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Online Patient Safety Education Programme for Junior Doctors: is it worthwhile?

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Abstract

Background Increasing demand exists for blended approaches to the development of professionalism. Trainees of the Royal College of Physicians of Ireland participated in an online patient safety programme.

Aims Study aims were: (1) to determine whether the programme improved junior doctors' knowledge, attitudes and skills relating to error reporting, open communication and care for the second victim and (2) to establish whether the methodology facilitated participants' learning.

Methods 208 junior doctors who completed the programme completed a pre online questionnaire. Measures were "patient safety knowledge and attitudes", "medical safety climate" and "experience of learning". Sixty-two completed the post questionnaire, representing a 30% matched response rate.

Results Participating in the programme resulted in immediate ($p < 0.01$) improvement in skills such as knowing when and how to complete incident forms and disclosing errors to patients, in self-rated knowledge ($p < 0.01$) and attitudes towards error reporting ($p < 0.01$). Sixty-three per cent disagreed that doctors routinely report medical errors and 42% disagreed that doctors routinely share information about medical errors and what caused them. Participants rated interactive features as the most positive elements of the programme.

Conclusions An online training programme on medical error improved self-rated knowledge, attitudes and skills in junior doctors and was deemed an effective learning tool. Perceptions of work issues such as a poor culture of error reporting among doctors may prevent improved attitudes being realised in practice. Online patient safety education has a role in practice based initiatives aimed at developing professionalism and improving safety.

Keywords: Patient safety, e-learning, junior doctors, survey, professionalism

Introduction

The Republic of Ireland has thirteen postgraduate medical training bodies responsible for providing continuing education and training for doctors. To date, most of the training has been provided in face-to-face settings but there is increasing interest in, and demand for e-learning and blended approaches to the development of professionalism.

The Irish Medical Council includes “patient safety and quality of care” as one of the core competencies required of all doctors [1]. Non Consultant Hospital Doctors or NCHDs are crucial in preventing, reporting and learning from errors, near misses and adverse events [2-3]. Research has shown that exposure to training in patient safety varies significantly in NCHDs and depends on such factors as degree, year of training, speciality and country in which basic medical education was obtained [4].

Whereas e-learning has been shown to be efficient [5], such approaches must adhere to core principles of effective learning. These include (1) engaging learners in solving real-world problems; (2) activating existing knowledge, (3) demonstrating new knowledge to the learner, (4) the learner applying new knowledge and (5) integrating new knowledge into the learner’s world[6]. Applying and integrating safety knowledge into the world of the learner poses particular challenges [2-3, 7]. Reported barriers to junior doctors engaging in practice-based safety initiatives include lack of time [8], impeding attitudes of colleagues, high work pressure, professional hierarchy, switching of stations [2, 9] and a perceived disconnect between junior doctors and their employers [10]. To date, there is little research evidence to distinguish between educational methodologies in terms of their effectiveness in changing the behaviour of health professionals [11].

The aims of this study were: (1) to determine whether a new e-learning programme, Patient Safety Online Programme for Doctors, improved junior doctors’ knowledge, attitudes and skills in relation to error reporting, open communication and care of the second victim and (2) to establish whether the e-learning approach facilitated participants’ learning. We were also interested in establishing doctors’ views of the medical safety climate in their hospitals and determining whether these perceptions would support the application of learning from the online programme.

Methods

Setting

The study was conducted among junior doctors (basic specialist trainees) of the Royal College of Physicians of Ireland between January 2012 and February 2013.

Intervention

The “Patient Safety Online Programme for Doctors”, was developed by a collaborative team from the Institute of Leadership at the Royal College of Surgeons of Ireland (RCSI) and Royal College of Physicians of Ireland (RCPI). A steering group with representation from the Clinical Indemnity Scheme was established to guide the project. Five modules were formed (Table 1) after consideration of established safety curricula [12], academic–practice interfaces and research. The core of each module is a filmed case study based on real life events supplemented by video based input from patient safety experts (family and medical representatives). Expert status was conferred by publication record, patient safety representation at national level and/or clinical career. Participants complete interactive questions during each module and for assessment purposes, multiple choice questions, based on the single best answer approach [13] at the end of modules.

