Development of a programme to facilitate interprofessional simulation-based training for final year undergraduate healthcare students

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Abstract

Introduction:
Students have few opportunities to practise alongside students from other disciplines. Simulation offers an ideal context to provide them with concrete experience in a safe and controlled environment. This project was about the development of a programme to facilitate interprofessional scenario-based simulation training for final year undergraduate healthcare students and explored whether simulation improved trainees' knowledge of other healthcare discipline's roles and skills.

Methods:
A multidisciplinary academic project team was created and trained for the development and facilitation of this project. The team worked on the development of appropriate multiprofessional scenarios and a strategy to recruit the final year students on a volunteer basis to the project. By the end of the project 95 students were involved in small groups to one of fifteen 3-hour interprofessional simulation sessions. Staff role played the relatives, doctor on call, and patient when it was more appropriate than using a patient simulator (Laerdal SimMan/SimBaby) in the simulated community setting and paediatric or adult emergency department. Each session had 3 to 4 of the following disciplines represented (Adult/Children/Learning Disability Nursing, Paramedic, Radiography, Physiotherapy) and each student observed and took part in one long and relevant high-fidelity scenario. Half the students were randomly selected to fill in a 40-item questionnaire testing their knowledge of other disciplines before the simulation (control group) and the others after (experimental group). Students were assessed on the questions relating to the disciplines represented in their session.

Results:
By the end of the project 95 questionnaires were collected of which 45 were control group students (Questionnaire before simulation) and 50 experimental group students (Questionnaire after simulation). Both groups were comparable in terms of gender, discipline and age representation. Participants were: Adult nurses (n=46), Children's nurses (n=4), Learning Disability nurses (n=7), Nurses, Paramedics (n=8), Radiographers (n=20), Physiotherapists (n=8). 15 sessions were run with an average of around 7 participants and at least 3 disciplines represented. The knowledge test results about the disciplines represented was significantly different between the control and experimental groups (Control 73.80%, 95% CI 70.95-76.65; and Experimental 78.81%, 95% CI 75.76-81.87, p=0.02). In addition, there were sometimes reliable differences between the groups in their view of multidisciplinary training; confidence about working as part of a multidisciplinary team was 3.33 (SD=0.80, Control) and 3.79 (SD=0.90, Experimental), p=0.011; their anticipation that working as part of a multidisciplinary team would make them feel anxious was 2.67 (SD=1.17, Control) and 2.25 (SD=1.04, Experimental), p=0.073; their perception of their knowledge of what other healthcare professionals can or cannot do was 3.00 (SD=0.91, Control) and 3.35 (SD=0.93, Experimental), p=0.066; their view that learning with other healthcare students before qualification will improve their relationship after qualification was 3.93 (SD=1.14, Control) and 4.33 (SD=0.81, Experimental), p=0.055; their opinion about interprofessional learning helping them to become better team workers before qualification was 3.96 (SD=1.24, Control) and 4.42 (SD=0.77, Experimental), p=0.036.

Conclusions:
Although the difference is relatively small (~5%), the results demonstrate that students gained confidence and knowledge about the skills and role of other disciplines involved in their session. Through simulation, the positivism of students about different aspects of learning or working with other healthcare disciplines has significantly improved. Students gained knowledge of other disciplines simply by being given the opportunity to take part in a multiprofessional scenario and observe another one. The results of the test and their reported perception about multidisciplinary team working suggest that they are better prepared to enter the healthcare workforce. Discussions during the debriefings highlighted the fact that multidisciplinary training is important. The main challenges identified have been the voluntary student attendance and timetabling issues forcing us to run the session late in the day due to the number of disciplines involved in each session and their different placement rota. The aim is now to timetable formally this session within their curriculum. Introducing simulation in the undergraduate curriculum should facilitate its implementation as Continuing Professional Development once these students become qualified healthcare professionals.

Development of a programme to facilitate interprofessional simulation-based training for final year undergraduate healthcare students

Project Summary:

This project was about the implementation of scenario-based simulation training sessions for multiprofessional groups of final year health students, developed and facilitated by a team of healthcare educators and simulation specialists. Simulation is about getting students to operate in realistic simulated situations within community or hospital environments without interruption or guidance by the facilitator to observe how they manage the clinical situations and work collaboratively to treat the patient. This is a very resource intensive teaching approach where students are encouraged by the tutors to reflect during the debriefings as well as drawing out important learning points they will take away about issues such as safe practice, effective communication, and teamwork. Although only a limited number of students took part, the results of the study and the feedback from the students were very encouraging. A list of the scenarios is presented, along with advice on how to organise and plan a session in a Higher Education Institution context, the assessment questionnaire used, and an analysis of the feedback collected from the students who took part in the simulation sessions.

1/ Background

Students have generally very few opportunities to practise alongside students from other disciplines. Simulation offers an ideal context to provide them with concrete experiences in a safe and controlled environment (Ziv et al. 2000), but also presents a number of challenges which need to be overcome. Some simulation activities with a very limited number of professions at undergraduate level have already been published with encouraging results, mentioning that it was a powerful learning experience for the students (Ker et al. 2003). Other reports of simulation studies showed that students enjoyed and benefited from the experience (Alinier et al. 2006; Gordon et al. 2001). As indicated in a recent paper, the use of simulation in training is predicted to increase in the future, by an increasing number of disciplines, including for undergraduate interprofessional learning (Bradley 2006). This has been further emphasised by official reports directing the training and Continuing Professional Development (CPD) of healthcare providers (Department of Health 2000, 2006, 2008). The aim of the project presented in this report was to develop a programme to facilitate interprofessional scenario-based simulation training for final year undergraduate healthcare students and explore whether simulation improves trainees' knowledge of other healthcare discipline's roles and skills.

The University of Hertfordshire has a large portfolio of undergraduate health related courses ranging from pharmacy through to all branches of nursing. Interprofessional education (IPE) has been integrated as a module within the students' curriculum in their first year of study in 2004 and in the final year in 2006. Because of the semester A and B intakes, the modules are run twice a year totalling around 800 students from 10 disciplines. The delivery of these first and final year IPE modules is supported by a small core team of staff with a fractional central appointment within the Faculty of Health and Human Sciences as well as a number of staff from different disciplines.

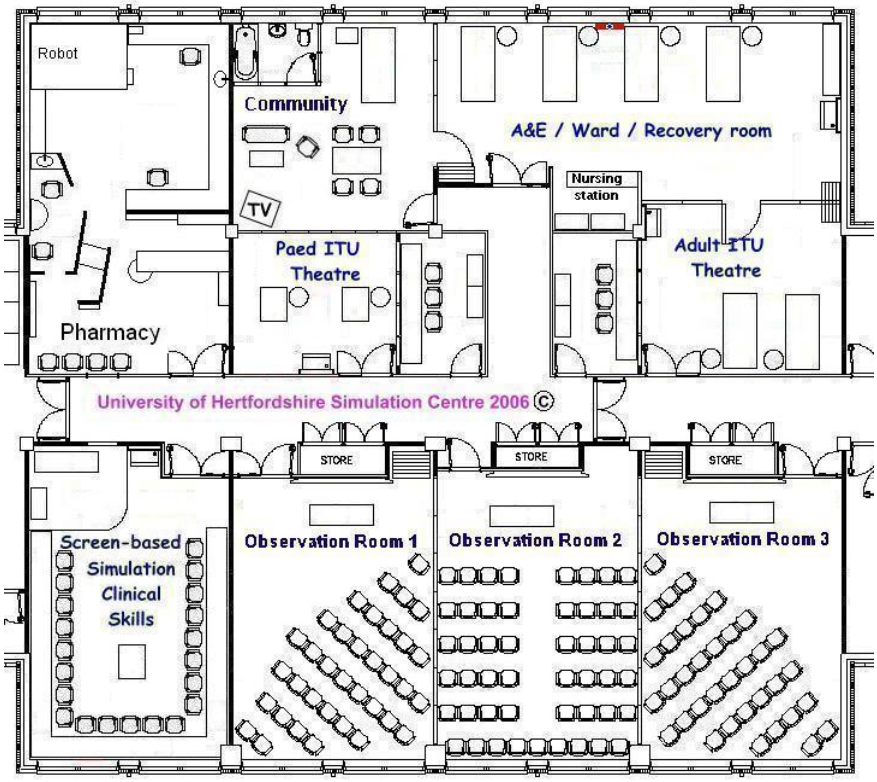

Figure 1: The new HICESC: a large and modern multiprofessional simulation centre floor plan.

Alongside this strong emphasis for the delivery of interprofessional education, the University has pioneered the use of realistic scenario-based simulation training in disciplines such as nursing and paramedic sciences with the opening of its Hertfordshire Intensive Care & Emergency Simulation Centre (HICESC) in 1998 (Alinier 2008). In early 2001 and 2005, the centre acquired two adult Laerdal patient simulators (SimMan) and one baby simulator (SimBaby), which have controllable physiological parameters to recreate a large range of medical conditions and pathologies, and other features such as operator controlled voice, auscultation sounds and bodily fluid outputs. At the time of being granted this mini project funding the simulation centre was entering a transitional phase whereby the existing facilities were going to be re-housed in a purpose built centre (Figure 1), which was part of a larger building project within the Faculty of Health and Human Sciences. The new HICESC which was formally inaugurated in July 2007 was to become the largest and most advanced simulation centre in the UK, and particularly well suited for the delivery of interprofessional training thanks to the range of simulated clinical and non-clinical settings it houses (Alinier 2007a).

2/ Interprofessional simulation for healthcare students

Interprofessional simulation is still a rare training opportunity, especially at undergraduate level, because of a number of issues which will be exposed later in this report. Defining both terms is important so one can appreciate and understand the type of learning experience that the participants in this project were offered. Our definition of “interprofessional simulation” is an adaptation of the well accepted definition of interprofessional education by Freeth et al (Freeth 2002) with our mode of delivery of simulation and reads as follows: “Interprofessional simulation is when members (or students) of two or more professions associated with health or social care are engaged together and autonomously in highly realistic scenarios to learn, with, from, and about each other from these simulated patient cases which occur in a safe and controllable environment.“ This type of simulation in healthcare education is also known as “high-fidelity simulation” because participants are not prompted or guided but are immersed in a realistic environment while they are providing treatment to their patient, whether it is an actor (simulated patient) or patient simulator (Alinier 2007b).

One of the aims for organising simulation sessions for students from different disciplines is to provide an opportunity for them to observe aspects of the work carried out by other professionals which they may not normally witness and also to interact with them when it is appropriate during a scenario. This was achieved in this project by inviting two matched multiprofessional teams of students for each session. This allowed the students from one team to take part in a scenario as and when required by the patient while the other students could observe remotely the whole scene through the camera system. Each scenario was then followed by a debriefing during which a discussion was facilitated to explore the experience from the different team members. The ultimate goal of such learning experiences is to improve collaboration and the quality of care provided to real patients.

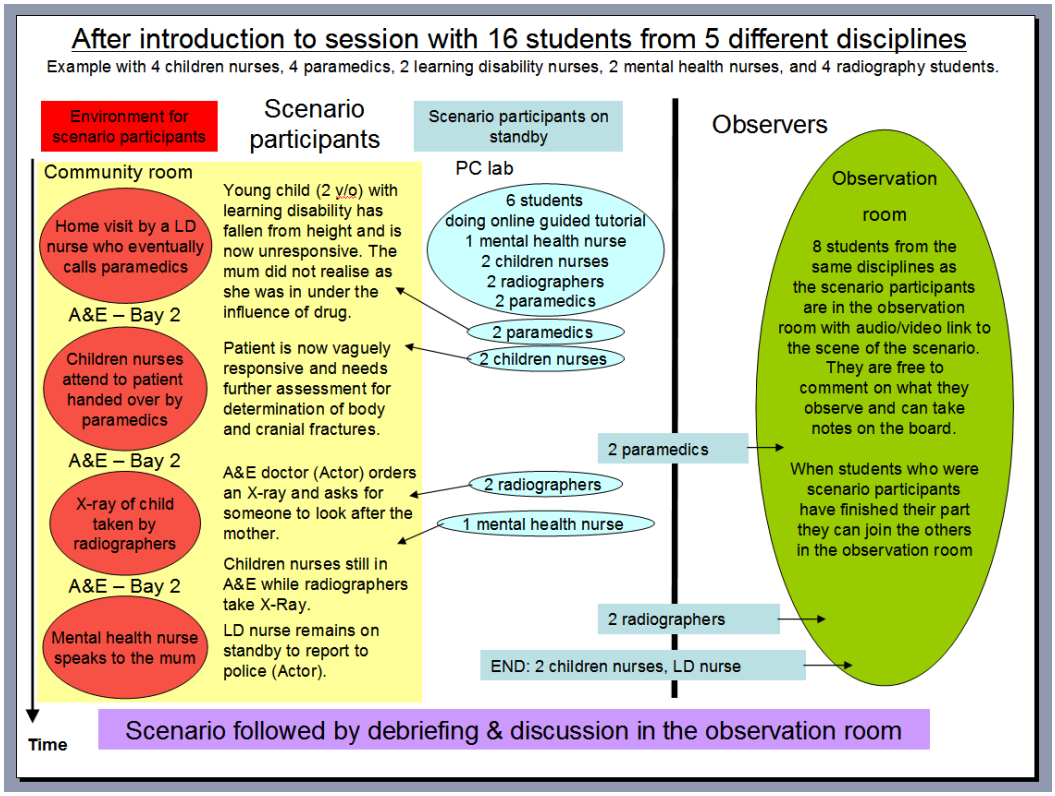

Figure 2: Schematic representation of the location and role or activity of students during a multiprofessional scenario.

