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An Undergraduate Patient Safety Curriculum: Development and Implementation

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Patient safety, which has been defined by the Institute of Medicine as “the prevention of harm to patients(1)”, is a major concern for all healthcare providers. The Harvard study(2), established the extent and types of adverse events and was a driver for starting policy discussions on improving patient safety. Undergraduate health professions education has the potential to improve patient safety and there have been several drivers for developing and implementing a patient safety curriculum including from regulatory bodies, (e.g., the General Medical Council)(3), advisory bodies such as the World Health Organization’s (WHO) report on a curriculum for patient safety(4), and the high profile cases and investigations into poor quality care (for example, in the UK, the Mid-Staffordshire Inquiry).

In this article we discuss the core content for a patient safety curriculum and the challenges of developing and implementing a patient safety curriculum in the global and multi-professional context. Some of the examples offered here

are based on the authors' own experiences in undergraduate medical education.

Deciding on core content

There are many examples of core patient safety curricula from both global and national organisations. These include the World Health Organization (WHO) curriculum in patient safety(4), the Australian Patient Safety Framework(5) and the Canadian Patient Safety Institute Competency framework(6).

The core components of a patient safety curriculum are presented in Table 1 and are taken from the WHO's guide for developing a patient safety curriculum. However, there is significant overlap between what is regarded as core for patient safety and what may already be a part of most health professions education curricula.

As with other curriculum development initiatives, the first step is to define the core competencies and the corresponding content that are appropriate to the local context. Mapping these competencies and content to what is already being implemented in the current curriculum will allow identification of gaps to be addressed. There may be relevant areas of the current curriculum where patient safety can be integrated, such as clinical skills training, care in the community, health law, clinical ethics and communication skills. Potential integration opportunities are illustrated in Table 1. However, it is likely that specific patient safety content, such as 'root cause analysis', will require

changes to the current curriculum.

Learning and Teaching Activities

It essential that there is curriculum alignment to ensure that the desired competencies can be achieved through appropriate learning and teaching activities(7). Effective patient safety education cannot be limited to didactic instruction and, as with most learning within the health professions, patient safety education requires providing learners with adequate immersion in authentic experiences and supporting their development through feedback mechanisms. Examples of learning activities are illustrated in Table 1 and Box 1 and are taken from the ANONYMISED curriculum. These examples highlight the need for multidisciplinary input from both within and outside medicine, as well as contextualisation of teaching, such as high profile threats to patient safety as presented in the media or in inquiry reports. Patients should be an essential part of learning about patient safety - this can be achieved through learning from patients' experiences of healthcare as well as through learning from patient involvement in giving feedback about student performance, especially for developing patient –centred communication and interpersonal skills(2, 4).

Use of technology and simulation to learn about patient safety bridges the gap between the different stages of learning and the transition into clinical practice on graduation. 'Simulating' a snapshot of the complexity of the clinical work environment can allow students to 'see' themselves in that near future role that they are working towards. The example learning activities in Table 1

show potential for a variety of methods to be used in the patient safety curriculum.

The role of the Hidden Curriculum

We need to recognise that, while patient safety content can be 'taught', learning is highly influenced by the hidden curriculum(4). The hidden curriculum describes the unintended learning that occurs through the norms and values conveyed by others in the classroom or the work environment (See example 1 in Box 1). It is a concern that if the taught curriculum is not consistently experienced, its message may be lost, with students following the cultural norm created by the workplace. However, it is inevitable that there will be a disparity between the taught and the experienced curriculum. Therefore, students should be supported to understand the workplace culture, and its powerful role in shaping the actions in the workplace, through guided immersion in workplace activities(4). Further opportunities can be provided through debriefing discussions at the end of clinical placements so that students have a chance to discuss and challenge assumptions. These opportunities are essential to help students understand how culture influences safe practice and to develop strategies that will help them to cope well with the workplace, which does not always conform to the ideals of the taught curriculum.

Learning activities for students to recognise ethical issues or compromises to professionalism will develop the insight required for safe practice. These could be achieved through small group case based discussions or through end of

placement debrief small group sessions. These activities should provide opportunities for supportive discussions where students can clarify concerns about any potential unsafe practices they observed and concerns about their own learning, and question their assumptions and understanding in a safe setting.

Novel tools such as the attitude to patient safety questionnaire developed by Carruthers et al(8) can be used as an aid to evaluate changes before and after a learning session but the data can also be used to facilitate reflective discussions about attitudes and insight into patient safety.

Complex Systems and external drivers in quality improvement

It is important that the patient safety curriculum recognises the importance of the healthcare system in the delivery of safe care. The delivery of healthcare has increased in complexity, with the interdependency of teams and systems , as well as the ever present unpredictability and uncertainty in the clinical workplace(9). An understanding of the importance of the contribution of the healthcare system to patient safety can help the students to understand the need for system level improvement and the approaches for achieving improvements in the healthcare system.