Study Design

The study formed a pre and post intervention design. The study cohort was basic specialist trainees of the RCPI who were required to complete the online programme, at some point, within the two year duration (July 2011 – June 2013) of their training scheme. In order to achieve a cross section of their views, following a pilot phase, a thirteen month study time frame (January 2012 – February 2013) was established. The study was approved by the RCSI Research Ethics Committee.

Data Collection

Participation was voluntary and the pre and post questionnaire (via Survey Monkey link) were uploaded to the RCPI virtual learning environment. Trainees were invited to complete a unique anonymous identifier on the questionnaires to enable a within-subjects pre and post data comparison. A modified plus version of a questionnaire from a similar US study [14] was used. Questionnaire items were modified in order to improve face validity for doctors working in Irish hospitals. The questionnaire covered the following themes: (1) demographic information; (2) self-rated knowledge of patient safety; (3) attitudes to patient safety; (4) views of medical safety climate; (5) self-rated comfort level with patient safety skills; (6) evaluation of programme content and the learning experience. Confounder items dealing with strategies for error reduction were included on the questionnaire as a control, since these were not substantially covered in the five module programme.

Data Analysis

Data were analysed using SPSS. Comparisons between survey responses were analysed using the Wilcoxon Rank-Sum Test.

Results

Respondents

During the study time frame, 208 basic specialist trainees who completed the programme completed the pre questionnaire also. Of this group, 62 (30%) completed both pre and post questionnaires. This paper reports the results from the pre and post matched sample of trainees (N=62) and the appendix of the online version of this paper includes descriptive data from the 208 trainees who completed the pre- questionnaire.

The age of respondents ranged from 24 – 45 years with a median of 28 and 15 medical specialities were represented (Fig 1). Forty respondents were female (65%) and twenty-two were male (35%). Sixty-six per cent were European, 18% Asian, 14% African and 2% American. For the majority of respondents (n=58, 94%), the number of days between completing the pre and post questionnaires was either less than one day (47%) or one to five days later (47%).

Knowledge

Table 2 presents data for items measuring self-rated knowledge. There was a significant improvement in respondents' knowledge in all six areas investigated. Prior to completing the programme, 82% rated their overall knowledge of patient safety as "good", "very good" or "excellent" and this increased to 98% after the programme. Nearly 40% rated their knowledge of the prevalence of adverse events as "fair" or "poor" before the programme whereas all respondents rated this as "good" or better after the programme. Knowledge (good or better) of the factors contributing to adverse events and near misses increased from 84% to 100% and knowledge about how to communicate openly with families after an adverse event or near miss from 76% to 98%. Knowledge of systems for reporting adverse events and near misses, and of methods of learning from these increased from 68% to 98%. Interestingly, only 53% rated their knowledge of how to care for themselves after an adverse event or near miss as "good" or better before the programme. This increased to 98% after the programme.

Attitude

Table 3 presents data for self-rated attitudes and medical safety climate items. Respondents understood the concept of medical fallibility and this increased after the programme. At pre-test, most doctors (71%) agreed that making errors in medicine was inevitable and this increased to 89% after the programme. Prior to the programme, 65% disagreed or strongly disagreed with the statement that “competent doctors do not make medical errors that lead to patient harm” and this increased to 79% after the programme.

Respondents accepted that it is not up to the nursing staff to report errors (agree/strongly agree: 92% pre/84% post) and that even if no harm to a patient occurs, the error should still be reported (agree/strongly agree: 87% pre/94% post). Most respondents disagreed that if they saw a medical error they would keep it to themselves (disagree/strongly disagree 76% pre/84% post). In comparison, prior to the programme just 61% provided desirable responses (disagree/strongly disagree) to the statement “reporting systems do little to reduce future errors” and this increased to 86% after the programme.

The confounder items, detailed next, considered attitudes to error prevention. Most (89%) disagreed or strongly disagreed before the programme with the statement: “only doctors can determine the causes of a medical error” and 55% and 8%, respectively provided desirable responses (disagree/strongly disagree) to the statements: “most errors are due to things that doctors cannot do anything about” and “after an error occurs an effective strategy is to work harder and to be more careful”. At post-test, there were no significant changes in these frequencies.