3/ Project preparation

This project was carried out in a succession of stages which included:

- Ethical application to involve the students in this project,
- Negotiations with Head of Schools regarding access to students and support from subject specialists,
- Dissemination of information about the project to staff within the Faculty,
- Development and review of a bank of scenarios which could realistically involve students from 3 to 5 disciplines,
- Development and review of the feedback and test questionnaires,
- Invitation to take part in the project sent to students through programme tutors, posters, and the online managed learning environment (StudyNet).
- Training of the staff to be involved and piloting of scenarios,
- Organising volunteers into teams and allocating them to a session,
- Collection and analysis of the feedback and test questionnaires.

Ethical approval was granted at a very early stage in the project and revised before the actual role out of the interprofessional simulation sessions. A multidisciplinary academic project team was created and trained for the development and facilitation of this project. The team worked on the development of appropriate multiprofessional scenarios and a strategy to recruit the students to the project.

During the initial stages of the project regular meetings were held with the Heads of Schools whose students were going to be involved in the simulation sessions. Some conditions were put in place such as the possibility for students from all disciplines to take part in the project in order not to advantage any of them during assessment. This took our anticipated participant population from about 450 students from 4 disciplines to over 800 students from 10 disciplines. The main advantage was that it allowed the project team to use the final year IPE module as a vehicle to publicise the project, while making it clear to the students that attendance was not compulsory and that it was not a component of their assessment towards the module. Sessions could only be organised when students had no other timetabled activities, which meant running them at the end of the teaching day. Heads of Schools nominated staff to support the project for the development of the scenarios and initial sessions with students if they accepted to do it in their own time because of staff workload commitments.

Table 1 presents a Gantt chart of the project as it actually happened. Although this was a two-year project, the sessions for the students were actually run only over one academic year. The project was heavily advertised to students to encourage participation. This included use of emails or direct communication by programme tutors, posters displayed throughout the Faculty, messages on the students' StudyNet Interprofessional Education module homepage, and via the Faculty newsletter.

Timeline / List of activities to be undertaken	Jan - Feb 06	Mar- Apr 06	May -Jun 06	Jul - Aug 06	Sep - Oct 06	Nov-Dec 06	Jan - Apr 07	May -Jun 07	Jul -Aug 07	Sep -Oct 07	Nov-Dec 07	Jan – Feb 08	Mar – Apr 08	May – Jun 08	Jul – Aug 08	Sep 08- ….
Ethical Approval							Project frozen									
Briefing of lecturing team																
Organising timetable																
Development of feedback forms																
Development of test questionnaire																
Development of scenarios																
Discussions with Heads of Schools																
Interim report																
Advertisement of the project																
Running simulation sessions																
Evaluation of project																
Data analysis																
Final report (End of project)																
Dissemination of results																

Table 1: Gantt chart of the project

4/ Methodology

Students were invited to volunteer to take part in a 3-hour multiprofessional simulation session during which two scenarios were run. For the realism of the scenarios students had to wear their uniform, several lecturers were involved as actors as and when appropriate (Simulated patient, relative or doctor on call), and students were asked to treat the patient simulator (Laerdal SimMan) as a real patient. Depending on the disciplines represented during the session and the scenario run, the scenario sometimes evolved from the simulated community setting to the paediatric or adult emergency department. Each session had 3 to 4 disciplines represented and each student observed and took part in one long and relevant high-fidelity scenario. Half the students were randomly selected to fill in a 40-item questionnaire testing their knowledge of other disciplines before the simulation (Control group) and the others after (Experimental group) as illustrated in Figure 3. Although students were asked to fill in all 45 items of the discipline knowledge questionnaire (Q2) (See Appendix I), they were only were assessed on the questions relating to the disciplines represented within their session.

At the beginning of any session, and after the students were randomly given either the pre-course questionnaire (Q1), making them part of the experimental group, or Q1 and Q2, making them part of the control group. Students were briefed about the session and introduced to the environment, equipment, and patient simulator for about 30 minutes. Then the students were divided into 2 teams to take part in the scenarios. One team remained in the observation room while some students from the other team were conducted to the waiting room and others briefed about their patient. As the scenario unfolded, students from the waiting room were called to join the scenario. Hence, for example, only the radiography students who were part of the observing team could see the patient being handed over by the paramedics to the nurses in the A&E. After the debriefing of the scenario, the roles were reversed and a different scenario was prepared for the other students to enact. This gave all students a chance to observe what their peers were doing. For example learning disability nurses very rarely have the opportunity to see an X-ray being taken, or radiographers and physiotherapists are not familiar with paramedics assessing a patient at home.

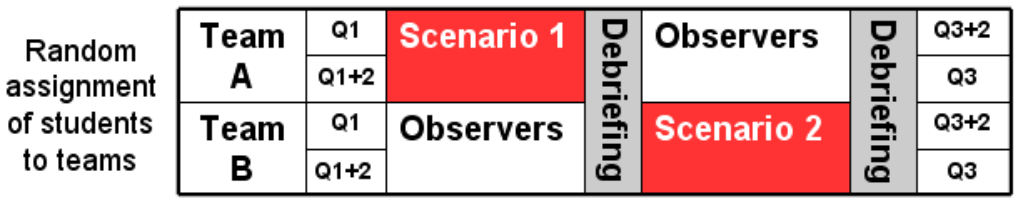

Figure 3: Succession of events during a session of the project.

5/ Project Outcomes

By the end of the project 135 students responded to the invitation and volunteered to take part in the project, but in fact only 95 students from 6 different disciplines were able to attend one of the 15 simulation sessions organised for the project. The disciplines of the students who took part in the project is shown in Figure 4 and includes Adult Nursing, Children's Nursing, Learning Disability Nursing, Paramedic Science, Diagnostic Radiography, and Physiotherapy. Two other sessions had to be cancelled because only 2 students were present. More sessions would have been organised if more students had volunteered to take part in the project. Table 2 shows that 6 students attended two sessions, but they were not given the opportunity to fill in the questionnaires a second time. Although around 16 students (4 students from 4 disciplines) were invited per session, on average only 7 students attended each session. Most students were invited more than once before they were actually able to take part in a session for various reasons. This often meant that instead of having a pair of students from each required discipline for a given scenario, students were often taking part in a scenario as the sole representative from their specific profession. This issue occurred for a couple of the sessions run and is reflected in the feedback collated in Appendix III and the following comment

made by a final year adult branch nursing student: "*The session was very useful and beneficial for the contribution of my professional knowledge. The session would have been more beneficial if more students from other discipline were part of the experience. The debriefing was helpful for the reflection on the event!*"

In total, 17.08% of students registered on the semester A IPE module took part in this simulation project (N=95). Closer analysis of Table 2 and Figure 4 shows that the highest level of participation was from Learning Disability students with 63.64% (n=7), but they are part of a very small cohort. Nearly a third of the paramedic students took part in the project (n=8), but they are also part of a small group. The largest number of participants were from adult nursing (n=46) and represented 21.60% of their overall cohort. Although only 16.67% of radiography students took part in the project (n=20), they constituted the second largest group of participants. 10.53% of the children's nursing cohort (n=4) and 8.70% of the physiotherapy students (n=8) took part on the project. Only one or two students from radiotherapy and mental health nursing ever registered their interest to take part in the project but they were not able to attend a session. Overall students were positive about their experience and this feedback was confirmed by their written comments such as: "*This is a great project. It really helps increasing my knowledge and I was able to practice my emergency skills*." (final year adult branch nursing student).

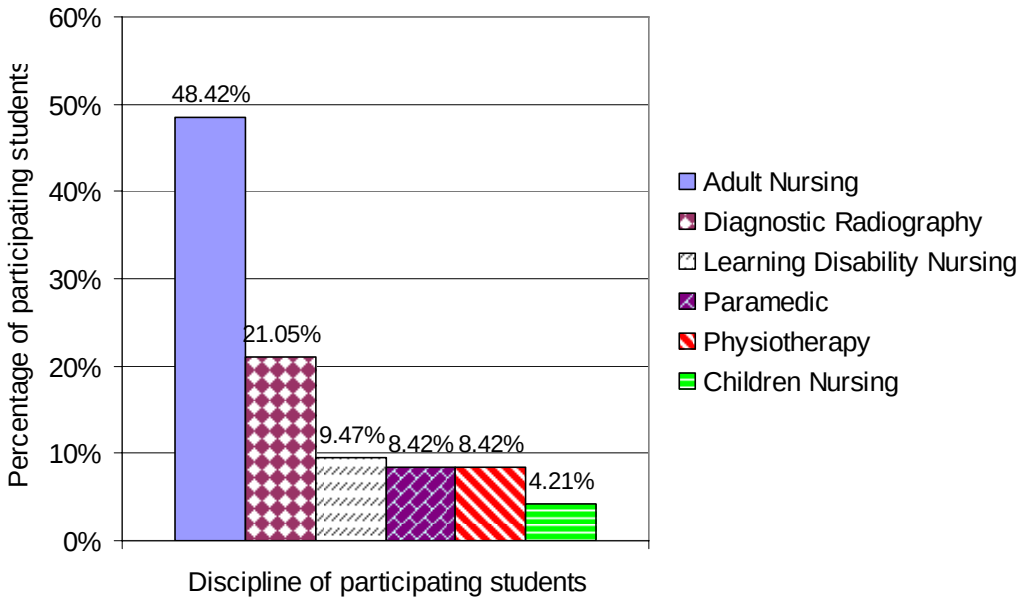

Figure 4: Bar chart representation of the disciplines involved in the project.

	Total student number	**Project participants**	**Percentage participation from cohort**	Students who attended an extra session	Number of scenario participants
Adult Nursing	213	46	21.60%	0	46
Children's Nursing	38	4	10.53%	0	4
Learning Disability Nursing	11	7	63.64%	2	9
Mental Health Nursing	33	0	0%	0	0
Radiography	120	20	16.67%	0	20
Radiotherapy	22	0	0%	0	0
Physiotherapy	92	8	8.70%	0	8
Paramedics	27	8	29.63%	4	12
Unknown	0	2	-	-	2
Total	556	95	17.08%	6	101

Table 2: Discipline and number of students involved in the interprofessional simulation project.

For each of the sessions half of the students from each discipline were randomly selected to be part of the control group and half for the experimental group. The teams involved in each of the two scenarios were a mixture of control and experimental group students as shown in Figure 3. In total 45 students were recruited for the control group, and 50 students for the experimental group. This was due to an uneven number of students often taking part in the sessions or students arriving slightly late. Overall both groups were comparable in terms of gender (~89.3% female), age (~28.3 y/o) and discipline representation (Table 3 and Figure 5).

Group		Discipline							Total
		Adult Nursing	Radiography	Learning Disability Nursing	Paramedic	Physiotherapy	Children Nursing	Missing	
Control	Count	23	11	2	3	4	2		45
	% within Group	51.1%	24.4%	4.4%	6.7%	8.9%	4.4%		100.0%
	% within Discipline	50.0%	55.0%	22.2%	37.5%	50.0%	50.0%		47.4%
	% of Total	24.2%	11.6%	2.1%	3.2%	4.2%	2.1%		47.4%
Experimental	Count	23	9	5	5	4	2	2	50
	% within Group	46.0%	18.0%	10.0%	10.0%	8.0%	4.0%	4.0%	100.0%
	% within Discipline	50.0%	45.0%	77.8%	62.5%	50.0%	50.0%	100.0 %	52.6%
	% of Total	24.2%	9.5%	7.4%	5.3%	4.2%	2.1%	2.1%	52.6%
Total	Count	46	20	7	8	8	4	2	95
	% within Group	48.4%	21.1%	7.5%	8.4%	8.4%	4.2%	2.1%	100.0%
	% within Discipline	100.0 %	100.0%	100.0%	100.0%	100.0%	100.0%	100.0 %	100.0%
	% of Total	48.4%	21.1%	7.5%	8.4%	8.4%	4.2%	2.1%	100.0%

Table 3: Cross tabulation of participants discipline by project group.

