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**Simulation in pharmacy education to enhance interprofessional education (IPE)**

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**Declaration of interest**

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article.

## Abstract

### Background

Increased demands from healthcare services have led to new roles for healthcare professionals (HCPs). Simulation based learning (SBL) can offer multidisciplinary HCPs and students a format to train for such emerging roles.

### Objective

The aim of this work was to adapt existing nursing SBL to involve pharmacy students and evaluate perceptions and effectiveness of SBL when used for Inter-professional Education (IPE).

### Methods

Settings were a simulated hospital ward and a general practitioner (GP) practice. Participants were pharmacy and nursing students. Evaluation was by questionnaires and interviews. Ethical approval was obtained from the University Ethics Committee.

### Key Findings

A total of 440 students participated. The majority of respondents (317/330;96%) found the sessions useful. All elements were highly rated: briefing (315/340;93%), setting (301/321;94%), scenario (325/338;96%), feedback (303/327;93%), interaction with the "patient" (328/338;97%), interactions with other HCP trainee (293/329;89%). The majority (304/327;93%) agreed that they felt the sessions had enhanced their skills. Significant ( $p \leq 0.05$ ) enhancement in communication confidence was perceived by the students. Students gained understanding of each other's roles, and appreciated practicing communication and teamwork.

### Conclusions

Students recognised the importance, usefulness and need for IPE. SBL has the potential to support a variety of HCPs to facilitate uptake of new roles and working in multidisciplinary teams.

## INTRODUCTION

Healthcare needs in the UK have become more demanding due to the aging population, increased public expectations, and financial pressures. Healthcare students need to become competent healthcare professionals (HCP) who can effectively communicate with patients and other health and social care professionals to improve patient care.

Optimal use of medicines for both patients and the National Health Service (NHS) is critical as more people are taking increasing numbers of medicines (1). NHS England set up funding to support new working practices of pharmacists and pharmacy services in a wider range of care settings e.g. general practitioner (GP) practices, care homes and domiciliary care to support people with long-term conditions on multiple medicines (2,3).

New Standards for Pharmacy Professionals were launched in 2017 by the pharmacy regulator in Great Britain, the General Pharmaceutical Council (GPhC), to ensure those using pharmacy services receive safe and effective care (4). Pharmacy education must ensure the profession can meet these standards which include providing person-centred care, working in partnership with others and communicating effectively, as well as maintaining the science base which underpins the profession.

Pharmacy education needs to place more emphasis on preparing students for problem solving, critical thinking, and communication (5). Work-based learning

(WBL) allows students to practice by doing (6), however finding and funding sufficient numbers of placements for WBL can be challenging.

Simulations of workplaces can be developed to replicate the relevant experience.

Simulation based learning (SBL) is an effective technique adopted by many institutions and organisations around the world (7). SBL provides an “immersive” experience and can act as a tool for HCPs and trainees to be more confident in tackling the increased complexity of healthcare services.

The simulation setting model (SSM) (8) is specific for SBL in healthcare education.

The model comprises four phases: introduction, outlining the session and goals; briefing, where students learn how to use the simulation for learning and what to do if they require aid; scenarios, where participants receive information on the specific case to be simulated and are clarified of their and others’ roles; debriefing, where facilitated feedback allows a reflective discussion. The SSM has been used in; education, for example in emergency medicine; research, in looking at human factor issues in error-prone situations and in assessment; although this use is much debated (9). Similarities with the use of mannequins, virtual medical worlds or computerised scenarios are that there will be an introduction with instructions, participation in the activity followed by feedback. The key differences are that the students participate at the same time and in the same physical location, and feedback can be flexible and not pre-programmed.

SBL can bring multidisciplinary HCPs and students together in their learning. Inter-professional Education (IPE) puts an emphasis on collaborative and shared learning and the decrease of preconceived opinions of others (10).

Schools of Pharmacy in the UK have highlighted barriers to IPE implementation such as finding appropriate professional partners and coordinating timetabling (11). SBL may be a more flexible and cost-effective way of achieving IPE whilst allowing its effectiveness to be evaluated. Although IPE has been acknowledged to have a positive impact on various healthcare disciplines in terms of their attitudes, perceptions, collaborative knowledge and skills, there is scarce evidence as to whether this impact translates to clinical competence and improved quality of care for patients (12,13,14).

SBL has been extensively used in nursing (15,16,17). With newer roles emerging for pharmacists, SBL can help introduce students to different care settings and facilitate working alongside other HCPs.

At our institution, the School of Nursing has used simulations for 16 years. In 2015, discussions were held with nursing lecturers to develop IPE simulations involving pharmacy students (PS) The overall aim was to help students gain knowledge, skills and attitudes regarding working alongside, and collaborating with, other healthcare professionals. To our knowledge this was the first time in the UK that SBL for IPE had been designed to specifically involve PS and that included not only a hospital ward setting but also a GP practice setting.

The aim of this study was to evaluate the experience and perceptions of students of SBL sessions when used for IPE, for their structure, usefulness, learning gained and perceived effectiveness on communication skills



## **METHOD**

### **Participants**

All Level 7 PS and Levels 5 and 6 adult nursing students (NS) were timetabled in 2016 to attend an IPE SBL session. Ten half day hospital setting and sixteen 1.5hr GP setting sessions were available. Due to the difference in cohort size, one PS and 2-3 NS were allocated per scenario with a nurse and pharmacist facilitator per two patients.

### **The SBL sessions**

In the hospital setting, the environment resembled a hospital ward and trained amateur role-players played patients dressed in hospital gowns and wearing makeup to reflect injuries, intravenous (IV) lines, vomiting, etc.