Medical Safety Climate

At pre-test, only 13% and 20% respectively agreed or strongly agreed with the statements: “doctors routinely report medical errors” and “doctors routinely share information about medical errors and what caused them”. 76% agreed or strongly agreed that “in my workplace, senior medical staff have patient safety as a high priority”. Twenty-three per cent disagreed that “there is a gap between what we know as best care and what we provide on a day to day basis”. None of the climate factor scores change significantly from pre- to post programme.

Comfort Level with Patient Safety Skills

Compared with pre-programme levels, comfort levels with patient safety skills increased significantly after the programme (Table 4). It was clear that only a proportion of respondents felt comfortable or very comfortable with disclosing an error to senior medical staff and/or management (58%), accurately completing an incident report form (58%), analysing a case to find the causes of an error (53%), disclosing an error to a patient (42%), knowing when to complete an incident report form (48%) and supporting and advising a colleague who had been involved in an error (51%). After completing the programme, between 80% and 94% of respondents reported they felt “comfortable to very comfortable” dealing with these tasks.

Evaluation of Programme Content and Experience

After completing the programme, the majority agreed or strongly agreed that the content of each module was relevant for them: introduction to patient safety (90%), understanding adverse events and near misses (92%), open communication (90%), caring for the second victim (92%) and learning from adverse events and near misses (92%).

The majority rated all aspects of the programme experience highly (see Fig 1 in the online appendix) in particular the case studies and video clips with patient safety experts. Eighty four percent indicated they would recommend the programme to a colleague, 2% would not and 13% were unsure. Few respondents wrote qualitative comments. Suggestions for improvement indicated that respondents would like more of what was done well; “more video clips from patient representatives and true life cases” and “statements from different people about errors made and how they dealt with them, from consultants to interns”. Two comments suggested that some components of the programme may have been seen as overly idealistic. For example, it was suggested that the recommendations were unrealistic and that junior doctors cannot be expected to prevent, anticipate, apologise for, report and analyse all or most medical errors without additional resources or time.

Discussion

This paper reports the impact of an online patient safety training programme on the knowledge, skills and attitudes of junior doctors in training. Following the programme, participants showed significant increases in their levels of comfort in deploying patient safety skills (knowing when and how to complete an incident form; disclosing errors to patients; supporting colleagues involved in error). Their knowledge of patient safety issues increased and their attitudes towards medical fallibility and error reporting also changed in a positive direction. Comparison of baseline knowledge, attitude, skills and medical safety climate data with findings from other studies suggests similarities in the educational and work-based experience of junior doctors in a number of countries. Respondents' views on medical safety climate (including a poor culture of error reporting among doctors and a lack of sharing of lessons learned) predictably did not change between pre and post test. Such beliefs about the cultural context may prevent improved attitudes emerging as improved behaviour in practice. The programme experience was positively rated. In particular, participants rated highly the use of case studies based on real life events and video clips from medical and family representatives.

Error Reporting

The findings from this study agree with those of previous research [15-18], in that very positive attitudes towards the importance of error reporting were found among junior doctors. Respondents indicated a willingness to take responsibility for reporting errors, even if there is no harm caused to the patient. However, as has been reported elsewhere [15-16], attitudes are less positive when the effectiveness of reporting systems is considered. Considering the pre- survey data alone, only 61% disagreed or strongly disagreed with the statement that "reporting systems do little to reduce future errors" and only 51% felt comfortable or very comfortable "analysing a case to find the causes of an error". Potential reasons for this include junior doctors not becoming involved in discussions about how to prevent incidents and junior doctors not receiving feedback following an investigation [16]. The pre-survey data also indicated the problem of underdeveloped incident reporting skills. Less than 60% of respondents felt they knew fully how or when to complete incident forms. Similarly, a US study [19] found that less than 60% of physicians knew how to report errors or what to report. Our pre- survey data also suggested a lack of confidence in doctors' abilities to tackle the systematic causes of error with 55% disagreeing or strongly disagreeing with the statement "most errors are due to things doctors cannot do anything about".