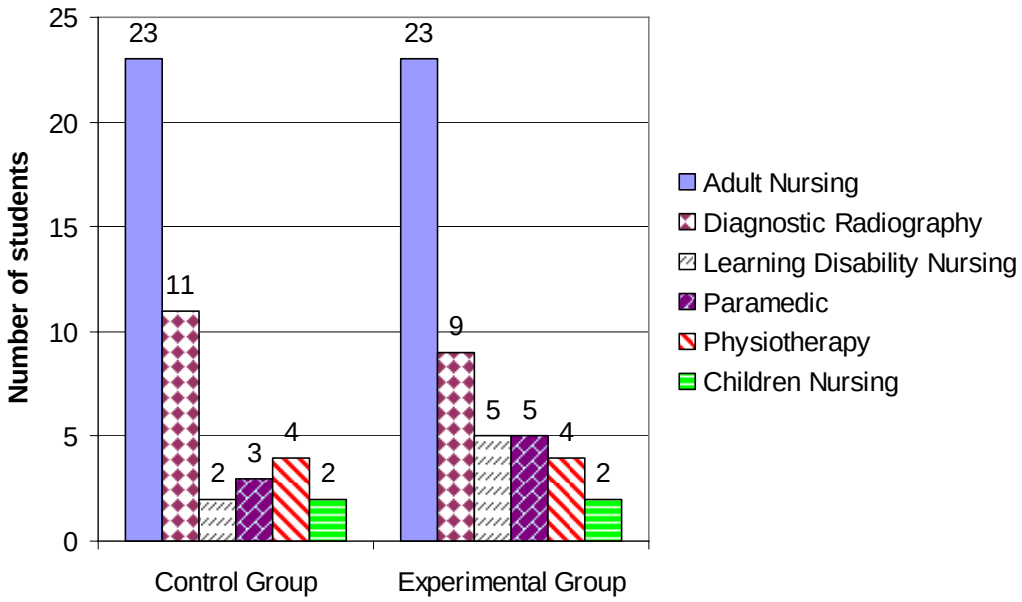

Figure 5: Bar chart representation of the project groups by discipline representation.

5.1/ Scenarios developed

The team developed a series of scenarios that were scrutinised by discipline specific experts from the University of Hertfordshire and staff from clinical practice. A total of 18 scenarios have been developed for this project (see Table 4), but due to the actual number of students and disciplines represented (Table 2), only 8 scenarios have been used during the sessions. Some of the scenarios developed are presented in Appendix II. These contain baseline information and key details about the progression of each scenario.

The scenarios were normally designed in pairs in terms of the health disciplines they were involving, hence the colour coding of the inventory presented in Table 4. Each scenario required the involvement of three to four disciplines from our health student population. When other health professionals were required for the realistic development of a given scenario, a member from the team would act the role.

	Patient	Para-medics	Adult Nurses	Child Nurses	Physio-therapists	Radio-graphers	Radio-therapists	Mental Health Nurses	Learning Disability Nurses	N° Students	Disci-plines	Date last modified
1	**Peter**	**2**	**2**				**2**			6	3	11/11/2007
2	**Maxine**			**2**	**2**	**2**		**2**		8	4	05/11/2007
3	**Laura**			**2**	**2**	**2**		**2**		8	4	26/11/2007
4	**Harry**	**2**		**2**	**2**			**2**		8	4	05/11/2007
5	**Laurent**	**2**		**2**	**2**			**2**		8	4	11/11/2007
6	**Alan**	**2**	**2**		**2**	**2**				8	4	05/11/2007
7	**Rob**	**2**	**2**		**2**	**2**				8	4	03/12/2007
8	**John**	**2**	**2**		**2**	**2**				8	4	05/11/2007
9	**Rashid**		**2**			**2**			**2**	6	3	11/11/2007
10	**Amit**		**4**			**2**			**2**	8	3	12/11/2007
11	**Paul**		**2**				**2**		**2**	6	3	11/11/2007
12	**Jessica**		**4**				**2**		**2**	8	3	11/11/2007
13	**Raymond**		**2**		**2**	**2**			**2**	8	4	20/11/2007
14	**Philip**		**2**		**2**	**2**			**2**	8	4	20/11/2007
15	**Bruce**		**2**			**2**			**2**	6	3	02/12/2007
16	**Stephen**		**2**			**2**			**2**	6	3	03/12/2007
17	**John 2**		**2**		**2**	**2**				6	3	26/11/2007
18	**Rob 2**		**2**		**2**	**2**				6	3	21/02/2008
	N° Scenarios	6	14	4	11	13	3	4	8			

Table 4: Inventory of scenarios developed for the simulation sessions involving semester A IPE students.

None of the scenarios were fully programmed on the software that operates the patient simulator (Laerdal SimMan and SimBaby) because the operator had the ability to make the appropriate physiological changes in real time as the situation was developing and as treatment was being provided. This mode of controlling the patient simulator is referred to as being “on the fly”, and is normally reserved for advanced users, who often have the ability to multitask during the scenarios. For all scenarios a folder has been made containing corresponding patient notes, GP letters, X-ray request forms, X-rays, ECGs.

Thanks to the setup of the simulation centre, students were able to use the phone lines to make calls to inform relatives or contact the X-ray department for example. Similarly it allowed the paramedics to call the A&E department before they arrived with their patient. This allowed the observation and practice of communication skills which are normally not very practical to assess. The mannequins were operated from control rooms located adjacent to the setting of any given scenario sometimes

with a direct view through an observation window or via the multiple cameras present in each room. The views from the same cameras were displayed via a data projector in one of the observation rooms for the students not involved in the scenario. The floor plan of the Centre can be seen in Figure 1.

5.2/ Student feedback and study results

5.2.1/ Pre-simulation questionnaire results

Students completed the pre-simulation questionnaire, referred to as Q1 in Figure 3 as soon as they entered the centre. The only information they had about the session was the briefing letter inviting them to take part in the project. The summary of the findings from the 27 questions is presented in Table 5 and used a 5-point Likert scale with 1=strongly disagree and 5=strongly agree.

	Question (1=strongly disagree and 5=strongly agree)	*Mean*	*standard-deviation*	*Number*
1	I am familiar with the concept of simulation	2.66	1.24	90
2	Medical simulation will improve my clinical skills	4.15	0.92	91
3	Medical simulation will improve my clinical knowledge	4.05	0.87	91
4	Medical simulation will improve my skills in managing emergencies	4.13	0.91	91
5	Patient simulators are a useful addition to learning from real patients	4.10	0.97	90
6	I expect that this session will change my practice significantly	3.61	0.88	91
7	I am looking forward to the session	4.02	0.99	91
8	I am worried about performing badly in front of the camera	3.63	1.26	91
9	I am worried about performing badly in front of my peers	3.52	1.28	91
10	I am worried about performing badly in front of the instructors	3.65	1.20	91
11	I expect to learn new concepts that will aid my clinical practice	3.87	0.98	91
12	Having the opportunity to observe myself on video would be useful	3.71	1.04	91
13	I expect to learn from watching others perform	4.02	0.9	90
14	I feel well trained in leadership and communication	3.24	0.85	91
15	I feel well trained in working as a team in crisis situation	2.93	0.96	91
16	I will find it difficult to treat the mannequin as a real patient	3.22	1.05	89
17	It is better to take part in simulation training as part of a multidisciplinary team	3.93	0.92	91
18*	I am well aware of the role and skills of an adult nurse	4.06 / 2.78	1.10 / 0.90	46 / 45
19	I am well aware of the role and skills of a mental health nurse	2.63	0.96	91
20*	I am well aware of the role and skills of a learning disability nurse	4.8 / 2.36	0.45 / 0.88	5/86
21*	I am well aware of the role and skills of a children's nurse	4.75 / 2.55	0.5 / 1	4 / 87
22	I am well aware of the role and skills of a midwife	2.70	1	91
23*	I am well aware of the role and skills of a radiographer	4.75 / 2.75	0.91 / 0.89	20 / 71
24	I am well aware of the role and skills of a radiotherapist	2.69	0.94	91
25*	I am well aware of the role and skills of a paramedic	5 / 2.81	0 / 0.94	8 / 83
26*	I am well aware of the role and skills of a physiotherapist	5 / 2.81	0 / 0.82	8 / 83
27	I am well aware of the role and skills of a pharmacist	2.65	0.92	91

Table 5: Results of the pre-simulation questionnaire.
* Students from the discipline in question / Students from the other disciplines.

According to their responses on the pre-simulation questionnaire, only a minority of students reported being already familiar with the concepts of medical simulation training before the start of the session (22.22%), yet 52.74% expected the session would change their practice significantly. They had a fairly high perception that taking part in simulation would improve their clinical skills (4.15 SD=0.92), their clinical knowledge (4.05 SD=0.87), and their skills in managing emergencies (4.13 SD=0.91). Similarly they expressed a positive view about the usefulness of patient simulators (4.10 SD=0.97) and were looking forward to the session (4.02 SD=0.99). They were generally slightly worried about

being videoed and performing badly in front of their peers or tutors (~3.6 SD=1.2). Although they were in favour of both approaches, students seemed to report that they would expect to learn more from watching their peers taking part in a scenario (4.02 SD=0.90) rather than watching themselves on video (3.71 SD=1.04). The students were generally unsure about their ability to work as part of a team in a crisis situation (2.93 SD=0.96), hence favoured multidisciplinary simulation training (3.93 SD=0.92).

The pre-simulation questionnaire also included a section assessing the students' perception of their awareness of the role and skills of the different disciplines potentially involved in the project. It is noticeable that students reported being very well aware of the role and skills of their own discipline, except adult nursing students who said they were simply aware. On average students reported being unsure or not really aware of the role and skills of the other disciplines. The least understood disciplines seem to be Learning Disability Nursing and Children's Nursing.

5.2.2/ Post-simulation questionnaire results

The post-simulation questionnaire (Q3, Figure 3) was completed by the students at the very end of the session and contained 40 questions across four sections (Table 6). The first section related to the familiarisation period. The results of the first question showed that in fact 25.27% of students reported being already familiar with the concepts of medical simulation. In general students felt the familiarisation period helped to reassure them (3.64 SD=1.03) but they were unsure that they had enough time to familiarise themselves with the patient simulator (3.12 SD=0.93). 40% of the students reported feeling comfortable in the simulated environment, and 41.1% were unsure. Looking more closely at the data collected the physiotherapy students appeared to be the group most satisfied with the familiarisation time (3.63 SD=0.92) while the paramedic students were the least satisfied (2.63 SD=0.92). The learning disability students were the group who reported feeling the most comfortable in the simulated environment (3.80 SD=0.84) while the radiography students were unsure (3.00 SD=0.94).

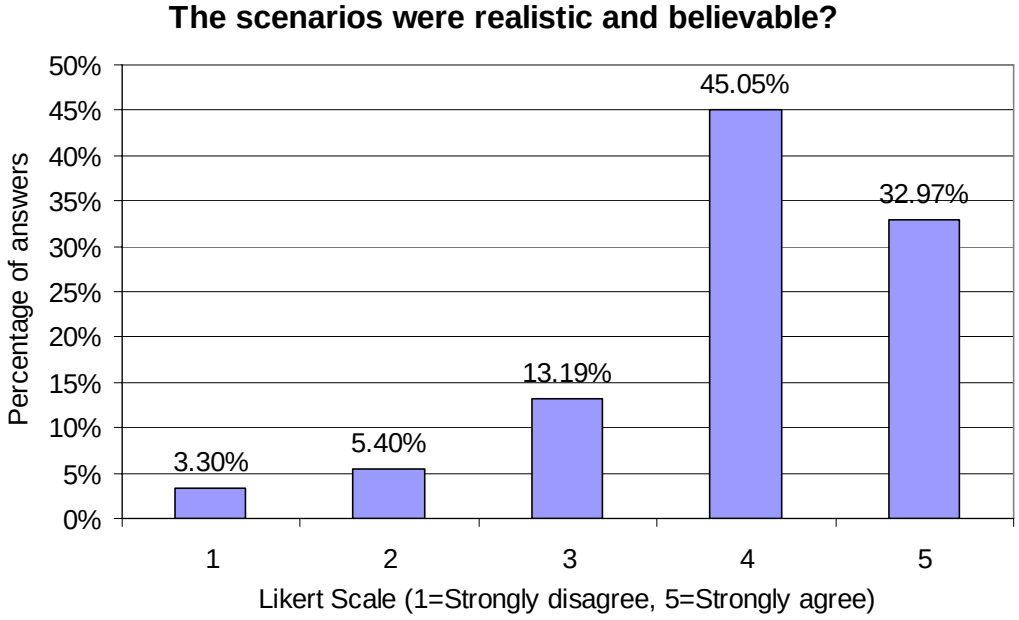

Figure 6: Students' perception of realism of the scenarios.