National policy drivers influence providing safe care. For example, while the performance target set for seeing patients within four hours of being admitted to an emergency department in the UK may have been introduced with good intentions, there have been many instances of patient safety compromises

because of pressure to meet this target(10). Examples like this can allow a discussion of the role policy drivers play in shaping practice. Contextualisation to local practice can be achieved by discussing local hospital quality assurance procedures in relation to case examples of local incidents. Furthermore, disparities between policy driven expectations and the realities of the current healthcare workplace may be demonstrated in sessions on developing clinical leadership and quality improvement skills.

Quality improvement is the continuous efforts to improve the outcomes of performance and learning(11); this is key for improving the safety of current practice. Quality improvement requires maintaining the quality of one's own work but at the same time continuously exploring suitable opportunities for improving one's own and the organization's performance. Existing audit opportunities can be adapted to incorporate consideration of quality improvement (see example 4 in Box 1). Furthermore students should understand the relevance of outside bodies in enhancing quality and the reliability of care; especially in relation to near misses, adverse events and the role of never events. 'Never Events' are serious incidents that are deemed preventable if relevant national guidance has been implemented by the organization as recommended. A Never Event can trigger the visit of an external regulatory body and is a good example of illustrating how outside bodies regulate quality of service provided.

Assessment for learning and assessment of learning

Assessment facilitates learning; an essential aspect of curriculum alignment is to ensure that assessment is appropriate to the desired competencies(7). A distinction may be made between assessment of learning and assessment for learning(12). Assessment for learning can be facilitated through opportunities for supported reflection and semi-structured discussions. These can include debrief or Balint style discussions after clinical placements(13), allowing students to clarify concerns. These opportunities can facilitate discussions on accountability, and offer students a chance to better understand the dangers of unconscious incompetence and the need for on going personal development for safe care. Furthermore, maximising opportunities for hands on practice can also be opportunities for assessment for learning; examples include opportunities for writing a prescription under supervision, writing in patients' records and student led clinics(14). Such opportunities can increase the confidence of the educators and employers that the graduate has demonstrated evidence at the highest level of Miller's pyramid: 'does'(15).

Simulated learning encounters can be excellent opportunities for learning about patient safety through formative assessments. The purpose of such assessment is more fruitful if it incorporates opportunities for dialogue between the trainer and trainees to follow-up on feedback and reflections(12). This can be achieved in many ways including video recording the simulated clinical encounter and using the recordings to provide feedback.

To ensure that patient safety competencies are 'sampled' in assessment, patient safety competencies should be regularly blueprinted during summative assessments. Blueprinting is the process through which one decides what

should be assessed, the level at which it should be assessed and whether the method and content of the assessment is aligned to the curriculum(7). It is also worth identifying which elements of the existing print address relevant patient safety components. So, for example, assessment of relevant ethics teaching such as truth telling or infection control procedures, all address patient safety competencies and may already be assessed regularly. However, regularly blueprinting these will ensure better alignment and continuity for further development is highlighted. The 'shows how' element of Miller's pyramid(15) can be addressed through simulation based learning opportunities as well as OSCE stations. For example, demonstrating appropriate communication and interprofessional skills when interacting with patients and carers (outcome 8 in Table 2) can be assessed by incorporating patient rating, in OSCEs that include patients. An OSCE station may assess competence in communicating an error in a patient's care. The OSCE station can involve a patient and assessor rating with each commenting on different aspects of the student 's competence; the patient can rate the student on establishing rapport and clarity of communication whereas the assessor's focus can be on the student's understanding of the clinical situation, handling of the patient's questions and appropriate communication of the incident. Patients who are involved should receive appropriate training to contribute to undergraduate medical education in this way.

Student assistantships (where the student takes on the role of a doctor under supervision) may be utilised to create safe opportunities to allow the student to demonstrate the Miller's pyramid level, 'does'. For example, components of WHO outcome 11 (See Table 2) can be demonstrated in a safe setting, where

possible, by allowing students to lead under supervision, the management of therapeutics or writing prescriptions.

Evaluating the curriculum

Evaluation is an integral part of all curriculum development to test that what has been implemented is working but also to identify opportunities to continue to improve the curriculum. Evaluation involves three keysteps: (1)identifying the aim (it maybe that the focus of the evaluation is a single session or the whole patient safety curriculum), (2) collecting appropriate information and (3) disseminating of and responding to what the information tells us. Once the focus of the evaluation is identified it is important to implement appropriate methods of data collection that involves key stakeholders. For example, if you the focus is to review the whole curriculum, the gain would be minimal if the evaluation is limited to a questionnaire survey with all the students in the course. A better evaluation plan would involve a literature review that considers evidence and policy development and mapping this to the current curriculum to identify new developments and redundant areas of the current curriculum, involvement of multiple stakeholders in the evaluation process (hospital,staff, patient volunteers, teachers and students) and implementation of multiple methods in gathering data such as document analysis, interviews and questionnaires(4).

Implementing a patient safety curriculum is a challenge. A number of system level initiatives can help, such as developing a good relationship with the local healthcare provider, being informed by a multidisciplinary perspective and identifying change leaders or champions who can lead on developments.