Our study found very limited understanding of the role of organisations in error management; pre and post the programme less than 20% strongly disagreed or disagreed with the statement "after an error occurs, an effective strategy is to work harder and be more careful". Our findings reinforce the views [15, 20] that education on the organisational aspects of patient safety need to be incorporated into curricula for junior doctors. In the development of subsequent modules of this e-learning programme (medication safety, healthcare associated infections, principles of antibiotic use), error reduction strategies and leadership skills have been emphasized.

Open Communication

Respondents were more comfortable disclosing an error to senior medical staff/management than to patients. In systems terms, the openness to talking to senior colleagues or management is a positive finding since organisational knowledge is important for error prevention. The communication apprehension with patients may reflect a lack of confidence engendered by a fear of litigation or of damage to reputation. Standardising training in open communication for junior doctors may prove to be particularly important given the variability in training in this area [17].

Caring for the Second Victim

Before the programme, fewer than 50% of respondents rated their knowledge of how to care for themselves after unintentionally causing harm to patients as fair or poor. It is generally accepted that expecting errorless performance from trainees is unrealistic [21]. Studies have identified rates of error and adverse events ranging from 18% to 77% [22-26]. It is important therefore that young doctors receive training in how to cope with the emotional distress that may ensue. For example, as part of a training programme for residents at the University of Illinois Medical Centre at Chicago (UIMCC), the expectation of reporting adverse events was communicated to residents with the proviso that this would serve as one of the criteria for assessing their progress in key competencies [27]. At UIMCC the innovation in training was that if a report indicated that a patient was harmed, then a second victim impact report on the doctor would also be considered.

Culture

There were no significant differences between pre and post measures of medical safety climate. At pre-test, only 13% and 20%, respectively, agreed or strongly agreed with the statements “doctors routinely report medical errors” and “doctors routinely share information about medical errors and what caused them”. These findings suggest a disparity between expressed and lived values. However, it is important to take into account the barriers to engagement (e.g. time, hierarchy, switching of stations) in safety initiatives [2, 8]. Our finding that 76% agreed or strongly agreed with the statement “in my workplace, senior medical staff have patient safety as a high priority” and that 23% disagreed that “there is a gap between what we know as best care and what we provide on a day to day basis” suggests that despite patient safety leadership, there are still systemic difficulties involved in applying learning from patient safety education to practice.

Educators should be attempting to effect the training environment (e.g. hospitals) and healthcare teams in addition to the trainee. In studies where the culture of the training environment has been successfully improved as part of educational provision, safety behaviours have increased and junior doctors have expressed less concern about factors that impede error reporting [27]. It is important that the training bodies and the employers of doctors align their expectations with regard to patient safety training, so that patient safety curricula has a direct operational home within the practice setting [20]. As part of this alignment, the RCPI has implemented a plan to have a postgraduate trainee representative in training hospitals and a mentorship service available to junior doctors.

Limitations

The major limitation of the study was that it was primarily concerned with process evaluation rather than with longer term outcomes. There was no control group and neither was there a third time point to determine whether improved knowledge, attitude and skills were sustained. There is also the issue of social desirability of responses. However, given that participation was anonymous and that there was a lot of variability in responses, social desirability effects are likely to have been modest. It also has to be considered that the improvements in knowledge, attitude and skills may have been due to the self-determined nature of the responses - typically participants will rate themselves better after a learning and awareness based programme. The short time frames between completion of the pre and post questionnaires are also a relevant factor. Half of respondents completed the pre and post questionnaires on the same day and research shows that immediate responses to training are usually assessed favourably [28]. The 30% response rate and 2:1 female to male ratio of respondents may also be interpreted to weaken the study findings. However, as evidenced in the appendix, the demographic characteristics of respondents are very similar to those of the overall study cohort.