The second section of the post-simulation questionnaire related to the scenarios. Over 78% of the students thought the scenarios were realistic and believable (Figure 6). All students tended to disagree that the presence of a video camera, their peers, or the tutors would make them under-perform, which contradicted their impression prior to the session. They seemed to be the least worried

about the presence of their peers (2.16 SD=0.95). They generally found it less difficult than they anticipated to treat the mannequin as a real patient (3.22 before versus 2.89 after) and thought the mannequin responded realistically to treatment (3.81 SD=0.99). The students reported that the scenarios prompted realistic responses from them (3.78 SD=0.97) and that it is better to take part in simulation training as part of a multidisciplinary team (4.4 SD=0.76) (Figure 7).

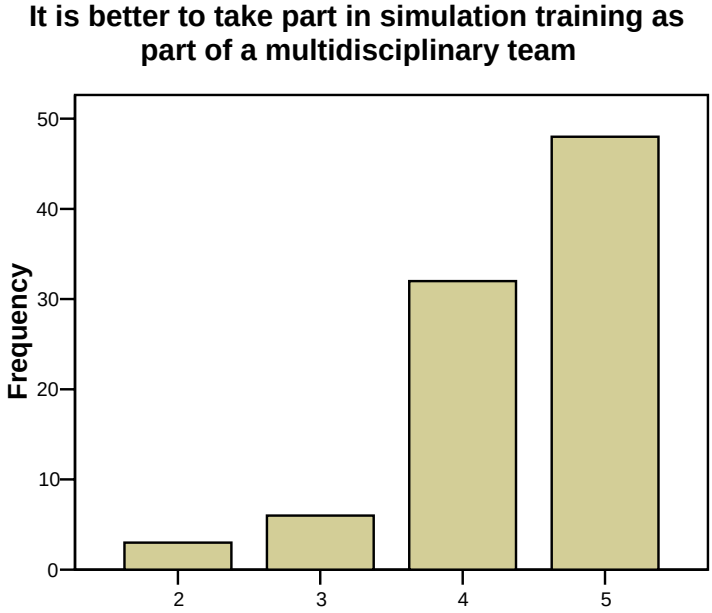

Figure 7: Responses of students as to whether it is better to take part in simulation training as part of a multidisciplinary team.
(with 1=strongly disagree and 5=strongly agree).

A series of subjective questions explored whether students thought they had learnt about the different professions involved in their scenario or the scenario they observed (Table 6). The discipline for which students reported learning the most was Adult Nursing (4.20 SD=0.9). Only 2 paramedic students responded to the questions if they learnt about their own discipline by taking part in the scenario (Question 18), and they disagreed (2 SD=1.41). This is due to the fact that this group of students had spent a year on placement as qualified paramedics as part of their four year degree. Hence, they had already acquired a significant amount of experience about their own discipline, but were still able to benefit from the session by learning more about the role and skills of the other disciplines. It may worthwhile to mention that paramedic students have regular sessions in the simulation centre in their first, second and final year of their programme of study, so were more familiar than most other students with the simulated environment and patient simulators. Apart from the exception of the latter group of students who reported not learning more about their own practice, all students thought that simulation allowed them to learn more about the role and skills of their own and other disciplines.

The next section of the post-simulation questionnaire was about the debriefing session. Students felt that they learnt from the debriefing following each scenario (4.39 SD=0.69). They also felt that it is beneficial to have multidisciplinary scenario debriefings (4.42 SD=0.74) as much discussion was taking place among students about their differing practices on issues such as patient handling or patient assessment. According to students the debriefing illustrated important behavioural aspects (4.27 SD=0.76) and enhanced their technical knowledge (4.10 SD=0.82). The majority of students thought that seeing themselves on video would allow them to reflect better (4.08 SD=1.09). All students were given the opportunity to come back to the centre to view the recording of their scenario, but only 2 groups out of 15 actually returned to view it in their own time.

	Question *(1=strongly disagree and 5=strongly agree)*	*Mean*	*standard-deviation*	*Number*
A	**The familiarisation period with medical simulation training:**			
1	I was familiar with the concepts of medical simulation training	2.8	1.17	91
2	The familiarisation period helped to reassure me	3.64	1.03	88
3	I had enough time to familiarise myself with the patient simulator	3.12	0.93	90
4	I felt comfortable with the simulated environment	3.28	1.03	90
B	**The medical simulation session:**			
5	The scenarios were realistic and believable	3.99	0.99	91
6	The presence of a video camera made me under-perform	2.47	1.05	90
7	The presence of my peers made me under-perform	2.16	0.95	91
8	The presence of the instructors made me under-perform	2.24	1	90
9	I found it difficult to treat the mannequin as a real patient	2.89	1.27	91
10	The response of the mannequin to treatment was realistic	3.81	0.99	91
11	The scenario prompted realistic responses from me	3.78	0.97	91
12	It is better to take part in simulation training as part of a multidisciplinary team	4.4	0.76	89
13*	Simulation allowed me to learn more about the role and skills of an adult nurse	4.36 / 4.20	0.89 / 0.9	33 / 35
14	Simulation allowed me to learn more about the role and skills of a radiotherapist		N/A	
15	Simulation allowed me to learn more about the role and skills of a mental health nurse		N/A	
16*	Simulation allowed me to learn more about the role and skills of a radiographer	4.23 / 3.73	0.93 / 0.86	13 / 64
17*	Simulation allowed me to learn more about the role and skills of a learning disability nurse	4.33 / 3.81	0.58 / 1.18	3 / 27
18*	Simulation allowed me to learn more about the role and skills of a paramedic	2 / 4.03	1.41 / 0.90	2 / 34
19*	Simulation allowed me to learn more about the role and skills of a physiotherapist	4.0 / 4.0	1.67 / 0.86	6 / 31
20	Simulation allowed me to learn more about the role and skills of a midwife		N/A	
21*	Simulation allowed me to learn more about the role and skills of a children's nurse	4.0 / 3.67	. / 2.31	1/3
22	Simulation allowed me to learn more about the role and skills of a pharmacist		N/A	
C	**The debriefing session:**			
23	I learnt from the debriefing session	4.39	0.69	90
24	It is beneficial to have multidisciplinary scenario debriefing session	4.42	0.74	91
25	The debriefing session illustrated important behavioural aspects	4.27	0.76	90
26	The debriefing session enhanced my technical knowledge	4.10	0.82	90
27	Seeing myself on the video tape would allow me to reflect better	4.08	1.09	86
D	**Your opinion on medical simulation training:**			
28	I enjoyed the session	4.59	0.80	91
29	I found it useful to learn alongside peers from other disciplines	4.63	0.66	90
30	I learnt from participating in my own scenario	4.49	0.78	90
31	I learnt from watching others take part in the scenario	4.54	0.75	90
32	It reinforced aspects of my clinical practice important to patient safety	4.38	0.73	91
33	The course will help me to practise more safety	4.34	0.81	90
34	I will change my clinical practice because of what I have learned today	3.90	1.02	89
35	Today's course has improved my clinical skills	4.02	0.97	91
36	Today's course has increased my clinical knowledge	4.16	0.76	90
37	Patient simulators are a useful addition to learning from real patients	4.48	0.71	89
38	Simulation training should be available to all trainees from my discipline	4.69	0.61	91
39	Simulation training should be part of the IPE module	4.66	0.71	89
40	How regularly would you find it useful to repeat such a session per year?	3.80	3.12	86

Table 6: Results of the post-simulation questionnaire.
* Students from the discipline in question / Students from the other disciplines.

The fourth and final section of that questionnaire explored further the views of students about medical simulation training and the project in general. The students very much enjoyed the session (4.59 SD=0.80). They reported learning from taking part in their scenario (4.49 SD=0.78) as much as they did while observing their peers (4.54 SD=0.75). They found it very useful to learn alongside peers from other disciplines (4.63 SD=0.66). According to them the sessions reinforced aspects of their clinical practice important to patient safety (4.38 SD=0.73) and will help them to practise more safely (4.34 SD=0.81). Most students reported they would change aspects of their clinical practice because of what they learnt during the session (3.90 SD=1.02). Students reported that the session improved their clinical skills and knowledge and that patient simulators are a useful addition to learning from real patients (4.48 SD=0.71) to an even greater degree than they thought before the session (4.10 SD=0.97) (Table 5). Students were strongly in agreement that the type of simulation training they were exposed to should be available to all trainees from their discipline (4.69 SD=0.61) and be part of the IPE module (4.66 SD=0.71). On average students would like to take part in such session 3.8 times per year (SD 3.12). The responses to this open question ranged from 1 to 18 sessions per year. The average was 10 for the paramedic students, and approximately 2 to 4 times per year for the other disciplines.

5.2.3/ Discipline knowledge questionnaire results

The discipline knowledge questionnaire was referred to as Q2 in Figure 3 and was composed of 45 questions (See Appendix I). The first 5 questions were very subjective whereas the other 40 questions were "True/False" statements related to a total of 10 disciplines. Since no student from Pharmacy, Radiotherapy, Midwifery and Mental Health took part in any session, the students' answers to these questions were not used.

	Group	N	Mean	Std. Deviation
I am confident when working as part of a multidisciplinary team	Control	45	3.33	0.80
	Experimental	48	3.79	0.90
Working as part of a multidisciplinary team would make me feel anxious	Control	45	2.67	1.17
	Experimental	48	2.25	1.04
I feel I know what other professionals can and cannot do	Control	45	3.00	0.91
	Experimental	48	3.35	0.93
Learning with other healthcare students before qualification improves relationships after qualification	Control	45	3.93	1.14
	Experimental	48	4.33	0.81
Interprofessional learning before qualification helps me become a better team worker	Control	45	3.96	1.24
	Experimental	48	4.42	0.77

Table 7: Students' view of multidisciplinary team working and training by study group.

The students' responses to the first five questions are reported in Table 7 and show that students from the experimental group generally express a more positive attitude toward interprofessional learning and multidisciplinary working. For example students from the experimental group report feeling more confident about working as part of a multidisciplinary team (3.33 SD=0.80, Control and 3.79 SD=0.90, Experimental), with a statistically significant difference (p=0.011) (

). Another question which resulted in a statistically significant difference of perception was when asked if interprofessional learning before qualification helps them to become better team workers (3.96 SD=1.24, Control and 4.42 SD=0.77, Experimental, p=0.036). A bar chart graph clearly shows the difference in the responses from the two groups (

). Although the small differences noticed for the responses to the other questions did not reach statistical significance they are worth considering. Their anticipation that working as part of a multidisciplinary team would make them feel anxious was 2.67 for the control group students (SD=1.17) and 2.25 for the experimental group students (SD=1.04), (p=0.073); their perception of their knowledge of what other healthcare professionals can or cannot do was 3.00 for the control group students (SD=0.91) and 3.35 for the experimental group students (SD=0.93), (p=0.066); their view that learning with other healthcare students before qualification will improve their relationship

after qualification was 3.93 for the control group students (SD=1.14) and 4.33 for the experimental group students (SD=0.81), (p=0.055).

