale of 1 (strongly disagree) to 5 (strongly agree) looking at various aspects of the simulation. They were also devised to provide the clinical skills trainers with awareness of the individual participants' professional background and previous training experience. For example, job title, whether an Advanced Paediatric Life Support (APLS) course had been completed and if so when, and if the participant had any previous experience of paediatric simulation.

Feedback was gained from thirteen simulations over a period of 14 months, resulting in 55 multi-professional evaluations.

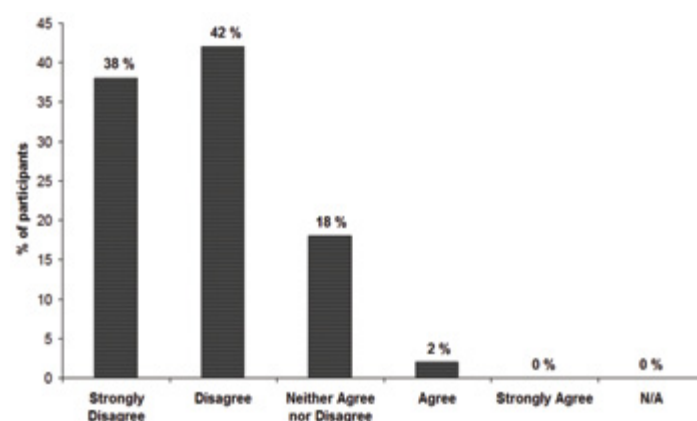
Figure 2: SimBaby™ Scenario Questionnaire

Date:
Name:
Job Title:
Last APLS Course: (2004 / 2005 / 2006 / 2007 / 2008)
Are you an APLS Instructor? (Yes / No)
Location of Scenario: (Children's Emergency Department [CED] or Ward name:.....)
Please rate each of the following on a scale of 1 to 5 (1 = Strongly Disagree; 2 = Disagree; 3 = Neither Agree nor Disagree; 4 = Agree; 5 = Strongly Agree):
I found the scenario stressful
The experience is similar to APLS scenarios
It was useful to have the practice in the ward or CED
I felt threatened being watched
This scenario was typical of cases seen in this hospital
I learned something useful today
This has improved my confidence in resuscitation scenarios
It was not very realistic
I would be happy to be videoed if I had to do this again
This scenario is a good way to learn
I felt that I led the scenario well (if applicable)
I lack confidence in communication during resuscitations
I would prefer some warning that this was going to happen
I would hate to do this again
My performance was an accurate reflection of my abilities
Please list:
Two things I learned today:
Strengths of the scenario format:
Weaknesses of the scenario format:
How does this compare with APLS, as a learning experience?
Any further comments or suggestions for next time:

Of all the participants, 83% 'strongly agreed' and 17% 'agreed' that it was useful to have simulation sessions in the Children's Wards or the Children's Emergency Department (CED).

It was endeavoured to recreate the realism of an acute situation as it occurs in the wards or CED. 80% of participants 'strongly disagreed' or 'disagreed' that the sessions 'were not very realistic' (Figure 3). Comments illustrating the achieved realism of the sessions included: "realism; realistic; SimBaby™ life like; have to do procedures; uses real ward supplies; realistic model and situation; real time - see practical difficulties; when performed on ward or actual work area, more realistic than in classroom (especially in terms of organisation, logistics and equipment)".

Figure 3: Percentage of participants rating the question "It was not very realistic?"



Continual improvement of scenarios and session delivery was part based on participant feedback throughout the 14 months of the study. Comments regarding potential weaknesses of the simulation event included: "equipment problems; lack of room; manikin not good; can be unrealistic; initially not clear what we could and couldn't do". However, most comments surrounded the session logistics: "too many people in the room; would be better with less people; not enough nurses; more nursing staff available than normal; blood results came back very quickly; stressful".

The scenarios were devised using information from Derby Children's Hospital Paediatric Clinical Emergency Forms; this helped to substantiate the validity of the scenarios and helped devise cases typically seen in the acute areas. In general, both the nursing and medical staff agreed that the cases were 'typical' of those seen in Derby Children's Hospital, with 13% of doctors 'strongly agreeing' and 71% 'agreeing'. Those that 'neither agreed nor disagreed' (16%) could be attributed to the lack of exposure to this type of clinical scenario in practice.

The sessions gave opportunity for an inter-professional learning approach and experiencing team work in a stressful environment without the risk of harm to any 'real' patient. Participants could gain insight and awareness into their own and others' knowledge and skills in such emergency events. 96% of participants 'strongly agreed' or 'agreed' that the scenario was a good way to learn.