Conclusion

This study demonstrated that e-learning can form a useful part of the repertoire for patient safety education. Evaluations were positive, significant changes in self-rated knowledge, attitudes and skills were found and the e-learning method was acceptable to junior doctors. There appears to be a particular demand for learning from the experiences of colleagues and for understanding the perspectives of patients and their relatives. Participants’ views of practice-based issues such as a poor culture of error reporting among doctors and a lack of sharing of lessons learned, may prevent improved attitudes being realised in practice. Patient safety education for doctors is important but it must be tied to clinical practice and healthcare teams to enhance its effectiveness. This approach may help to improve safety cultures in hospitals while at the same time developing the professionalism of junior doctors.

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Conflict of interest None.

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Tables:**Table 1:** RCSI RCPI Patient Safety Online Programme for Doctors – Module Titles and Learning Outcomes

Module Titles	Learning Outcomes
1. Introduction to patient safety	Understand the prevalence of safety problems and importance of learning from past events.
2. Understanding adverse events & near misses	Know and critique models for explaining how adverse events and near misses occur.
3. Open communication	Be capable of understanding and applying open communication skills.
4. Caring for the second victim	Understand the personal impact of errors and be capable of using effective coping strategies.
5. Learning from adverse events & near misses	Know and understand the concepts underlying risk management and be capable of applying procedures such as incident reporting and incident review.

Table 2 Respondents' pre and post ratings of patient safety knowledge items

Item		Excellent	Very Good	Good	Fair	Poor	p Value
Overall knowledge of patient safety	Pre	1 (1%)	18 (29%)	32 (52%)	11 (18%)	0	p < 0.001
	Post	19 (32%)	32 (53%)	8 (13%)	0	1 (2%)	
Prevalence of adverse events (AEs) & near misses (NMs)	Pre	0	9 (15%)	30 (48%)	18 (29%)	5 (8%)	p < 0.001
	Post	20 (32%)	33 (53%)	9 (15%)	0	0	
Factors that contribute to AEs & NMs	Pre	2 (3%)	14 (23%)	36 (58%)	9 (15%)	1 (1%)	p < 0.001
	Post	23 (37%)	32 (52%)	7 (11%)	0	0	
Communicating openly with patients & families after an AE	Pre	3 (5%)	15 (24%)	29 (47%)	15 (24%)	0	p < 0.001
	Post	25 (40%)	27 (43%)	9 (15%)	1 (2%)	0	
How to self-care after un-intentionally causing patient harm	Pre	2 (3%)	12 (19%)	19 (31%)	22 (36%)	7 (11%)	p < 0.001
	Post	22 (35%)	31 (50%)	8 (13%)	1 (2%)	0	
Systems for reporting AEs & NMs	Pre	1 (2%)	11 (18%)	30 (48%)	17 (27%)	3 (5%)	p < 0.001
	Post	20 (33%)	33 (55%)	6 (10%)	1 (2%)	0	
Methods for learning from AEs & NMs	Pre	1 (2%)	12 (19%)	30 (48%)	19 (31%)	0	p < 0.001
	Post	20 (34%)	28 (48%)	9 (16%)	1 (2%)	0	

Table 3 Pre and post ratings of patient safety attitudinal and medical safety culture items