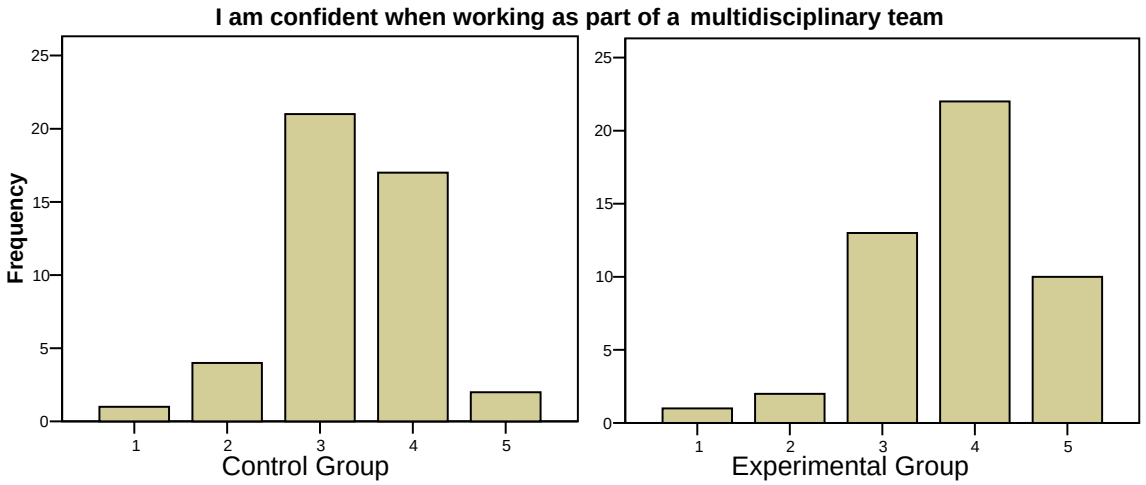

Figure 8: Students' confidence about working as part of a multidisciplinary team.
(with 1=strongly disagree and 5=strongly agree).

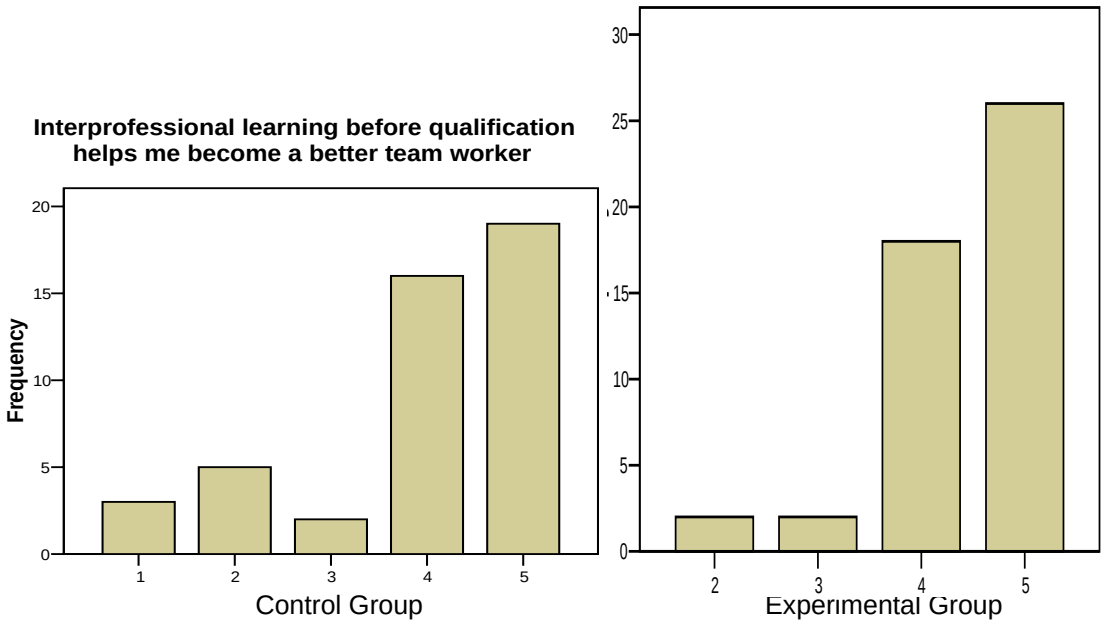

Figure 9: Students' view of interprofessional learning prior to qualifying as health care professionals.
(with 1=strongly disagree and 5=strongly agree).

Each simulation session involved students from 3 to 4 different disciplines; hence we are only interested to find out the score difference between the control and experimental group using a limited number of questions per session (12 or 16 questions). Analysis of the students' results for the discipline knowledge questionnaire shows that students from the control group correctly answered 73.80% (95% CI 70.95-76.65) of the questions relating to the disciplines represented during their session whereas students from the experimental group scored 78.81% (95% CI 75.76-81.87) (Table 8). The 5.01% percentage point difference between the two groups was significant (p=0.02) and proves that students from the experimental group benefited from observing and taking part in a scenario.

	Group	Number	Mean (%)	Standard deviation	t-test for Equality of Means (Equal Variances assumed		
					df	T	Sig. (2-tailed)
Test results	Control	45	73.80	9.62	91	-2.38	0.020
	Experimental	48	78.81	10.65			

Table 8: Students' results for the discipline knowledge questionnaire.

5.3/ Advice for running a successful interprofessional simulation programme

Key to the successful implementation of an interprofessional simulation programme is:

- The support from each professional programme management team as, in the long term, they can help aligning the students' timetables and influence the curriculum content.

Other major elements are:

- The team who is actually going to help facilitate the simulation sessions needs to be trained in running such sessions, in facilitating debriefings, and should be of a mix of professional disciplines.
- Appropriate facilities for the observers to fully benefit from the experience are required (Audio and video link to simulation rooms).
- A range of simulated environments may be needed to realistically involve all the disciplines represented.
- A range of equipment that the different professions use in their clinical areas should be available.
- A bank of scenarios with setup guidelines, scripts, patient notes, medical exam results needs to be developed.
- Enough time needs to be allocated for the students to be briefed about how the session will be run, how they are expected to behave, and so they can familiarise themselves with the environment and patient simulator.
- A supportive learning atmosphere needs to be created from the start of the session so students can tackle the scenarios without the fear of being criticised for the mistakes they may commit.

5.4/ Dissemination of project to date

Aspects of this project and the support from the HEA – Health Sciences and Practice Subject Centre has already been acknowledged through a number of conference presentations or papers such as the following:

- Alinier G, Harwood C, Harwood P, Montague S, Papail G, Ruparelia K, Huish E. Undergraduate multiprofessional training: Are students ready for it? Abstract submitted to the 2009 International Meeting for Simulation in Healthcare, Orlando, FL. (under review)

- Alinier G. Using full-scale clinical simulation for undergraduate interprofessional training. Keynote lecture at the 8th International Nursing Conference, Brunei Darussalam, 25-27 November 2008

- Alinier G. Simulation as a university excellence project. The University of Hertfordshire example. Oral presentation at the 50th conference of the French Society of Anaesthesia and Resuscitation, Paris, France, 24-27 September 2008

- Alinier G, Harwood C, Harwood P, Montague S, Huish E, Ruparelia K, Webber J. IPE Simulation Project. Oral Presentation at the Faculty of Health and Human Sciences Learning and Teaching Conference, Hatfield, UK, 10 September 2008

- Montague S, Alinier G, Harwood C, Harwood P, Huish E, Ruparelia K. Are undergraduate healthcare students learning about each other from multiprofessional scenario-based simulation training? Abstract presented orally at the 14th annual meeting of the Society in Europe for Simulation Applied to Medicine. Hatfield, UK, 19-21 June 2008

- Alinier G. How could you integrate full-scale simulation in your healthcare curriculum? Workshop presented at the HEA Health Sciences & Practice Subject Centre Festival of Learning 2008, University of Cumbria, Carlisle, UK, 11-13 March 2008

- Alinier G. Taking simulation with Paramedics a step further. Keynote lecture at the Laerdal Simulation User Network meeting. University of Cardiff, Cardiff, UK, 27 February 2008

- Alinier G, 2007. Enhancing trainees' learning experience through the opening of an advanced multiprofessional simulation training facility at the University of Hertfordshire. British Journal of Anaesthetic and Recovery Nursing 8(2), 22-27

- Alinier G, Montague S, Harwood C, Harwood P, Sharma M, Huish E. HEA - IPE Simulation Project. Oral Presentation at the Faculty of Health and Human Sciences Learning and Teaching Conference, Hatfield, UK, 5 September 2007

- Alinier G. Medical Simulation at UH: Where next? Keynote lecture at the First Annual Laerdal Simulation User Group Symposium. York, UK, 27-28 April 2007

- Alinier G et al. Poster and flyer at the Faculty of Health & Human Sciences Research Showcase, Hatfield, 23-27 October 2008

- Alinier G. Are Undergraduate Healthcare Students Learning About Each Other From Multi-professional Scenario-Based Simulation Training? Keynote lecture at the 8th Biennial International Nursing Conference, Brunei Darussalam, 25-27 November 2008

Now that the project has been completed, the team will work on publishing some articles in interprofessional, nursing, and radiography education journals.

6/ Issues faced

An important number of issues arose during the project and impeded its progress in different aspects. These included delayed building work for the new simulation centre, difficult student access because of asynchronous timetabled teaching and placement patterns, and heavy staff workload. Other potential problematic areas are profession specific equipment to realistically involve all the professions in the scenarios such as for example a mobile X-ray machine (incapacitated), patient wedges, and lead aprons for radiographers. All the equipment required for the scenarios developed were either already present in the simulation centre or acquired progressively thanks to donations from the local hospitals or equipment manufacturers

Contrary to our initial intention of proposing participation to this project to students from only a few disciplines, for equity all final year healthcare students had to be offered the opportunity to take part in the sessions on a voluntarily basis after having returned a consent form. An option temporarily considered was to make the session compulsory for all students as part of the final year IPE module. The plan was to invite them for a 2.5-hour session in groups of 20 students composed of 4 students from 5 different disciplines, however due the very large number of students undertaking the final year IPE module (~835 across 10 programmes of study in semesters A and B) and the limited amount of time when they are on campus and accessible at the same time, it was just not logistically possible.

Most university based programmes of study make provision for their students to have personal study time during week days, however when trying to correlate the timetables from the different disciplines to determine when students are available, it quickly became apparent that organising the students in multiprofessional groups would be a major problem. For most programmes students have clinical

placement rotations during which they often do not check their emails or can not easily come back to the University even if they obtained permission from the placement supervisor. That is the very reason why the delivery of the IPE module is organised in 2 one-week blocks booked over a year in advance across all programmes. The timetabling issues forced us to run the sessions late in the afternoon, usually 16:00 until 19:00 or later, bringing in other issues such as childcare commitments for mature students or clash with part-time job commitments. However students who made the effort to come thought it was very worthwhile as reported in this comment from a final year physiotherapy student: "…*the impression I got from the students yesterday and those who have attended previously said how beneficial the whole thing was so I think three hours is nothing to ask when we gain so much from it…*" (See Appendix III)

Recruitment of students from the semester B IPE module proved very difficult because students felt the pressure of end of final year examination and assignment deadlines. Despite a few students volunteering from each discipline none attended any of the proposed sessions. For this reason, no student from Pharmacy or Midwifery took part in the project.

Another potential issue was the burden on the staff workload for the facilitation of a potentially very large number of sessions, 50 sessions for 800 students. Running highly realistic simulation sessions for a multiprofessional group of students requires the commitment of a fairly large team of staff who have to agree doing it in addition to their respective teaching commitments. For any session, at least 4 to 5 lecturers were involved. One person was controlling the patient simulator (physiological parameters, voice, and cameras), one was acting as a relative, one was a simulated patient (usually towards the start of a scenario), one was the A&E doctor, and a technician helped reset the scene between scenarios or controlled the camera system for the students in the observation room. While this form of learning is extremely valuable, it is very resource intensive, and hence expensive to run. A number of learning points and key recommendation have been summarised in Table 9.

Project aim: Develop, facilitate, and evaluate the use of high-fidelity simulation training for multiprofessional groups of final year healthcare students
Key learning points: ▪ Students found the opportunity to take part in a highly realistic simulation session very valuable. ▪ Students' attitude towards interprofessional learning and multidisciplinary working was significantly improved following participation and observation of multidisciplinary scenarios. ▪ Although making high-fidelity simulation training part of the students' curriculum would be recommended, it may be physically difficult to implement due to student numbers, staffing, or timetabling issues. ▪ All students attending a simulation session should have the opportunity to take part in a scenario and observe another scenario. ▪ A high-fidelity simulation session cannot be improvised or rushed for it to be a valuable and effective learning experience for the students **Our recommendations**: ▪ Rather than relying on the voluntary participation of students, their attendance should be mandatory and managed by an online booking system offering enough slots for all students to register taking their discipline into consideration. ▪ The booking system should have exclusion criteria to prevent, for example, adult and child branch nursing students to book the same slot, or to avoid having too many different disciplines booked for the same session, making the development of a realistic scenario impossible or very difficult.