Six clinical scenarios (Stroke, Chronic Obstructive Pulmonary Disease (COPD), Chest Pain, Head Injury, Pre-op patient, Post-op Pain) were adapted by a hospital pharmacist to incorporate pharmaceutical issues such as high oxygen saturation for COPD patient, drug interactions, patients being nil by mouth and the need to identify alternative routes of administration.

For each scenario, a role-player brief included details of information they could recall when asked for medical and drug-related history and a student brief gave brief background and clerking notes. Inpatient drug charts, assessment forms and electronic records on an iPad were available. Example briefs available in the supplementary material. Each simulation session included telephone interruptions to assess students' ability to prioritise tasks. Box 1 shows the format of each session.

In the GP practice setting, consultation cubicles were set up with patients played by role-players. Six clinical scenarios (COPD, Chest Pain, Hypertension, Dementia Carer, Diabetes, Parkinson's) were adapted by a GP practice pharmacist to incorporate pharmaceutical issues such as poor inhaler technique, duplication of therapy, swallowing difficulties, ongoing proton pump inhibitor (PPI) with no indication, drug interactions, dose titration/increase not implemented following a hospital letter.

Each scenario included briefs for the role-player, student and facilitator (supplementary material). Box 2 shows the format of the sessions.

### **Data Collection**

A 20 item questionnaire was developed. There were: twelve 5 point Likert style questions covering the session components and perceived impact ie briefing, briefing notes, scenarios, setting, telephone call and feedback, interactions with others, perception of confidence in communication and enhancement of skills and overall usefulness; four tick box questions on expectations, timing of briefing, time available and feedback structure and four free text responses looking at learning about each other, best and worst aspects, and perceived main learning outcome achieved. Participants could indicate on the questionnaire their willingness to participate in an interview and if willing could provide their contact details.

A pilot in the first session indicated no changes were necessary so this was used for all other students (Supplementary material). Questionnaires and a participant information sheet were distributed by a researcher at the end of each session. Questionnaires completed by PS were returned immediately however NS were moving onto other activities and were allowed to take questionnaires to complete

with instructions to return them the next day to nursing facilitators. Generic email reminders were sent out to prompt return of outstanding questionnaires.

A short interview schedule was designed with a standardised introduction format and five specific open-ended questions, including prompts, allowing for broad responses. Topics covered were: views on the scenarios, most enjoyable aspects, skills developed, fitting IPE in the curriculum and thoughts on possible improvements (supplementary material). Sample size was not pre-determined, interviewees were all participants who had given contact details and were available in a suitable timeframe. Structured interviews were conducted by a researcher at a time and date convenient to the participant, either by phone, using verbal consent or face to face using written consent. Detailed notes were taken of the responses.

This research was approved by the University Ethics Committee (1213/045).

### **Data management and analysis**

Questionnaire data was entered and processed by the main researcher, using Excel®, and reviewed by another. Responses were presented as percentages of the total of responders. The mean of Likert scale responses for confidence in communication pre and post the SBL was calculated.

T-tests were carried out with  $p \leq 0.05$  being accepted as the measure of statistical significance. Qualitative responses from the questionnaire were coded and quantified to find the core categories. The three most frequent categories for each question were presented.

Interview notes were transcribed into Word® and analysed using thematic analysis. The analysis was performed inductively and deductively and themes were

extrapolated. Each coded passage of response was grouped by thematic similarity by the main researcher and discussed with another. Themes are described using illustrative quotes from the interviews with each interviewee being assigned a consecutive code (eg NS1,NS2, and PS1,PS2,etc).

## RESULTS

A total of 440 students participated in the IPE sessions (126PS,314NS).

Questionnaire response rate was [as shown in Figure 1](#). 0% (n=126/126) for PS and 69% (n=216/314) for NS. A few questions were unanswered by some participants.

All the sessions met or exceeded students' expectations (336/339;99%) as shown in Figure 1.

The aspects of the IPE sessions rated using 5-point Likert scales are shown in Table 1. The modal rating for the setting, scenarios and interaction with role-players and other HCP was excellent and for the briefing, briefing notes and telephone interaction was good. Most felt the scenarios enhanced their skills (304/327;93%). The majority (303/327;93%) found the feedback sessions to be extremely useful/useful. Overall, 96%(n=317/330) found the sessions to be extremely useful/useful.

Students preferred having the briefing just before the simulation (301/339;88%) and the majority (283/338;84%) found the time given to fully participate was sufficient. There was a significant increase in the perceived confidence in communicating with other HCPs and patients ( $p < 0.05$ ) (Table 2).

Looking at the open ended responses in the questionnaire, of the NS (151/216;70%) who commented on what they learnt about the other profession: the majority (104/151;69%) felt that PS were knowledgeable with some of these NS and other responders specifically mentioning medications, side effects and drug interactions (63/151;42%). Ten (6%) felt that they had learnt about the PS role. Most frequent in

PS responses (100/126;79%) were the NS role (20/100;20%), knowledge (18/100;18%), and the tests and observations carried out (13/100;13%).

The three most frequent comments on the best aspects for both NS (179/216;83%) and PS (119/126;94%) respectively were: teamwork (59/179;33% vs 36/119;30%); feedback (20/179;11% vs 18/119;15%) and role-players (9/179;5% vs 16/119;13%).

Worst aspects comments were provided by 64%(n=139/216) NS and 79%(n=100/126) PS. The top two for both professions were 'Nothing' given by 17%(n=23/139) and 19%(n=19/100) NS and PS respectively and 'time' reported by 13%(n=18/139) NS and 19%(n=19/100) PS. The third most frequent was nerves for NS (11/139;7%) and dissertation for PS (15/100;15%) as the IPE sessions coincided with coursework deadlines.