The participants were invited to list two things they learned from the session. It emerged that specified learning outcomes were individual; however, team working issues were the main recurring theme. Comments included: "communication with team in a stressful situation - direct instructions; teamwork; importance of a good leader; important stepwise action of ABC; I need to do more work on paediatric emergencies; important to know where equipment is; value of effective team work; that I need to familiarise with the resuscitation room in CED".

Our experience in session setup and delivery was also revised, for example, the normal resuscitation room layout needed to be maintained, but arranged in such a manner that the operator of the simulation computer would not impede or distract the

participants. Another area of change included addition of a parental figure for the simulated sick child thereby enhancing the learning experience.

Impact on risk issues

Risk was not an area that we had deliberately set out to scrutinize. However, issues emerged that needed to be dealt with promptly. Table 1 shows the ‘risk’ and the ‘action taken’. Practical issues, for example, where to find equipment and how to use it, were recurring obstacles for the participants. This consequently raised awareness of resuscitation equipment and its operation.

Table 1: Risks identified and subsequent action taken

Subject	Risk	Action Taken
Fluids	Wrong strength of intravenous saline bags kept in resuscitation room - unable to locate 0.9% strength saline	Incorrect fluids removed & 0.9% saline bags placed in specified and labelled location
Drugs	Wrong drug dose given in scenario	Procedure for working out & checking drug doses revisited
	Unable to draw up drug	Staff educated post-debrief
Equipment	Location - lack of awareness leading to delays in treatment	Increased awareness
	Equipment not available; intravenous needles missing from resuscitation trolley - no spares available to restock from alternative areas	Discussed with senior nursing staff - central store now kept in Children’s Emergency Department
	Absence of stylets for infant intubation - unable to intubate child	Small stylets now on resuscitation equipment list
	Lack of knowledge on using equipment e.g. putting a laryngoscope together	Increased awareness of educational needs
Timings	Participants unable to recollect event timings correctly for documentation purposes	Awareness of allocating a scribe if staff available
		Use of writing boards in resuscitation areas
		Development of a carbonated resuscitation documentation form that can be filled in as the resuscitation progresses

The future

The approach to undergraduate and postgraduate education is constantly evolving. We continue to support medical education and encourage inter-professional learning by maintaining the

paediatric simulation programme. Our strategy for future development includes filming the scenarios - an area that has been evaluated favourably by current participants. We have expanded our bank of pre-programmed illness scenarios and are currently developing trauma scenarios.

There has been recent development of a standardised debriefing form as we feel it is vital that specific points are covered and finally, we are moving forward with plans to involve other disciplines and clinical areas in the programme. Royal Derby Hospital is now operating all acute services from one site; there are new Accident & Emergency facilities for both adult and paediatrics. Our proposal for a future simulation project is to treat a child from the arrival at hospital via an ambulance paramedic crew, through all necessary departments, to eventual treatment of the child in a specialist unit.

Conclusion

We concede that there are limits to what can be achieved with simulation and that there is always ‘room to improve’ or adapt the simulations. The simulations have brought immediate risk issues to light that have needed prompt resolution. Although a relatively small sample size, the fact that the session is conducted within the participants own working environment has produced some interesting and thought provoking illustrations of what can hinder or indeed help, a paediatric resuscitation event.

Clinically based simulation is a sustainable and realistic method of delivering inter-professional training and it is a constructive and beneficial experience to all those involved. It provides the opportunity for participants to work together as a team whilst managing an acutely unwell child and receiving consultant led feedback on communication and clinical skills, as well as overall management of the event.

Author Information

Karen Tomlinson is a registered nurse who currently works as a Clinical Skills & Resuscitation Trainer in Derby Royal Hospital. Her background is in adult surgical nursing and she has worked in various different areas such as surgical high dependency, step down units, spinal units and the general surgical wards. Within the scope of her current role Karen is involved in both undergraduate medical education from facilitation of the clinical skills element of the Graduate Entry to Medicine Course to postgraduate education and courses.

Caroline Cocking also currently works as a Clinical Skills & Resuscitation Trainer in Derby Royal Hospital. Her background is both adult and paediatric critical care nursing with her previous role being practice development nurse for paediatric critical care. Caroline is heavily involved in both undergraduate and postgraduate education for paediatrics.

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Clinical Skills Lab (CSL)



The Clinical Skills Lab database will comprise information on over 200 clinical skills, broadly separated into:

- History taking skills
- Communication skills
- Clinical examination/interpretation skills
- Practical skills

Not only will this valuable resource provide material to students as a learning tool and revision aid, for example, OSCEs, it will also offer educational materials for teachers from all disciplines, allowing some standardisation of practice. The Clinical Skills community will also be encouraged to contribute, making this database interactive.

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