Table 9: Key learning points of this project

7/ Discussion

Although the difference is relatively small (5.01%), the results demonstrate that students gained confidence and knowledge about the skills and role of other disciplines involved in their session. Through simulation, the positivism of students about different aspects of multidisciplinary learning has significantly improved. Students gained knowledge of other disciplines simply by being given the opportunity to take part in a multidisciplinary scenario and observe another one. The results of the test and their reported perception concerning multidisciplinary team working suggest that they are better prepared to enter the interprofessional healthcare workforce.

Discussions during the debriefings highlighted the fact that multidisciplinary training is important. The briefing and familiarisation period was deemed to be very important for the students so they could feel more at ease during the scenarios. Surprisingly it is the learning disability students and not the paramedic students who reported feeling the most comfortable in the simulated environment. It was also surprising that the paramedic students reported not having had enough time to familiarise themselves with the patient simulator given that most of them should have already use it during the academic year.

The main challenges of this project have been the volunteer students' attendance and timetabling issues forcing us to run the sessions late in the day due to the number of disciplines involved in each session and their different placement rota. The aim is now to make place in the students' timetable to formally include this session within their curriculum. Introducing it in the undergraduate curriculum should facilitate its future implementation as Continuing Professional Development once these students become qualified healthcare professionals.

With respects to limitations, this project only involved students from one Higher Education Institution who in addition were volunteers to take part in the study. This may bias the subjective elements of this study such as the responses to questionnaires 1 and 3, but also the objective difference in performance to the discipline specific knowledge questions (Q2) because it may have been impacted upon by elements of the interprofessional education curriculum the students will have experienced. Although a respectable number of students was involved in the project overall, some of the statistics presented in Table 5 and Table 6 are not valid due to the very small number of students sometimes representing a discipline. For example only one session had Children's Nursing students, so only a very small proportion of students from the other disciplines have been able to learn about that discipline.

Simulation is still in its infancy in undergraduate healthcare education. The key learning points of this project have been summarised in Table 9 and their application is not limited to the disciplines involved in this project. It would however be wise to start by developing uniprofessional simulation training and acquiring experience that way before embarking in multiprofessional simulation.

Acknowledgements

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Appendices

Appendix I - Discipline knowledge questionnaire

Programme of study & Cohort: _____. Discipline: _____.

Gender? Male / Female Age: _____ .

Questionnaire filled in **before** / **after** taking part in the scenario-based simulation training.

1=Strongly disagree 5=Strongly agree

1.	I am confident when working as part of a multidisciplinary team ……	1	2	3	4	5
2.	Working as part of a multidisciplinary team would make me feel anxious ……..	1	2	3	4	5
3.	I feel I know what other professionals can and cannot do ……	1	2	3	4	5
4.	Learning with other health-care students before qualification improves relationships after qualification ……	1	2	3	4	5
5.	Interprofessional learning before qualification helps me become a better team worker ……	1	2	3	4	5

Knowledge of other professions:

6.	Intravenous cannulation can be undertaken by all registered adult nurses …….	True	/ False
7.	Adult nurses may hold the cassette while an X-ray is taken ……..……..	True	/ False
8.	Adult nurses are responsible for prioritising care of patients in the A&E …….	True	/ False
9.	All adult nurses can prescribe a limited range of drugs ……..……	True	/ False
10.	Radiographers are trained in Basic Life Support (CPR) ..……..……	True	/ False
11.	Radiographers may hold the cassette while the X-ray is taken …….	True	/ False
12.	Radiographers only work in the imaging/X-ray department ……..….	True	/ False
13.	All radiographers are able to request X-rays ……..……	True	/ False
14.	Mental health nurses are regularly trained in Basic Life Support (CPR) ……..…	True	/ False
15.	A&E departments employ mental health nurses ……..……..	True	/ False
16.	Mental health nurses can administer oral medication ……..	True	/ False
17.	Mental health nurses provide support for patients as well as for staff ……..…	True	/ False
18.	Physiotherapists may treat patients with acute respiratory problems ..……..….	True	/ False
19.	Physiotherapists are trained in Basic Life Support (CPR) ..……..	True	/ False
20.	Physiotherapists may treat patients in their home ……..……..	True	/ False

21. Interpretation of X-rays is within physiotherapists' scope of practice ..... True / False
22. Learning disability nurses deal with both adults and children ..... True / False
23. Learning disability nurses are trained in Basic Life Support (CPR) ..... True / False
24. Learning disability nurses can assess the physical status of their clients ..... True / False
25. Learning disability nurses can administer oral medication ..... True / False

26. Radiotherapists are only specialised in treating patients with tumours ..... True / False
27. Radiotherapists are trained in Basic Life Support (CPR) ..... True / False
28. Radiotherapists may treat patients on the ward ..... True / False
29. Radiotherapists may diagnose illness and disease ..... True / False

30. Administration of drugs is within paramedics' scope of practice ..... True / False
31. Paramedics' priority is the rapid transportation of patients to hospital ..... True / False
32. Paramedics will not intervene for an incident on the premises of a hospital ..... True / False
33. Paramedics are able to perform IV cannulation ..... True / False

34. Pharmacists are bound by a code of ethics ..... True / False
35. All pharmacists are able to prescribe drugs ..... True / False
36. Pharmacists are trained in Basic Life Support (CPR) ..... True / False
37. All pharmacists are now trained to perform basic physical assessment ..... True / False

38. Midwifes routinely carry out post-birth home visits ..... True / False
39. Midwifes sometimes work in the A&E department ..... True / False
40. Midwifes are trained in Basic Life Support (CPR) ..... True / False
41. All midwifes can perform suturing of the perineum ..... True / False

42. Children's nurses may hold the cassette while an X-ray is taken ..... True / False
43. Children's nurses can care for patients up to 18 years old ..... True / False
44. Intravenous cannulation can be undertaken by all registered children's nurses . True / False
45. Children's nurses can give consent for a child to have an operation ..... True / False

Appendix II – Scripts of a selection of multiprofessional scenarios:

SCENARIO 2, MAXINE

Participants.	2 Nurses (child care), 2 Radiographers, 2 Mental Health Liaison Nurses, 2 Physiotherapists.
Patients name.	Maxine Alexander.
Others.	Actors: Dad (Kevin), Mother, Doctor
Scenario Base.	Maxine a 9 month-old baby is a baby in good health inthe Physiotherapy Dept. waiting room with her father while mum attends a physiotherapy appointment.
Environments.	Physiotherapy waiting room, Paediatric A&E.
Clinical Overview.	Kevin has a history of a generalised anxiety disorder. Maxine, a 9-month old baby, presents as an emergency at the Paediatric A & E. Inhaled foreign body whilst in Physio Dept.
Technical.	SimBaby setup in Physio Dept/waiting room, and cabling ready in Paediatric A&E to quickly reconnect SimBaby.

All physiological measures (SimMan/SimBaby) depend upon participants reactions. Noted levels are for base line reference and trends only.

Participants		Instructor/controller	Background/Scene	Other students
Maxine a 9-month old baby presents as an emergency at the Paediatric A & E. Both parents are present. Dad has a history of a generalised anxiety disorder for which he received Cognitive Behavioural Therapy 6 months ago.				
In physiotherapy dept, Mum having physio for maleolar fracture. Dad in waiting room with Maxine who just inhaled a foreign body. Physiotherapists initiate interventions. Doctor called, Maxine transferred to Paediatric A&E.	Paediatric A&E	Maxine coughing – choking. Short of breath, cyanosed. Reduced sounds and movement on right side of chest.	Maxine has trouble breathing, taking frequent shallow breaths. Dad shouts for help – Maxine "choking to death".	2 Physiotherapists treating mum
Child care nurses continue with airway support. Parents informed about condition and are supported.		RR 70 SpO_2 92% on oxygen Retraction with shallow breathing. HR 190 B/P 78/32 Capillary refill is 4s.	Mother becoming more anxious. Mother asks questions about condition of Maxine and what is being done. Dad now showing signs of high anxiety. No significant improvement in Maxine	2 Nurses (child branch). 2 Radiographers.
Radiographers perform X-ray. Children nurses perform continue to perform chest thrusts and back blows. Crash call. Support for parents. 2 mental health liaison nurses called (already in A&E).		RR 40 SpO_2 85% on oxygen HR 60 B/P 60/28	(? No FB Seen on X-ray) Maxine's condition deteriorates Maxine progressively becomes drowsy and is unresponsive. Mum is in distress and is in the way. Dad is in a panic mode, He is now trembling and hyperventilating. He is clenching his fists and is "up tight" and aggressive looking. He suddenly rushes out of the room.	2 Mental health liaison nurses in A&E. look after father (move to quiet room).
Foreign body dislodged and removed. Oxygen therapy continued.		RR 40 SpO_2 97 on O_2 HR 100 B/P 70/30	Maxine is fine but very weak. Father calms, (if interventions effective).	2 mental health liaison nurses go to observation room.
Radiographers present X-ray results.		RR 30 SpO_2 99 on O_2 HR 110 B/P 80/34	END OF SCENARIO - DEBRIEFING	.

SCENARIO 4, HARRY

Participants.	2 Paramedics, 2 Physiotherapists, 2 Nurses (child), 2 Mental Health Nurses, 2 Radiographers.
Patients name.	Harry Porter.
Others.	Actors: Doctor, Mother (Karen past history of Post Natal Depression).
Scenario Base.	3-month old male baby with cystic fibrosis.
Environments.	Community area, Paediatric ITU.
Clinical Overview.	Child with Cystic fibrosis, chest infection.
Technical.	SimBaby in his cot in the community room. Cabling ready in PITU to reconnect SimBaby.

Dr Jones,
The Surgery,
Common Place Square.
Freds Town.
AB12 3CD

Dear Physiotherapist,

Re Name Harry BLOGGS
DOB 15/08/07
Δ Cystic Fibrosis
PC recent discharge from hospital

I would be very grateful if you could assess this infant to review his physiotherapy routine at home. He was admitted to hospital at 6 weeks old with a chest infection and failure to thrive; he was subsequently diagnosed with cystic fibrosis. I saw him and his mother in the surgery this morning and I am concerned that she is not coping at home. His mother has a history of post natal depression with her previous pregnancies and she is complaining that she is finding it impossible to fit in his physiotherapy treatment into his daily routine. I have asked the community mental health nurse to assess Mrs Bloggs in view of her history.

Thank you.

Yours sincerely,

Dr Jones

All physiological measures (SimMan/SimBaby) depend upon participants reactions. Noted levels are for base line reference and trends only.

Participants		Instructor/controller	Background/Scene	Other students
Harry is a 3-month old male baby born with Cystic Fibrosis, recently discharged from local hospital. He is being visited at home by physiotherapists for discharge follow up. He weighs 4kg. His mother, Karen, visited GP last week because of her post-natal depression and is being visited, at the same time, by a community mental health nurse.				
Physiotherapists on home visit to assess the child. Community practice nurses (CPN) visiting the mother. Call an ambulance on 3005 and reassure mother.	Community room	Inspiratory stridor. Barking cough RR 50 SpO_2 97 ↘ HR 180 B/P 84/39 Harry has a harsh cry, hoarseness.	Harry is in his cot, he is irritable and restless. Karen is at the bedside and gives a history of a runny nose, cough and congestion for 3 days. She is not motivated to care for Harry and finds it more and more difficult to cope with his condition. Temp 38.50 C (tympanic)	- 2 paramedics checking their bags with hands free telephone (3005). - 2 CPN's + 2 children nurses in PC lab.
Paramedics arrive at home. Preparation of equipment. Handover communication with physiotherapists. Patient assessment.		RR 60 SpO_2 94 Subcoastal recession (Medium) HR 200 B/P 78/32	Harry deteriorates over 4 minutes. IV access is not possible. Mother is anxious and restless, pacing up and down.	2 children nurses dispatched to A&E
Paramedics give oxygen, obtain IV access and call hospital A&E on 8005 so nurses can prepare themselves.		RR 60↘ SpO_2 88 Subcoastal recession (Deep) HR 220↘ B/P 70/30 On O_2: Reduced stridor and chest recession.	Mother asks questions about condition of Harry and what is being done. She becomes upset tearful and agitated. Harry progressively becomes quieter and slower to respond.	2 CPN's look after mum.
Paramedics transport patient to A&E via reception.		SimBaby now disconnected to be reconnected in PITU		- 2 physiotherapists
Paramedics arrive in A&E. Handover communication with children nurses. Mother's needs looked after by the CPNs. Perform initial assessment, monitor and record of information.	PITU	RR ↘24 SpO_2 80 on O_2 HR ↘85 B/P 60/30	Harry is now drowsy. Capillary refill is 4s IV access is not possible. The mother is now demanding, shouting, wailing, aggressive, and is unpredictable. Erratic, irrational, and violent.	2 CPN's look after mum.
Doctor examines.		RR 0 SpO_2 78↘ HR 200 VT B/P 55/30	Karen wants to stay in the same room as Harry and cries.	- 2 paramedics go to observation room
Children nurses perform BLS. CPN's calms mother.		RR 0 HR 220 VT B/P 0	Harry arrests.	
Team initiates ALS. Defibrillation at 4j/kg or AED.		If adequate: RR 40 SpO_2 94 HR 160 BP84/39	Karen accepts to leave the room and calms down.	
Doctor asks children nurses to transfer Harry to Paed ICU and inform mother.		RR 40 SpO_2 98 HR 120 B/P 85/50	Harry is fine but very weak. END OF SCENARIO - DEBRIEFING	

SCENARIO 6, ALAN

Participants.	2 Paramedics, 2 Physiotherapists, 2 Nurses (adult), 2 Radiographers.
Patients name.	Alan Riddle
Others.	Actors: Daughter, Doctor.
Scenario Base.	55 y/o male patient, found laying beside bed after falling.
Environments.	Community area, Adult A&E.
Clinical Overview.	Patient with Paget's disease - Fall - Fracture neck Lt femur - Hit Rt temporal area of skull when falling.
Technical.	2 SimMen, SimMan A laying by bed on the floor in the community room in casual clothes. SimMan B in bay 2 of A&E wearing patient gown.