A majority of the students (NS: 75%(163/216); PS : 87%(109/126) gave comments identifying their main learning outcome. Team work was highlighted most frequently by both groups (38/163;23% NS and 16/109;15% PS) then increasing communication skills (27/163;17% NS and 45/109;42% PS). The next most frequent for NS was to increase confidence (15/163;9%) and for PS was to increase knowledge (10/109;9%)

Eleven students were interviewed with data saturation being achieved after the fifth interview. Although no new themes were emerging, all planned interviews were completed. The three main themes are described below with illustrative quotes each with an interviewee identifier:

### **Theme 1: Gained understanding of own and others' roles.**

Students highlighted that they had learnt about their own and each other's role.

*"Broke down a lot of ignorance about them (nurses). Learned a lot about nurses"* (PS6)

*"Learned things from the pharmacist that I never knew before [...]"* (NS5) and

The role and value of a pharmacist was made apparent:

*"Realising the importance of pharmacy"* (PS5)

*"It was useful to have heavy elements of pharmacology as the pharmacist was able to help"* (NS5)

## **Theme 2: Enables applied practice in a realistic setting**

It was important that students were immersed in the scenarios so behaviours and actions could be as natural as possible. Students found the sessions realistic.

*"..... applicable to when we graduate and are exposed to the real working world"* (NS2)

*"Realistic situations. Very relevant to real life"* (PS5)

There was recognition of some of the challenges of the real world such as clashing priorities.

*"Gets difficult when both HCPs prioritise different things. However, this is what happens in real life"* (NS4)

Despite this, the opportunity to apply knowledge appreciated.

*"How all knowledge over the past 4 years came together and to implement it"* (PS1)

## **Theme 3: IPE needs to be integral part of the course**

The importance of working with other HCPs was highlighted. Students wanted more frequent sessions and starting earlier in their courses.

*"Would be good to have it more often....would make us into more competent HCPs"*  
(NS2).

*"Should be integrated a lot more into the course; ...More IPE sessions with nurses and other health care professionals"* (PS1).



## DISCUSSION

Students' perceptions and experiences of SBL when used for IPE and effectiveness of the SBL on communication and other nursing and pharmacy skills were evaluated. SBL is not unique as there are many activities that Schools of Pharmacy adopt for IPE such as; team based learning, problem based learning, case based learning, all having advantages and disadvantages (11). However to our knowledge this was the first time in the UK that SBL for IPE had been designed to specifically involve PS and cases using pharmaceutical aspects

Limitations include the use of questionnaires and structured interviews. These limit the responses and exploration of ideas raised by participants. Timetabling and time commitment limited the number of interviewees but data saturation was achieved.

The questionnaire response rate for NS was lower than that for PS, nevertheless there was still almost a 2:1 ratio of NS to PS numbers of completed questionnaires.

The NS response rate could be affected by NS regularly participating in simulations which are separately evaluated and so the importance of this evaluation, compared to PS, may not have been realised. The NS completed the IPE session as part of a rotation limiting the time available to complete and return questionnaires.

Furthermore NS ratings could be relative to other simulations whereas PS evaluation was based on this sole experience. Communication confidence ratings are not evaluated for other IPE activities appear to make a significant increase in how confident the students felt in communicating with patients and other HCPs and therefore are an additional training option for HCPs.

Most students rated the briefing highly and a well-structured briefing session is known to be key to maximise learning (8). Similarly, debriefing is paramount in the reflection process and again most students found this to be extremely useful/useful.

High ratings for other features suggest the realistic setting allowed students to practice tasks as they would in the real world. SBL does not need to fully replicate the clinical work environment in order to be an effective setting. The key is to provide an experience that meets the learning goals (18).

Using role-players as standardised patients, as defined by Rickles (19), are an important component of a successful SBL session. A study conducted with physiology students assessed clinical knowledge, confidence and motivation for further learning after two hours of musculoskeletal assessment and rehabilitation lab using a standardised patient versus a peer patient. Significantly higher development of practical clinical skills was noted with the standardised patient (20). The role-players in this study were standardised patients and students rated highly their interaction with them.

A key learning outcome for the IPE simulations was the quality of the interactions between NS and PS. NS spend more time in placements and simulations interacting with other HCPs than PS. Other simulated training environments have improved communication skills, however none of these used a physical simulated clinical setting (19,21,22). Interactions in this study were rated as excellent/good and teamwork was highlighted as a key aspect. A statistically significant increase in perceived confidence in communication was found, a finding which is reflective of other studies (23,24).

The perceived worst aspects of the SBL sessions were “time” and “nothing”. The comment “nothing” indicates the overall success of the simulation in terms of student satisfaction. “Time” was mentioned by both cohorts, nevertheless working under time pressure can be argued to be an essential element of SBL as HCPs must work

efficiently. Some nursing simulations are assessed which may explain some of the NS responses and the coursework deadline clash will be avoided in future years. Timetabling and scheduling have been highlighted as the biggest barriers to the success of IPE (11).

The aim of IPE is for participants to learn how to work within a multidisciplinary team (MDT); to transfer these skills and take them into practice. Pharmacists working in healthcare environments inevitably work with other HCPs, so it is imperative to expose students to a MDT environment early on to improve competence in working in such dynamics and thus improve patient care. Students recognised the usefulness and importance of IPE and learning about each other's roles with comments such as *"I can see how it is applicable to when we graduate and are exposed to the real working world"*(NS2).