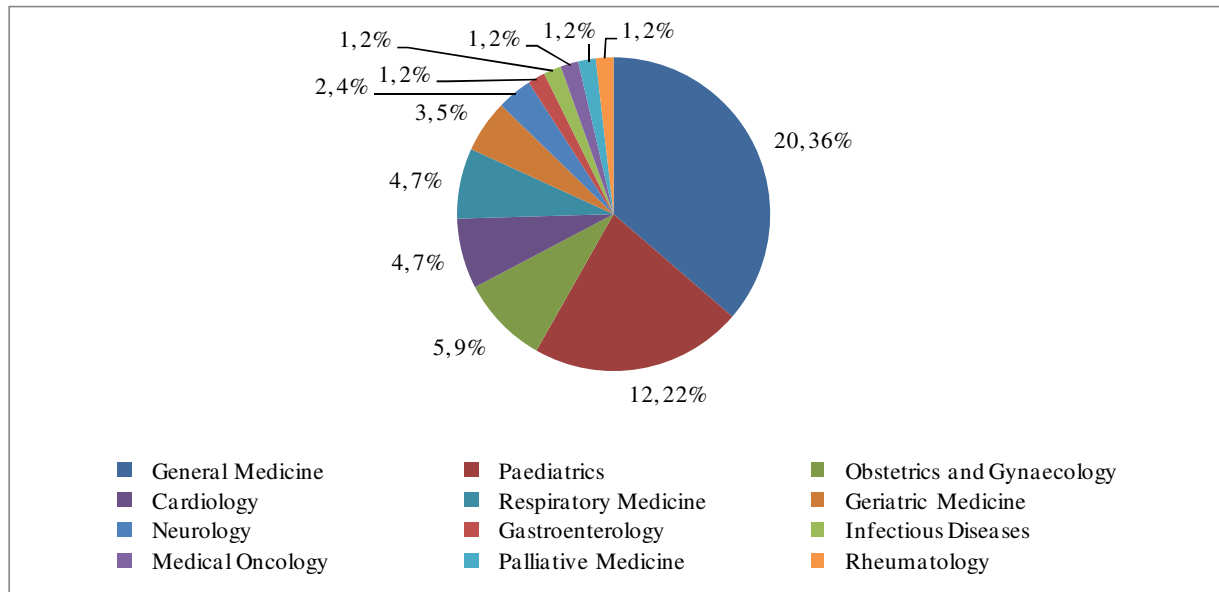
Attitudinal/Medical Safety Climate Items		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	p Value
<i>Medical Fallibility</i>							
Making errors in medicine is inevitable	<i>Pre</i>	10 (16%)	34 (55%)	10 (16%)	8 (13%)	0	p = 0.001
	<i>Post</i>	25 (40%)	30 (49%)	5 (8%)	2 (3%)	0	
Competent doctors do not make medical errors that lead to patient harm	<i>Pre</i>	3 (5%)	7 (11%)	12 (19%)	33 (54%)	7 (11%)	p = 0.004
	<i>Post</i>	2 (3%)	6 (10%)	5 (8%)	29 (47%)	20 (32%)	
<i>Error Reporting</i>							
If there is no harm to a patient there is no need to address an error	<i>Pre</i>	0	1 (2%)	7 (11%)	40 (64%)	14 (23%)	p = 0.002
	<i>Post</i>	0	2 (3%)	2 (3%)	25 (40%)	33 (53%)	
It is up to nursing staff to report medical errors	<i>Pre</i>	0	3 (5%)	2 (3%)	41 (66%)	16 (26%)	p = 0.84
	<i>Post</i>	1 (2%)	5 (8%)	4 (6%)	25 (40%)	27 (44%)	
If I saw a medical error I would keep it to myself	<i>Pre</i>	0	2 (3%)	13 (21%)	34 (55%)	13 (21%)	p = 0.005
	<i>Post</i>	0	3 (5%)	7 (11%)	26 (42%)	26 (42%)	
Reporting systems do little to reduce future errors	<i>Pre</i>	0	5 (8%)	19 (31%)	28 (45%)	10 (16%)	p < 0.001
	<i>Post</i>	1 (2%)	4 (7%)	3 (5%)	27 (43%)	27 (43%)	
<i>Error Prevention and Analysis</i>							
Most errors are due to things that doctors cannot do anything about	<i>Pre</i>	1 (2%)	2 (3%)	25 (40%)	31 (50%)	3 (5%)	p = 0.16
	<i>Post</i>	1 (2%)	12 (20%)	18 (29%)	25 (41%)	5 (8%)	
Only doctors can determine the causes of a medical error	<i>Pre</i>	0	2 (3%)	5 (8%)	42 (68%)	13 (21%)	p = 0.03
	<i>Post</i>	0	3 (3%)	4 (7%)	29 (47%)	27 (43%)	
After an error occurs, an effective strategy is to work harder and to be more careful	<i>Pre</i>	11 (18%)	31 (50%)	15 (24%)	5 (8%)	0	p = 0.14
	<i>Post</i>	14 (22%)	22 (36%)	14 (22%)	11 (18%)	1 (2%)	
<i>Medical Safety Climate</i>							
Doctors routinely report medical errors	<i>Pre</i>	0	8 (13%)	21 (34%)	26 (42%)	7 (11%)	p = 0.37
	<i>Post</i>	2 (3%)	10 (17%)	10 (17%)	26 (43%)	12 (20%)	
Doctors routinely share information about medical errors and what caused them	<i>Pre</i>	1 (2%)	16 (26%)	18 (29%)	22 (35%)	5 (8%)	p = 0.66
	<i>Post</i>	3 (5%)	16 (26%)	17 (27%)	20 (32%)	6 (10%)	
In my workplace, senior medical staff have patient safety as a high priority	<i>Pre</i>	16 (26%)	31 (50%)	14 (22%)	1 (2%)	0	p = 0.44
	<i>Post</i>	14 (23%)	33 (53%)	10 (16%)	3 (5%)	2 (3%)	
There is a gap between what we know as "best care" and what we provide on a day to day basis	<i>Pre</i>	8 (13%)	23 (37%)	17 (27%)	14 (23%)	0	p = 0.24
	<i>Post</i>	6 (10%)	28 (45%)	21 (34%)	7 (11%)	0	