All Physiological measures (SimMan/SimBaby) depend upon participants reactions. Noted levels are for base line reference and trends only.

Participants		Instructor/controller	Background/Scene	Other students
Alan is a 55 y/o male patient, found laying beside bed after falling. He is being visited at home for assessment of mobility and review of management by physiotherapists. Alan suffers from Paget's disease.				
Physiotherapists on home visit to assess the patient (SimMan A). Alan's daughter is at home Call an ambulance on 3005.	Community room	RR 30 HR 125 B/P 150/60 SpO_2 97 Agitated. Suffering great pain and discomfort in present position.	Alan finds walking painful. Fell whilst getting up off the bed after an afternoon rest. Worried daughter can give some information - pain in hip and Rt side of head. Hit Rt side of head on bedside table and hurt left hip.	2 paramedics checking their bags with hands free telephone (3005). 2 nurses + 2 radiographers in PC lab.
Paramedics arrive. Preparation of equipment. Handover communication with physiotherapists. Patient assessment. Prepare to transport patient.		RR 32 HR 110 B/P 150/60 SpO_2 97 Painful left hip - will not move it. Pain right temporal are of skull where hit head.	Shortened and externally rotated leg.	2 nurses in PC lab plus 2 radiographers still in PC lab with hands free telephone (3005)
Paramedics (may obtain IV access) and call hospital A&E on 8005 so nurses prepare themselves.		RR 32 $PetCO_2$ 4.2 HR 90 B/P 140/55 SpO_2 95		2 nurses dispatched to A&E 2 radiographers still in PC lab with hands free telephone (3005)
Paramedics transport patient to A&E on stretcher.	A&E	SimMan A now disconnected. SimMan B in bay 2 ready.		2 physiotherapists go to observation room
Paramedics arrive in A&E. Handover communication with nurses. Perform initial assessment, monitoring and recording of information (SimMan B). Doctor called.		RR 36 $PetCO_2$ 4.5 HR 80 B/P 155/50 SpO_2 98	**Patient (SimMan A) carried from stretcher to bay 3. Use of bay 2 onwards (SimMan B)**	2 radiographers still in PC lab with hands free telephone (3005)
Doctor examines patient and requests X-rays (3005).		RR 30 HR 75 B/P 170/50 SpO_2 98		2 paramedics go to observation room
Radiographers take X-rays and return results to A&E.		RR 22 HR 60 B/P 1160/70 SpO_2 98	The X-ray reveals Alan has a fracture of the neck of left femur. No skull fracture seen, but evidence of Paget's disease.	2 radiographers go to A&E

			END OF SCENARIO - DEBRIEFING	

SCENARIO 7, ROB1

Participants.	2 Paramedics, 2 Physiotherapists, 2 Nurses (adult), 2 Radiographers.
Patients name.	Rob. (Robert Bloggs)
Others.	Actors: Wife, Doctor
Scenario Base.	65 y/o with Chronic arthritis and previous cardiac history.
Environments.	Community area, Adult A&E.
Clinical Overview.	Chest pain when mobilising, Arrests after sitting down, ALS - transport.
Technical.	SimMan A sitting up in the community room in casual clothes, SimMan B in bay 2 of A&E wearing patient gown

Dr Jones,
The Surgery,
Common Place Square.
Freds Town.
AB29 9CD

Dear Physiotherapist,

Re Name Robert BLOGGS
DOB 01/01/42
Δ Rheumatoid arthritis
Angina pectoris
PC Deteriorating function especially mobility around the house

I would be very grateful if you could assess this gentleman who is having increasing difficulty with his arthritis affecting his functional abilities. I saw him at the surgery today and he was complaining that he is having increasing difficulty getting about at home, he walks with a stick and is having trouble on and off chairs and in and out of bed. He has a long history of angina pectoris but this is well controlled with medication, he reports only occasional need for his GTN spray.
Thank you.

Yours sincerely,

Dr Jones

Physiological measures (SimMan/SimBaby) depend upon participants reactions. Noted levels are for base line reference and trends only.

Participants		Instructor/controller	Background/Scene	Other students
Rob is a 65y/o male patient with rheumatoid arthritis and previous cardiac history. He is being visited at home for assessment of mobility and review of management by physiotherapists.				
Physiotherapists on home visit to assess the patient (SimMan A). Call an ambulance on 3005 and BLS initiated.	Community room	RR 20 crackles HR 125 B/P 150/90 SpO_2 97 ↘	Rob complains of chest discomfort while mobilising and eventually **arrests** after sitting down. Worried wife can give information.	- 2 paramedics checking their bags with hands free telephone (3005). - 2 nurses + 2 radiographers in PC lab.
Paramedics arrive. Preparation of equipment. Handover communication with physiotherapists. Take over to start ALS. Patient assessment form.		RR 0 HR 0 VF Coarse BP 0 SpO_2 0	Return of output after shock #2	- 2 nurses dispatched to A&E - 2 radiographers still in PC lab with hands free telephone (3005)
Paramedics obtain IV access and call hospital A&E on 8005 so nurses prepare themselves.		RR 30 $PetCO_2$ 7.5 HR 80 ST elevation B/P 100/60 SpO_2 95 ↗		- 2 radiographers still in PC lab with hands free telephone (3005)
Paramedics transport patient to A&E on stretcher via reception.		SimMan A now disconnected SimMan B in bay 2 ready		- 2 physiotherapists go to observation room
Paramedics arrive in A&E. Handover communication with nurses. Perform initial assessment, monitor and record information (SimMan B).	A&E	RR 24 $PetCO_2$ 4.8 HR 70 ST elevation B/P 110/80 SpO_2 98	**Patient (SimMan A) carried from stretcher to bay 3. Use of bay 2 onwards (SimMan B)**	- 2 radiographers still in PC lab with hands free telephone (3005)
Doctor examines patient and requests a chest X-ray (3005), and prescribes Digoxin (125µg), Furosemide (40mg orally-2 x day) and Amoxicillin (500mg STAT) for nurses to deliver.		RR 22 HR 70 ST elevation B/P 110/80 SpO_2 98		- 2 paramedics go to observation room
Radiographers take chest X-ray. Nurses perform drug calculations and administer.		RR 18 HR 70 ST elevation B/P 110/80 SpO_2 98	The X-ray reveals Rob has an enlarged heart and pulmonary oedema. END OF SCENARIO - DEBRIEFING	- 2 radiographers go to A&E

SCENARIO 8, JOHN

Participants.	2 Paramedics, 2 Physiotherapists, 2 Nurses (adult), 2 Radiographers.
Patients name.	John. (John StPierre).
Others.	Mother.
Scenario Base.	25 y/o with cystic fibrosis, Left side pneumothorax.
Environments.	Community area, Adult A&E.
Clinical Overview.	Cystic fibrosis, chest infection, left pneumothorax.
Technical.	SimMan A sitting up in the community room in casual clothes. SimMan B in bay 2 of A&E wearing patient gown.

Dr Jones,
The Surgery,
Common Place Square.
Freds Town.
AB12 3CD

Dear Physiotherapist,

Re Name John StPierre
DOB 01/01/82
Δ Cystic Fibrosis
PC Deteriorating lung disease
Recent admission to hospital with left pneumothorax

I would be very grateful if you could assess this young man. I saw him at the surgery today and he was complaining that he is having increasing difficulty adhering to his home physiotherapy routine since his discharge from hospital two weeks ago. He is complaining of increasing amounts of sputum and appears quite dyspnoeic on minimal exercise. He is currently on a 4-week course of oral ciprofloxacin.
Thank you.

Yours sincerely,

Dr Jones

All Physiological measures (SimMan/SimBaby) depend upon participants reactions. Noted levels are for base line reference and trends only.

Participants		Instructor/controller	Background/Scene	Other students
John is a 25 y/o male patient with cystic fibrosis. He is being visited at home by physiotherapists for review of management. The physios have to perform a respiratory assessment.				
2 Physiotherapists on home visit assess patient's condition (SimMan A). Call an ambulance on 3005. Reassure mother.	Community room	RR 26 inspiratory wheezing and crackles HR 125 B/P 150/90 SpO_2 93 ↘	John is not feeling well and his mother is getting worried. He is sitting on a chair near the table at home.	- 2 paramedics checking their bags with hands free telephone (3005). - 2 nurses + 2 radiographers in PC lab.
Paramedics arrive at home. Handover communication with physiotherapists. Perform initial assessment. Administration of Oxygen. Patient assessment form. Call hospital A&E on 8005 so nurses prepare themselves.		RR 32 noises as above. HR 130 ↗ B/P 144/88 SpO_2 89 ↘ decreasing rapidly. Decreasing chest sounds left side.	John deteriorates and become short of breath and cannot speak in full sentences. Cyanosis Mother becoming more anxious, restless.	- 2 nurses dispatched to A&E - 2 radiographers still in PC lab with hands free telephone (3005)
Paramedics transport patient to A&E on stretcher via reception.		SimMan A now disconnected SimMan B in bay 2 ready		- 2 physiotherapists go to observation room
Paramedics arrive in A&E. Handover communication with nurses. Perform initial assessment, monitor and recording of information. Pneumothorax – (lt) (SimMan B).	A&E	RR 34 wheezing + crackles. HR 132 B/P 140/90 SpO_2 90 ↘ on O_2 No breath sounds left side.	**Patient (SimMan A) carried from stretcher to bay 3. Use of bay 2 onwards (SimMan B)**	- 2 radiographers still in PC lab with hands free telephone (3005)
Doctor examines patient and orders a chest X-ray on 3005 (and to get IV access if non).		RR 36 wheezing + crackles. HR 134 B/P 135/85 SpO_2 88 ↘		- 2 paramedics go to observation room
Radiographers take chest X-ray with mobile machine.		RR 36 wheezing + crackles. HR 134 B/P 135/85 SpO_2 depends		
Nurses/Radiographers initiate BLS on patient.		RR 0 HR 0 VF BP 0 Then RR 26 SpO_2 depends. HR 110 B/P 105/65	Patient arrests while X-ray cassette is inserted, but regains output while BLS is provided. END OF SCENARIO - DEBRIEFING	- 2 radiographers go to A&E

SCENARIO 10, AMIT

Participants.	2 Radiographers, 2 Learning Disability Nurses, 4 Adult Nurses.
Patients name.	Amit Patel
Others.	Actors: Parents and Doctor
Scenario Base.	25 y/o with physical and learning disabilities, also suffers from frequent asthmatic attacks and chest infections.
Environments.	X-ray unit, Adult A&E,
Clinical Overview.	Severe asthmatic attack, left pneumothorax.
Technical.	SimMan A setup in X-ray room. SimMan B setup in bay 2 of A&E

All Physiological measures (SimMan/SimBaby) depend upon participants reactions. Noted levels are for base line reference and trends only.