## **CONCLUSION**

Integrating SBL into IPE proved to be a success and a valuable educational tool to help facilitate learning for future HCPs. Students rated the sessions highly and perceived that their communication skills, respect for the roles of other HCPs and clinical skills were enhanced. Furthermore, the students recognised the importance, usefulness and need for IPE. SBL has now become a routine teaching method for IPE in our courses. The GP IPE has been developed to include handovers in both directions between the HCPs and domiciliary setting IPE events have been successfully delivered. To our knowledge this was the first time in the UK that SBL for IPE had been designed to specifically involve PS. This training model could possibly be used for supporting practising pharmacists who want to undertake new roles or offer new services.

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Box 1: Format of the hospital setting session

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## Box 1: Format of the hospital setting session

### **INTRODUCTION (15mins)**

- Joint nursing/pharmacy introductory briefing session

### **BRIEFING (15mins)**

- Pharmacy students familiarise themselves with case briefing notes
- Nurses familiarising themselves with the electronic record

### **SCENARIO SIMULATION (45mins)**

- On the 'ward' at the bedside assessing and looking after the patient, with a pharmacy and nursing facilitator per two beds
- Facilitators act as a nurse in charge and prescribers where necessary
- Phone calls could be made and received during this time

### **DEBRIEF (15mins)**

- Role-player feedback to nursing and pharmacy students

### **DEBRIEF (15mins)**

- Separate profession-only debrief on specific teaching points of the case by facilitator

### **DEBRIEF (60mins)**

- Joint debrief on the IPE to the whole group with each patient team presenting a handover including key points about their patient

## Box 2: Format of the GP practice setting session

### **INTRODUCTION (15mins)**

- Joint introductory briefing session (first session only)

### **BRIEFING (15mins)**

- Briefing/familiarisation with patient scenario

### **SCENARIO SIMULATION (60mins)**

- Patient collected from waiting room by pharmacy students
- Medication review by pharmacy student whilst nursing students listen in (15mins)
- Handover between pharmacy student and nursing student (5mins)
- Review of patient by nursing students while pharmacy student observing (40mins)
- *Pharmacy students debrief on specific teaching aspects of case by pharmacy facilitator within this time. (Nursing debrief on specific nursing aspects held after the session)*

### **DEBRIEF (15mins)**

- Simulation IPE debrief in individual patient settings from role-player to nursing and pharmacy student together



Table 1: Rating of the IPE simulation sessions

	<b>Poor</b>	<b>Below Average</b>	<b>Average</b>	<b>Good</b>	<b>Excellent</b>
Briefing (n=340)	0 (0%)	1 (0.3%)	24 (7.1%)	172 (50.6%)	143 (42.1%)
Briefing notes (n=319)	0 (0%)	4 (1.3%)	26 (8.2%)	174 (54.5%)	115 (36.1%)
Scenarios (n=338)	0 (0%)	1 (0.3%)	12 (3.6%)	137 (40.5%)	188 (55.6%)
Setting (n=321)	1 (0.3%)	4 (1.3%)	15 (4.7%)	117 (36.5%)	184 (57.3%)
Interaction with HCP (n=329)	2 (0.6%)	2 (0.6%)	32 (9.7%)	134 (40.7%)	159 (48.3%)
Interaction with the patient actor (n=338)	0 (0%)	1 (0.3%)	9 (2.7%)	79 (23.4%)	249 (73.7%)
Phone Call (n=96)	0 (0%)	2 (2.1%)	6 (6.3%)	50 (52.1%)	38 (39.6%)
	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly agree</b>
Enhanced skills (n=327)	1 (0.3%)	2 (0.6%)	20 (6.1%)	157 (48.0%)	147 (45.0%)
	<b>Extremely not useful</b>	<b>Not useful</b>	<b>Neither useful or not useful</b>	<b>Useful</b>	<b>Extremely useful</b>
Feedback (n=326)	2 (0.6%)	3 (0.9%)	18 (5.5%)	137 (42.0%)	166 (50.9%)
Overall (n=330)	1 (0.3%)	2 (0.6%)	10 (3.0%)	128 (38.8%)	189 (57.3%)

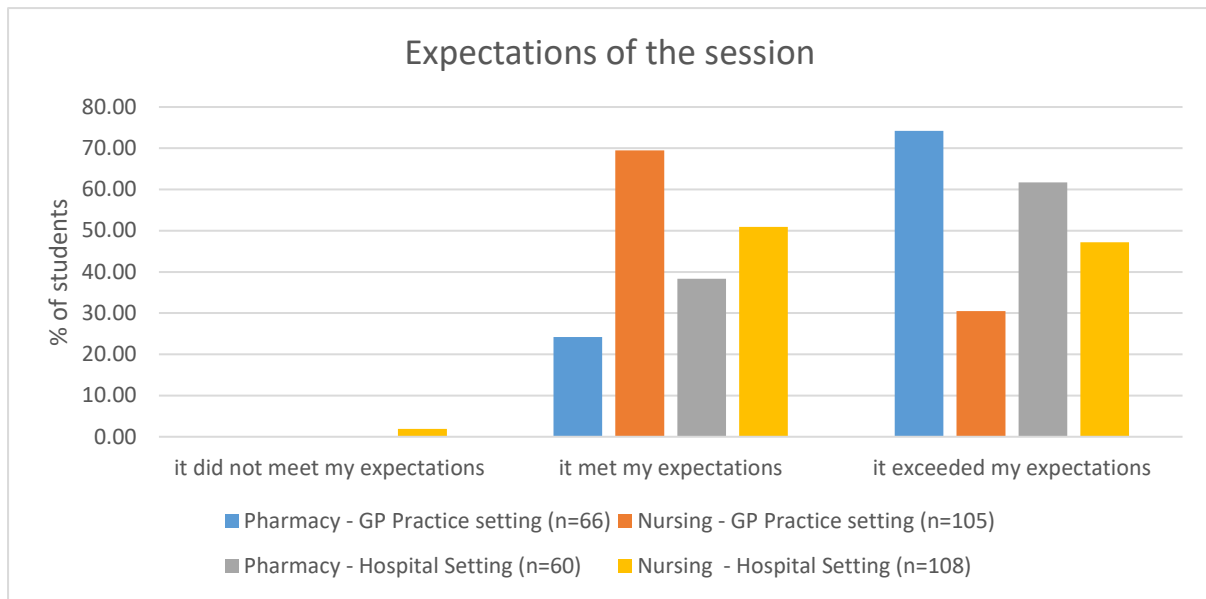
Table 2: Confidence in communicating with other HCPs and patients before and after the session