Table 4 Self-reported comfort level with patient safety skills items, pre and post completion of the RCSI RCPI Patient Safety Online Programme for Doctors

Item		Very Comfortable	Comfortable	Neutral	Uncomfortable	Very Uncomfortable	p Value
Knowing when to complete an incident report form	Pre	4 (6%)	26 (42%)	19 (31%)	12 (19%)	1 (2%)	p < 0.001
	Post	20 (32%)	36 (58%)	5 (8%)	0	1 (2%)	
Accurately completing an incident report form	Pre	4 (6%)	32 (52%)	14 (23%)	12 (19%)	0	p < 0.001
	Post	19 (31%)	38 (61%)	4 (6%)	0	1 (2%)	
Disclosing an error to a patient	Pre	2 (3%)	24 (39%)	18 (29%)	15 (24%)	3 (5%)	p < 0.001
	Post	12 (19%)	38 (61%)	11 (18%)	0	1 (2%)	
Disclosing an error to senior medical staff and/or management	Pre	2 (3%)	34 (55%)	17 (27%)	9 (15%)	0	p < 0.001
	Post	15 (24%)	37 (59%)	8 (13%)	1 (2%)	1 (2%)	
Analysing a case to find the causes of an error	Pre	2 (3%)	31 (50%)	22 (36%)	7 (11%)	0	p < 0.001
	Post	14 (23%)	42 (67%)	5 (8%)	0	1 (2%)	
Supporting & advising a colleague who has been involved in an error	Pre	4 (6%)	28 (45%)	19 (31%)	10 (16%)	1 (2%)	p < 0.001
	Post	21 (34%)	37 (60%)	3 (5%)	0	1 (2%)	

Graphs:

Fig 1 Speciality of Respondents



Appendix:

Appendix

**Pre Questionnaire Data collected from RCPI Basic Specialist Trainees
between August 2011 and February 2013**

Table 1 Demographic data for Basic Specialist Trainees who completed the pre- questionnaire only and both pre and post questionnaires

	BSTs completed pre questionnaire	BSTs completed pre and post questionnaire
	N (%)	N (%)
Sex		
Male	71 (34%)	22 (35%)
Female	135 (66%)	40 (65%)
Age		
24 - 46 years	205 (100%)	62 (100%)
Median age	27	28
Continent of Origin		
Europe	138 (68%)	41 (66%)
Asia	34 (17%)	11 (18%)
Africa	28 (14%)	9 (14%)
North America	3 (1%)	1 (1%)
Australia	0	0
Specialities (Grouped)		
General Medicine, Paediatrics, Obstetrics and Gynaecology	148 (72%)	43 (69%)
Cardiology, Clinical Microbiology, Emergency Medicine, Endocrinology/Diabetes Mellitus, Gastroenterology, Geriatric Medicine, Haematology, Histopathology, Infectious Diseases, Medical Oncology Neurology, Nephrology, Palliative Medicine, Rheumatology, Respiratory Medicine.	58 (28%)	19 (31%)

Table 2 Rating of Patient Safety Knowledge Items from Basic Specialist Trainees who completed the pre questionnaire