Participants		Instructor/controller	Background/Scene	Other students
Amit is 25 year old with physical and learning disabilities, also suffers from frequent asthmatic attacks and chest infections. Lives at home with parents. Having chest X-ray after referral from his GP. Develops a severe asthmatic attack after having the X-ray done. Accompanied by two community learning disabilities nurses.				
Radiographers have just taken X-ray when Amit commences asthmatic attack. Doctor called, LD nurses remain with Amit and his parents.	X–ray Department	RR 35 Wheezing bi-lateral, HR 100, B/P 130/70	The parents are actively involved in Amit's care. Amit is able to communicate at a basic verbal level.	2 radiographers 2 LD community nurses.
Oxygen given (60% through a high flow mask) Amit transferred to A&E department. Therapeutic interventions - salbutamol 2.5mg nebuliser prescribed by Doctor. Corticosteroid-prednisolone 60mg, orally Peak flow readings by nurses.		Dyspnoea, RR 35 Wheezing bi-lateral, HR 95, B/P 130/70 SpO_2 94 PEF before salbutamol 100. PEF after salbutamol 120.	Parents concerned about Amit's condition and are anxious.	4 nurses Adult Branch 2 LD community nurses.
IV aminophylline 500mg by slow IV injection over at least 20 minutes Bag and mask. Left pneumothorax.		Asthma severe Wheezing absent. RR 10 HR 110, SpO_2 84 on O_2 B/P 100/60 After a few minutes - Left pneumothorax. No air entry/movement left chest.	Parents anxiety increases as Amit's condition deteriorates.	4 nurses Adult Branch 2 LD community nurses.
Oxygen mask. Need to recognise pneumothorax.		3 - 5 minutes later: RR 30 HR 120, B/P 98/50 SpO_2 84	Amit's condition worsens - need decompression or a drain. Parents very worried - especially if pneumothorax not identified.	4 nurses Adult Branch 2 LD community nurses.
Decompression and drain by Doctor. Radiographers take chest X-ray post drain insertion.	A&E	Condition improves.	**Kept in A&E for observation.** END OF SCENARIO - DEBRIEFING	

SCENARIO 13, RAYMOND

Participants.	2 Physiotherapists, 2 Community Learning Disability Nurses, 2 Adult Nurses, 2 Radiographers.
Patients name.	Raymond
Others.	Actors: Mother, Doctor.
Scenario Base.	43 year old male with learning disability.
Environments.	Community area, A&E, X-ray (Adult ITU).
Clinical Overview.	Adult patient has moderate Learning Disabilities and chronic respiratory and cardiac problem (Ventricular septal defect).
Technical.	2 SimMen. SimMan A in Community Area (sitting up in bed). SimMan B on trolley in bay 2 of A&E.

Dr White,
The Surgery,
Common Place Square.
Freds Town.
AB12 3CD

Dear Physiotherapist,

Re Name Raymond BEDS
DOB 11/09/64
Δ Chronic pulmonary disease, recent deterioration.
PC Recent visit to the surgery

I would be very grateful if you could assess this man to review his physiotherapy routine at home. He was admitted to hospital at 10 weeks old with a chest. I saw him and his mother in the surgery 4 days ago and I am concerned that she is not coping at home. His elderly widowed mother, his main carer, has expressed some concerns regarding her ability to cope with Raymond. I have asked the community learning disability nursing team to assess Raymond and the family circumstances. Thank you.

Yours sincerely,

Dr White

All physiological measures (SimMan/SimBaby) depend upon participants reactions. Noted levels are for base line reference and <u>trends</u> only.

Participants		Instructor/controller	Background/Scene	Other students
Raymond is a 43 year old male patient with moderate learning disabilities. He also has chronic respiratory and cardiac problems. He is being visited at home by the Community Learning Disability Nurses as requested by his widowed mother who is having trouble coping due to her advancing age. The physiotherapists also visit due to a GP referral (letter available).				
Learning Disability Nurse does a home visit. Mother is at home.	Community room	Raymond cannot communicate properly. He is physically able. Sitting up in bed.	Mum is concerned that recently he has been less responsive and very lethargic..	2 adult nurses. 2 radiographers. 2 physiotherapists. In PC lab.
The Physios come to the home for respiratory assessment.		Raymond complains of feeling weak. R/R 34 Wheezes and lung crackles. Breathless.	Mum says that Raymond spends a lot of time in bed. ? hospitalisation. ? decisions re transport to hospital	2 adult nurses. 2 radiographers. 2 learning disability nurses to observation room if paramedics called and no further involvement.
2 hours later - Mum drives Raymond to A&E. Wheelchair to A&E trolley.				
Adult Nurses assessment and take history.	A&E	Raymond has difficulty breathing and is very lethargic. He is seen in bay 2.	Mum explains that Raymond deteriorated in the course of the afternoon, after he was seen by his physiotherapists and LD nurses.	2 radiographers in PC lab.
Doctor requests an X-ray. Radiographers take mobile X-ray (SimMan).		RR 36 SpO_2 97 HR 160 B/P 100/55	Mobile X-ray. Doctor takes nurses and mum away (corridor) to explore Raymond's abilities understanding.	2 radiographers to A&E.
Radiographers start BLS.		RR SpO_2 HR B/P	Raymond arrests after X-ray taken.	2 adult nurses to observation room.
Radiographers successful.		RR 34 SpO_2 98 HR 120 B/P 100/60	Raymond recovers after 2 minutes BLS. END OF SCENARIO - DEBRIEFING	

SCENARIO 18, ROB2

Participants.	2 Physiotherapists, 2 Adult Nurses, 2 Radiologists.
Patients name.	Rob Tring. (Robert)
Others.	Actor: Doctor.
Environment.	Ward.
Clinical Overview.	65 y/o Chronic arthritis, previous cardiac history - Arrest - returns after BLS.
Technical.	SimMan in Ward Bay 2. Skills mannequin (Adam post laryngectomy) in bay 4 being got out of bed into wheelchair.

Dr Jones,
The Surgery,
Common Place Square.
Freds Town.
AB29 9CD

Dear Physiotherapist,

Re Name Robert BLOGGS
DOB 01/01/42
Δ Rheumatoid arthritis
Angina pectoris
PC Deteriorating function especially mobility around the house

I would be very grateful if you could assess this gentleman who is having increasing difficulty with his arthritis affecting his functional abilities. I saw him at the surgery today and he was complaining that he is having increasing difficulty getting about at home, he walks with a stick and is having trouble on and off chairs and in and out of bed. He has a long history of angina pectoris but this is well controlled with medication, he reports only occasional need for his GTN spray.
Thank you.

Yours sincerely,

Dr Jones

All Physiological measures (SimMan/SimBaby) depend upon participants reactions. Noted levels are for base line reference and trends only.

Participants		Instructor/controller	Background/Scene	Other students
Rob Tring is a 65y/o male patient with chronic arthritis and previous cardiac history. He is being visited in the hospital ward for physiotherapy and assessment of mobility.				
Physiotherapists on ward visit to assess the patient and perform physiotherapy Nurses helping patient (Adam - post laryngectomy) in bed 4 out of bed into wheelchair. Patient assessment form.	Ward Area.	RR 20 crackles HR 125 BP 150/90 SPO_2 97 ↘	Rob complains of chest discomfort while preparing to mobilise from bed and eventually arrests after laying down.	2 nurses dealing with another patient (getting him out of bed) 2 physiotherapists in ward 2 radiographers in PC lab.
Physiotherapists give oxygen and initiate BLS Nurses called to bedside Phyiotherapists handover communication to nurses Doctor also arrives		RR 0 HR 0 VF Coarse BP 0 SPO_2 0	Return of output after 2mins CPR	2 nurses called to Robs bed area. 2 radiographers still in PC lab with hands free telephone (3005)
Doctor obtains IV access and examines patient and requests a chest X-ray (3005), and prescribes Digoxin (125µg), Furosemide (40mg orally-2 x day) and Amoxicillin (500mg STAT) for nurses to deliver. Nurses continue with observations and record information.		RR 30 $PetCO_2$ 7 HR 80 ST elevation BP 100/60 SPO_2 95 ↗	Rob responding. Nurses call Radiographers (3005)	2 radiographers still in PC lab with hands free telephone (3005) Radiographers dispatched to bed area for X-ray.
X-ray performed in bed area by radiographers. Nurses give medication and continue with observations		RR 30 $PetCO_2$ 7 HR 80 ST elevation BP 100/60 SPO_2 95 ↗		2 physiotherapists go to observation room 2 Radiographers go to bed area
Nurses continue to deal with other patient.		RR 24 $PetCO_2$ 4.5 HR 70 ST elevation BP 110/80 SPO_2 98	The X-ray reveals Rob has an enlarged heart and pulmonary oedema.	2 radiographers take X-rays to ward
		RR 22 HR 70 ST elevation BP 110/80 SPO_2 98	END OF SCENARIO - DEBRIEFING	

Appendix III - Qualitative Feedback:

"*This is an extremely valuable resource and it was a fantastic experience. It should be utilised more by everyone to improve their clinical practice.*" Paramedic student.

"*This programme should be established earlier as it is valuable and helps us nurses how to care for patients better. It highlights a lot of factors regarding patient care, even opportunities that we don't often get on the ward due to time constraints with mentors*." Adult nursing student.

"*This has been a successful session. I feel more confident that I have been able to gain experience in the A&E setting. This would be excellent if able to take place yearly. Very effective and well organised session*." Adult nursing student.

"*Having more of them!*" Adult nursing student.

"*Excellent learning experience. Should be compulsory part of IPE*." Physiotherapy student.

"*This was very useful. Several times each year from first year would be good. Having each video saved for each year to see the difference from first to third year would be very beneficial. Has been an excellent experience. Great learning in a positive way*." Adult nursing student.

"*Ace! Thank you. This could easily have been included in our patient assessment module!*" Paramedic student.

"*IPL teaches us about communicating within multidisciplinary teams but does not teach us anything about what other professions do. This session accomplished both 100%. It was Excellent!*" Radiography student.

"*It would be beneficial to have a copy of the video*." Adult nursing student.

"*Should have less nursing students. I found it hard to get involved as I didn't feel there was a role for me. Maybe this was my fault for not recognising what I could do?!*" Adult nursing student.

"Would be nice to have seen myself on camera!" Physiotherapy student.

"*Should be mandatory training.*" Adult nursing student.

"*Brilliant experience. Helped reassure my abilities in stress and performance in CPR. Fantastic feedback. Will arrange to view my scenario in video*" Physiotherapy student.

"*I think this session should run throughout the third year of the nursing course. It was a good session and I really learnt from it!*" Adult nursing student.

"*A very useful experience which made me feel more confident of dealing with similar scenarios in clinical situations*." Nursing student.

"*The session was very useful and beneficial for the contribution of my professional knowledge. The session would have been more beneficial if more students from other discipline were part of the experience. The debriefing was helpful for the reflection of the event!*" Nursing student.

"*This is a great project. It really helps increasing my knowledge and I was able to practice my emergency skills. A limitation was mostly adult nurses came to this lesson. This would be beneficial to be part of IPE training. This is an amazing experience and I believe that ALL healthcare professional students would benefit from it*." Nursing student.

"*I feel that all nurses should have a session particularly in the role as a qualified healthcare professional*." Nursing student.

"*Can we please do it again so its better??? if you don't have any luck there is a physio and radiographer in my IPE group who I could ask and they have done a video for our presentation. I honestly think it would be of great benefit, the impression I got from the students yesterday and those who have attended previously said how beneficial the whole thing was so I think three hours is nothing to ask when we gain so much from it I think to get more people to do it perhaps upload a video on StudyNet even if its the staff using the sim lab just to give students an idea what its all about*
Cheers I feel a lot better now!" Physiotherapy student.

"*The sessions could be a fantastic aid to the learning needs of all disciplines and in-fact has the potential to save a life more than any resuscitation Annie would do… I hope to get them* (the IPE simulation sessions) *made mandatory as part of the IPE module or even instead of the CPR sessions as I believe once your over the initial shock of the situation you can adapt accordingly and this is as real as it gets without someone actually having an arrest*." Nursing student.

"*I feel that all adult nurses should have a session particularly in the role as a qualified healthcare professional*." Nursing student.

"*Good for practicing if on respiratory rotation. Makes you more aware of situations that could occur*." Physiotherapy student.

"*This session was very useful and would be very good if it was incorporated into the course as there is not enough multidisciplinary learning in the course*." Nursing student.

"*Very helpful session. It should be done more often in the programme*." Nursing student.

"*I enjoyed the session and wish it was part of my training*." Nursing student.

"*This was a great experience and it is unfortunate that we don't do this during our lessons. It helped me to learn*." Nursing student, in May 2008.