		Confidence in communicating with other healthcare professionals			Confidence in communicating with patients		
Setting	Students	Before (mean)	After (mean)	P value*	Before (mean)	After (mean)	P value*
Hospital	Pharmacy (n=59)	3.70	4.19	$1.64 \times 10^{-5}$	3.70	4.24	$6.72 \times 10^{-7}$
	Nursing (n=107)	3.73	4.20	$2 \times 10^{-8}$	3.97	4.32	$3.51 \times 10^{-9}$
GP Practice	Pharmacy (n=65)	3.97	4.41	$6.65 \times 10^{-5}$	3.82	4.40	$3.45 \times 10^{-7}$
	Nursing (n=102)	4.03	4.25	$1.95 \times 10^{-4}$	4.07	4.41	$1.04 \times 10^{-6}$

(1=Very unconfident, 2=Unconfident, 3=Neither confident nor unconfident, 4=Confident, 5=Confident)

\*Statistical test: Paired t-test

Figure 1 Expectations of the sessions



## Appendices

### Appendix 1: Hospital setting example roleplayer brief

#### **Chest pain (male role-player where possible)**

You have recently been promoted to a very stressful position at work, which you are determined to do well at. The job involves lots of socialising with clients. Your diet and family life are suffering because of this, which is adding to your stress. Unfortunately, this has also meant that you have not been as active recently with the gym / sports etc.

You smoke and drink alcohol despite a family history of heart attacks. This creates some anxiety and you would really like to cut down / stop both activities.

#### **History**

4 weeks ago you suffered severe chest pain – as it persisted you went to A & E where an ECG was performed. You were told the ECG showed no changes and it was likely a ‘muscle strain’. However, there are still twinges and you wonder if it is your heart...

You have been taking the following medication since about a year ago when you were diagnosed with angina:

Aspirin 75mg one tablet (am)

Furosemide one tablet (am) – if asked why furosemide was prescribed, answer “for ankle swelling that I kept having a few weeks back”

Simvastatin one tablet (pm)

Atenolol one tablet (am) – if asked for more information, show student your repeat prescription which reads, “100 mg OD”

GTN Spray one to two sprays under the tongue when required for angina pain

Alcohol: 1-2 glasses of wine/day

Smoking: 15-20 cigarettes a day for the last 15 years.

#### **Expectations**

You will get the drug history taken from you by pharmacy student and should use the information outlined above

The student is likely to monitor your vital signs (BP and heart rate / pulse / respiratory rate most important, but they may take your temperature / oxygen saturation).

They may record a weight / height / BMI.

They may perform an ECG.

They should help promote a healthier lifestyle – smoking cessation / cutting down on alcohol / a healthy diet / more activity.

They may decide to refer you to other health care professionals.

### Medication details

Inpatient Drug Chart	Drug History
Aspirin 300 mg PO STAT	Aspirin 75 mg OM
Clopidogrel 300 mg PO STAT	Furosemide 40 mg OM
Fondaparinux 2.5 mg SC at 18:00	Simvastatin 10 mg ON
Aspirin 75 mg PO at 8:00	Atenolol 10 mg OM
Clopidogrel 75 mg PO at 8:00	GTN spray 400 micrograms one to two puffs PRN for angina pain
Atenolol 10 mg PO at 8:00	Allergies: NKDA
Furosemide 40 mg PO at 8:00	No OTC/herbal/homeopathic medicines or supplements
Atorvastatin 10 mg PO at 22:00	Smoking: 15-20 cigarettes a day for the last 15 years.
GTN spray 400 micrograms S/L 1-2 sprays PRN	Alcohol: 1-2 glasses of wine/day

## Appendix 2: Hospital setting example student brief

### CHEST PAIN

#### History

Presented in A&E with reoccurrence of chest pain. This usually well managed with medication but has over the last few weeks been getting slightly worse, possibly stress related.

Today whilst out in the town shopping sudden onset of pain, this was not relieved with rest/sitting down. GTN spray used but no relief obtained initially. After a 2<sup>nd</sup> dose of GTN a slight improvement felt in the pain. Store manager and first aider called for an ambulance.

NOK not yet contacted regarding admission to hospital.