Item	Excellent	Very Good	Good	Fair	Poor
Overall knowledge of patient safety	5 (3%)	59 (28%)	113 (54%)	27 (13%)	4 (2%)
Prevalence of adverse events and near misses	1 (1%)	33 (16%)	96 (46%)	61 (29%)	17 (8%)
Factors that contribute to adverse events and near misses	4 (2%)	58 (28%)	112 (54%)	30 (14%)	4 (2%)
How to communicate openly with patients and families after an adverse event	16 (8%)	55 (27%)	92 (44%)	39 (19%)	5 (2%)
How to self-care after unintentionally causing harm to a patient	6 (3%)	34 (16%)	81 (39%)	69 (33%)	18 (9%)
Systems for reporting adverse events and near misses	5 (2%)	45 (22%)	93 (45%)	52 (25%)	13 (6%)
Methods for learning from adverse events and near misses	5 (2%)	41 (20%)	106 (51%)	48 (23%)	8 (4%)

Table 3 Ratings of patient safety attitudinal and medical safety culture items from basic specialist trainees who completed the pre questionnaire

Attitudinal/Medical Safety Climate Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
<i>Medical Fallibility</i>					
Making errors in medicine is inevitable	33 (16%)	108 (52%)	42 (20%)	23 (11%)	2 (1%)
Competent doctors do not make medical errors that lead to patient harm	6 (3%)	22 (11%)	35 (17%)	113 (54%)	32 (15%)
<i>Error Reporting</i>					
If there is no harm to a patient there is no need to address an error	1 (1%)	3 (1%)	15 (7%)	123 (59%)	66 (32%)
It is up to nursing staff to report medical errors	1 (1%)	9 (4%)	28 (13%)	118 (57%)	51 (25%)
If I saw a medical error I would keep it to myself	0	5 (2%)	30 (15%)	124 (60%)	48 (23%)
Reporting systems do little to reduce future errors	3 (1%)	20 (10%)	51 (25%)	109 (52%)	25 (12%)
<i>Error Prevention and Analysis</i>					
Most errors are due to things that doctors cannot do anything about	1 (1%)	10 (5%)	65 (31%)	118 (57%)	14 (6%)
Only doctors can determine the causes of a medical error	2 (1%)	6 (3%)	17 (8%)	125 (60%)	58 (28%)
After an error occurs, an effective strategy is to work harder and to be more careful.	49 (23%)	93 (45%)	43 (21%)	22 (10%)	1 (1%)
<i>Medical Safety Climate</i>					
Doctors routinely report medical errors	2 (1%)	28 (13%)	67 (32%)	91 (44%)	20 (10%)
Doctors routinely share information about medical errors and what caused them	4 (2%)	57 (27%)	58 (28%)	70 (34%)	19 (9%)
In my workplace, senior medical staff have patient safety as a high priority.	44 (21%)	114 (55%)	47 (22%)	1 (1%)	2 (1%)
There is a gap between what we know as “best care” and what we provide on a day to day basis	24 (12%)	86 (41%)	59 (28%)	36 (17%)	3 (2%)

Table 4 Self-reported comfort level with patient safety skills items from basic specialist trainees who completed the pre questionnaire

Item	Very Comfortable	Comfortable	Neutral	Uncomfortable	Very Uncomfortable
Knowing when to complete an incident report form	18 (9%)	85 (41%)	56 (27%)	47 (22%)	1 (1%)
Accurately completing an incident report form	17 (8%)	94 (45%)	51 (25%)	44 (21%)	1 (1%)
Disclosing an error to a patient	6 (3%)	85 (41%)	48 (23%)	62 (30%)	6 (3%)
Disclosing an error to senior medical staff and/or management	9 (4%)	108 (53%)	44 (21%)	41 (20%)	4 (2%)
Analysing a case to find the causes of an error	8 (4%)	101 (48%)	68 (33%)	29 (14%)	1 (1%)
Supporting and advising a colleague who has been involved in an error	18 (9%)	98 (47%)	66 (32%)	23 (11%)	2 (1%)

Fig 1 Respondents' ratings (% agree or strongly agree) of the programme experience (62 matched sample)