Past Medical History:                    Angina diagnosed 1yr ago

  No epilepsy, No TB, No asthma, No diabetes

On examination;                            Patient obviously in discomfort with pain in central chest, slight radiation into left arm area. No cyanosis obvious. Pulse tachycardic but strong

Investigations:                            Cardiac enzymes negative – no signs of MI

  ECG normal

Diagnosis:                                    Angina Pain

Medication:                                Aspirin 75mg od (am)  
  Furosemide 40mg od (am)  
  Simvastatin 10mg od (pm)  
  Atenolol 10mg od (am)  
  GTN Spray 400mcg PRN

Plan:    Admit to ward  
  Analgesia  
  Rest  
  Medication Review  
  ECG review  
  VSM monitoring

*You are asked to complete this patient's drug history and medicines reconciliation as appropriate. Thereafter you should communicate any pharmaceutical problems identified to the nurse in person and/or to the medical team in writing as appropriate within the boundaries of your professional competence.*

### Appendix 3: Hospital setting example pharmacy facilitator checklist

Criteria		Achieved or comments
Drug History Taking	Confirms patient's drug history, including social history (alcohol/smoking).	See DH checklist
	Documents the drug history fully and clearly on the inpatient drug chart provided	On Meds Rec form
	Checks the suitability of medication for use (including the expiry date of the GTN spray)	
Medicines Reconciliation	<p>Completes medicines reconciliation comparing the medicines prescribed on the inpatient drug chart versus those documented in the drug history.</p> <p>Identifies any discrepancies or errors between the two lists of medicines:</p> <ul style="list-style-type: none"> <li>- Recognises that the lowest possible dose of atenolol is 25 mg and therefore the patient probably takes 100 mg OD rather than 10 mg OD.</li> <li>-</li> <li>- Recognises that the patient has been prescribed atorvastatin instead of simvastatin (also, see the lipid management strategy below).</li> </ul>	All on Meds Rec form?
	<p>Designs an action plan for any discrepancies/errors identified and prioritises actions accordingly:</p> <ul style="list-style-type: none"> <li>- Confirms the dose of atenolol with patient's repeat prescription.</li> <li>- Informs the nurse that they would get the doctors to change the dose of atenolol accordingly. In the meantime, patient's symptoms, heart rate and blood pressure should be monitored carefully. Any persistent episodes of tachycardia or hypertension should be reported to the medical team.</li> <li>- Asks the patient when and why furosemide was prescribed.</li> <li>- Informs the medical team that furosemide was started recently for peripheral oedema and asks them to re-assess the continuing clinical need.</li> <li>- Informs the nurse about their recommendation and asks to monitor the patient for any signs of peripheral oedema or pulmonary congestion. If observed, these should be reported to the medical team to review this accordingly in light of the current diagnosis.</li> <li>- Recognises that clopidogrel and fondaparinux have been newly started during the admission and asks the medical team to review them in light of the working diagnosis, i.e. continue clopidogrel for up to 12 months if unstable angina has been suspected or stop if unstable angina has been ruled out. Continue fondaparinux for up</li> </ul>	All on Medical Intervention form?

	<p>to 8 days or stop earlier if the patient undergoes percutaneous coronary intervention or is discharged from hospital. Communicate the recommendations above to the nurse.</p>	
<p>Prescription Screening and Monitoring</p>	<p>Reviews the current anti-anginal therapies taken by the patient and proposes an optimisation plan to the medical team. The student may propose the following options as the second line treatments to be added to atenolol:</p> <ul style="list-style-type: none"> <li>- A dihydropyridine calcium channel blocker (e.g. amlodipine) may be used provided the patient no longer suffers from peripheral oedema (note the use of furosemide in drug history) or</li> <li>- a long-acting nitrate (e.g. isosorbide mononitrate) <b>or</b></li> <li>- ivabradine <b>or</b></li> <li>- nicorandil <b>or</b></li> <li>- ranolazine.</li> </ul> <p>Reviews the lipid management strategy for the patient and proposes an optimisation plan for the secondary prevention of cardiovascular events to the medical team (atorvastatin 80 mg OD would be the treatment of choice if the patient is able to tolerate and kidney/liver functions are normal).</p> <p>Makes a suggestion to the medical team to review the clinical need for an ACE inhibitor if the patient has been suspected to have suffered from an attack of unstable angina, e.g. Ramipril 1.25 mg OD titrated at 12-24 hour intervals during admission (and over 4-6 weeks after) depending on patient's renal function, potassium and overall tolerability to maximum tolerated dose.</p> <p>Communicates the medicines optimisation plan designed to the nurse informing her of the recommendations made to the medical team.</p> <p>Advises the nurse on how to use the GTN spray whilst the patient is on the ward if needed and when to call for medical help.</p>	
<p>Discharge Planning and Advice</p>	<p>Assesses the patient's need for lifestyle advice (for example about exercise, stopping smoking, diet and weight control) and psychological support, and offer interventions as necessary with reference to relevant guidelines, including a referral to smoking cessation services in hospital or community.</p> <p>Conducts a brief patient consultation on the medicines recommended for the patient, e.g. atorvastatin, ramipril and clopidogrel (the latter to be taken for up to 12 months only). Ensures that the patient understands the risks and benefits of each medicine and is able to make an informed decision as to whether or not to take them.</p>	



**Appendix 4: GP Practice Setting Example Roleplayer brief**

**Parkinson's disease Case – Patients Brief**

You have come to the surgery today for a medication review. You were diagnosed with Parkinson's disease 10 years ago and attend regular check-ups at the hospital and GP. Until recently you have been coping fairly well.

**If asked Social History**

- You live alone and want to remain independent – do not want carers getting involved but family would like this for you.
- You don't really get out of the house as you feel you have no energy
- You now eat very little and have lost weight recently
- You drink very little so you don't have to walk to the toilet lots.
- You feel your family are bullying you into getting more help
- You do still smoke quite a lot as you see this as your escape from it all

**If asked**

- In general you are becoming increasingly fed up and tired.
- You have an increasing tremor in both your hands and this means you are able to do less around the house
- You are unsteady on your feet and recently have had a few falls – now you worry about breaking a bone and ending up in hospital you have a few bruises from falls already
- Recently you have started to feel very constipated

**Medication**

- You do think that you are starting to forget your pills and you are having problems swallowing some which puts you off taking them.
- You do remember going for a hospital appointment a few days ago for 'something to do with your Parkinson's'

<u>Medication</u>	<u>Date Issued</u>
Ramipril 10mg capsules once daily	29/3/16
Atorvastatin 40mg once daily	29/3/16
Salbutamol evohaler 100mcg 2dose	29/3/16
Rotigotine 6mg/24h patch 2 patches each day	29/3/16
Ferrous Fumarate 140mg/5ml (10mls twice a day)	29/3/16
Co-beneldopa 100/25mg tablets (one four times a day)	29/3/16
Paracetamol 500mg tabs (qds prn)	29/3/16
Entacapone 200mg tablets (one four times a day)	29/3/16

### Expectations

- Your vital signs should be taken esp BP/pulse/respiratory rate/height/weight and BMI
- A nutritional assessment may be carried out
- Bruises may be examined
- Referral to Occupational Therapist/GP/Specalist nurse
- Parkinsons UK society
- Health Promotion – diet with enough fibre/fluids
- Dosset box for meds
- Invite to see family and patient

### Props

- Bruises on arms and legs
- Hospital letter

## Appendix 5: GP Practice Setting Example student brief

## Pharmacist's Brief

Your next patient has been booked in for a medication review with you. They suffer from Parkinson's disease and recently have been struggling with it. Conduct the medication review and fill out the practice template attached.

### Patients Current Medication

<u>Medication</u>	<u>Date Issued</u>
Ramipril 10mg capsules once daily	29/3/16
Atorvastatin 40mg once daily	29/3/16
Salbutamol evohaler 100mcg 200dose when required	29/3/16
Rotigotine 6mg/24h patch 2 patches each day	29/3/16
Ferrous Fumarate 140mg/5ml (10mls twice a day)	29/3/16
Co-beneldopa 100/25mg tablets (one four times a day)	29/3/16
Paracetamol 500mg tabs (qds prn)	29/3/16
Entacapone 200mg tablets (onefour times a day)	29/3/16

You also notice that the patient was recently seen at the hospital. The part of the letter relating to the patient's medication is shown below.

<u>Medication</u>
Ramipril 10mg capsules once daily
Atorvastatin 40mg once daily
Salbutamol evohaler 100mcg 200dose when required
Rotigotine patches 16mg/24hours
Ferrous Fumarate 140mg/5ml (10mls twice a day)
Co-beneldopa 100/25mg tablets (one four times a day)
Paracetamol 500mg tabs (qds prn)

Entacapone 200mg tablets (one five times a day)

**In the review consider:**

- Introduction to the review
- Discuss adherence, polypharmacy and medication optimisation
- Social History
- Examinations & Investigations
- Recent blood results and further tests
- Recommend any medication changes
- Closure & Follow up.

## Appendix 6: GP Practice Setting Example Pharmacy Facilitator Brief

### Parkinsons Case

#### Introduction

- Read over notes before hand
- Introduce yourself as the practice pharmacist/nurse & checks patient identity
- Sets out purpose of consultation
- Ask patient if they have any questions, gains consent for review & negotiate a plan with patient for consultation

#### Adherence, polypharmacy and medication optimisation

- Takes a full medication history
- Checks each medication with the patient checking dosing/indication, how the patient is actually taking the medication
- Takes a full social history with the patient – discuss care arrangements/possibility of carers/check independence
- Check the patient understands what each medication is for and why they are taking the medication.
- Rotigotine patch – dose has been increased on hospital letter from 12mg to 16mg daily – stop the 2x6mg patches and start 2x8mg patches – explain the change to the patient and check using patches correctly – e.g. dry non irritated skin on torso/thigh/upper arm and put next patch on a different place – don't use same area for 14 days.
- Patient is struggling to take tablets – suggest to switch co-beneldopa to dispersible form to help patient
- Entacapone – dose has been changed from qds to five times daily – explain this change to the patient.

#### Examinations & Investigations

- BP check with patient to ensure BP is still well controlled
- Check Height & Weight of patient and calculate BMI
- Check temperature/pulse/ Heart Rate
- Possible blood glucose test while patient is in surgery
- May want to carry out a nutritional assessment as patient is not eating much. May want to discuss with patients GP possibility of nutritional drinks if patient not eating.
- Discuss smoking with patient offers advice on how to quit and where to get help maybe refer to smoking cessation.
- Check that bloods are up to date e.g. check recent lipid and LFT tests done
- May want to do a falls assessment with the patient and discuss risks of falls at home.
- May want to refer to dietician for assessment also to a occupational therapist to discuss care needs and if home is suitable for patient.

## **Clinical Decisions**

- Action changes on hospital letter as discussed above e.g. rotigotine change records to 16mg daily
- Co-beneldopa – change to dispersible form
- Entacapone – change as per hospital letter up to 5 times a day
- Explain to the patient BP readings and the significance
- May want to change patient's medication over to a blister pack to help with adherence as patient unsure over tabs
- Discuss with patient support groups e.g parkinson's UK society and explain where they can find out information
- May want to speak to family about patient – e.g. what level of support they could offer the patient this would require patient consent
- Make a clinical decision about patient's bruises – are they something you can treat or do you need to refer to GP. Is there a safeguarding issues with this patient.

## **Closure**

- Summarise Key points from the consultation and check the patient understands
- Confirm any changes that have been made and that patient is happy with plan
- Explains next step and any follow up appointment patient needs
- Stays within allocated time for review
- Ask the patient if they have any other questions

## Appendix 7: Evaluation Questionnaire

### Inter-professional education (IPE) survey

#### **1) Did the session meet your expectations?**

It exceeded my expectations

It met my expectations

It did not meet my expectations

>If it did not meet your expectations please specify why:

#### **2) Please rate the quality of the briefing session:**

Poor

Below Average

Average

Good

Excellent

If you rated it as poor, below average or average, please select the reason why:

>Was not given enough information on what to expect

>Was not provided with enough resources/tools to aid my interaction during the session

>If other, please specify:

#### **3) When do you prefer to receive briefing?**

>On the same day before starting the session

>A week before starting the session

>If other, please specify:

#### **4) If you had a phone call as part of your interaction, please rate the quality of it**

Poor

Below Average

Average

Good

Excellent

If you rated it as poor, below average or average, please select the reason why:

>Found it too difficult to deal with a phone call while having to communicate with patient/colleague

>If other, please specify:

#### **5) Rate the quality of the scenarios**

Poor

Below Average

Average

Good

Excellent

If you rated it as poor, below average or average, please select the reason why:

>Found them too challenging

>Found them hard to follow and understand (not well written)

>If other, please specify:

#### **6) Was the time given to complete the scenario sufficient?**

Yes

No

> If no, how much more time would you have liked?

#### **7) Rate the quality of the interactions you had with the nurse/pharmacist**

Poor       Below Average       Average       Good       Excellent

If you rated it as poor, below average or average, please select the reason why:

>Did not have enough time to interact with the nurse/pharmacist

>Scenarios did not increase my interactions with the nurse/pharmacist

>If other, please specify:

**8) In regards to the interaction with the patient actor**

>Rate the actor

Poor       Below Average       Average       Good       Excellent

>Rate the briefing notes provided

Poor       Below Average       Average       Good       Excellent

>Rate the setting (simulation ward)

Poor       Below Average       Average       Good       Excellent

**9) How useful did you find the feedback session?**

Extremely not useful       Not useful       Neither useful or not useful       Useful       Extremely useful

>If you chose not useful or extremely not useful, please explain why:

**10) Regarding the feedback session, tick the choice you prefer (can select more than one)**

>Preference towards a joint feedback session

>Preference towards a feedback session carried out alone (only students from your discipline)

>Preference towards feedback session carried out with patient

>Preference towards carrying out feedback session without patient

**11) State ONE thing that you learned the most about pharmacists**

**12) I found the scenarios to greatly enhance my nursing skills**

Strongly disagree       Disagree       Neutral       Agree       Strongly Agree

>If no, please explain why:

**13a) How confident were you in communicating with other healthcare professionals before the session?**

Very unconfident       Unconfident       Neither confident or unconfident       Confident       Very confident

**13b) How confident are you in communicating with other healthcare professionals after the session?**

Very unconfident       Unconfident       Neither confident or unconfident       Confident       Very confident

**14a) How confident were you in communicating with patients before the session?**

Very unconfident       Unconfident       Neither confident or unconfident       Confident       Very confident

**14b) How confident are you in communicating with patients after the session?**

Very unconfident       Unconfident       Neither confident or unconfident       Confident       Very confident

**15) Overall, please rate the usefulness of the IPE session**



Extremely not useful  Not useful  Neither useful or not useful  Useful  Extremely useful

**16) What were the worst aspects of the IPE session?**

**17) What were the best aspects of the IPE session?**

**18) In your opinion, what were the main learning outcomes that you achieved from the session?**

**As part of data collection, short interviews regarding the IPE session are required. If you would like to take part please state your name and email:**

## APPENDIX 8

### IPE Interview schedule

#### Opening

A.

(Establish Rapport) [Shake hands if not telephone interview] My name is Ahmed Albayaty, I am the final year pharmacy student that handed out the evaluation form at the end of the IPE session.

B.

(Purpose) You mentioned on the form that you would like to participate in a short interview regarding the IPE session. I only have five short questions to ask. Would this be ok with you?

C.

(Motivation) I hope to use your answers to the questions for my dissertation – final year project; to evaluate the IPE session.

D.

(Time Line) The interview should take less than 10 minutes. Are you available to respond to the questions at this time?

>If not, reschedule for another time.

#### Main Body

1) What did you generally think of your scenario?

##### Prompts

>Did you find it challenging/easy?

>How could you improve it?

>Did you find it relevant to you as a future pharmacist?

>Did it make you engage with the other healthcare professional?

2) What did you enjoy most about the simulation?

##### Prompts

>Did you enjoy communicating with the other healthcare professional?

>Did you enjoy the general setting of the ward?

>Did you enjoy the scenario?

3) What skills do you think you have developed from the simulation session?

##### Prompts

>Did it develop your communication skills?

>Did it develop your clinical skills?

>Did it develop your critical thinking skills?

4) How do you see IPE fitting into the curriculum?

Prompts

>How much of a part would you like to see IPE play on your course?

>Do you think IPE is necessary to develop a healthcare professional?

>Do you see IPE carrying any importance in training healthcare professionals?

5) Do you have any recommendations on improving the simulation session?

Prompts

>Do you think that the session could be structured differently?

>Do you think that the scenarios could be written differently?

>Do you think that the interactions between you and the other healthcare professional be structured differently?

>Did you feel that something was missing from the session?

Ending

A.

(Maintain Rapport) I appreciate the time you took for this interview. Is there anything else you think would be helpful for me to know?

B.

(Action to be taken) I should have all the information I need. Would it be alright to call you at home if I have any more questions? Thanks again.