In Summary

A patient safety curriculum that is fit for purpose should

- Be internationally relevant but incorporate local processes
- Have the input of all health professionals and involve the local education providers and the healthcare providers' patient safety teams
- Take an integrated approach with other relevant existing areas of the curriculum such as ethics, professionalism, clinical skills and communication skills teaching.
- Allow opportunities to recognise the 'culture' and the hidden curriculum and appreciate the complexity and interdependency of the modern healthcare system
- Students should be able to question and clarify concerns about any potential unsafe practices they observed and about their own learning
- Offer opportunities for students to participate, so that responsibility for safe practice is integrated into their developing professional role. The value of these opportunities can be increased through appropriate interprofessional learning opportunities.

- Be regularly blueprinted to ensure that the opportunities to drive learning by assessment are not missed.
- Offer feedback through opportunities for dialogue with the trainers, reflective dialogue and debrief opportunities is essential to develop patient safety.

Table 1: Potential integration and learning activities aligned to the WHO Patient Safety Curriculum

	Core components	Potential integration opportunities	Examples of learning activities
1	An understanding of what constitutes patient safety education and safe practice	Ethics and Law, In clinical environments, during clinical skills training	Through an introductory lecture; flagging up patient safety related competencies in other teaching so there is continuous sign posting
2	An appreciation of the role of human factors in errors	In placements; multi-disciplinary teaching that incorporates the science of human factors and contextualises it into personal and institutional examples	Session by a mix of experts including psychologists with human factor and safety training and senior medical staff sharing their unique perspectives experiences.
3	An understanding of and the impact of complex systems on [the quality of] patient care	Leadership and teamwork sessions; and primary care placements	Illustrating complex systems through how primary care practices work
4	The various team roles and an appreciation of their value in delivering safe care	Clinical placements, Student Selected Components and interprofessional learning activities	Interprofessional session on managing the acutely ill patient which involves doctors, nurses and paramedics; simulated scenarios to teach the management of the acutely ill patient.
5	An understanding of the different types of errors	Through local trust incidents and case examples discussed during small group	A joint session by the local hospital's patient safety manager and a psychologist. The session

	and the important role errors play in improving future practice	meetings; protected time for discussions soon after mortality meetings	includes local examples and data from the local hospital; addresses cognitive and behavioral elements in errors and biases in thinking, and an opportunity for undertaking error analysis.
6	An understanding of what clinical risk is and good practice in managing clinical risk	Simulated scenarios; placements	Understanding and managing clinical risk through clinical negligence and clinical decision making teaching; primary care led teaching on managing clinical uncertainty.
7	An appreciation of the role of quality improvement methods in improving systems; an appreciation of key methods by which a quality improvement exercise could be undertaken	Redesigning or expanding on audit opportunities to incorporate quality improvement exercises; demonstrating good practice in quality improvement through discussing previous or current projects in quality improvement	Quality improvement activities; e.g., Change one thing initiative(16).
8	Students should be able to demonstrate appropriate communication and interpersonal skills for interacting with patients and carers; especially with regards to breaking bad	Through patient stories, patients as educators; this is an area that can be integrated throughout the curriculum. Patient stories from national websites, e.g., Patient Stories(17)	Interactive session, which involves a video of a patient's carer who successfully complained to the trust about the care, and was compensated; addresses duty of candour and truth telling. Simulation based teaching focusing on issues leading to errors, e.g., effective handover;

	news or dealing with complaints		seeking help promptly.
9	An understanding and ability to apply essential infection control procedures	Infectious diseases teaching; in clinical placements; microbiology teaching	Engagement with appropriate protocols in placements;
10	Knowledge of the role of safety protocols to maintain safe practice during invasive procedures	During surgical placements	Through teaching on human factors and surgical placement experience.
11	An insight into the toolkits and protocols available to Improve medication safety	Through supervised opportunities in the clinical placement in senior years; the student assistantship	Opportunities to write prescription under supervision and involvement in discussing therapeutics management.
12	An understanding of the role that the work place culture plays, the relevance of personal values in upholding a safe culture; including an understanding of how to raise concerns	Placements and placement teaching or debrief at the end of placements; through an established raising concerns process for the medical school.	Through videos of local stories (e.g., Gina's story.(18)). Discuss examples of concerns raised and appropriate ways in which to raise concerns.

Example 1 - the influence of the hidden curriculum

1.1 A timetabled human factors session can teach that tiredness is a cause for accidents and errors. However, during clinical placements, they may see an over tired registrar still carrying on because the department is understaffed due to a local emergency and additional staff are not available promptly.

1.2 Students maybe taught to challenge seniors appropriately when patient safety is at risk. However, in reality the medical or nursing student may be reluctant to speak to another senior health professional colleague about a difficult patient whom staff are ignoring.

Example 2 – Good practice in integration

The early years could introduce human factors in the context of situational awareness in the learning environment or in the workplace. In later years, human factors teaching could be expanded to apply it to issues in relation to medication safety: drugs with similar names, route of administration, and tools available to reduce this type of errors.

Example 3 - Competencies consists of knowledge, skills attitudes and behaviours

Appropriate professional values and insight are required to recognise the need to raise concerns. The student should have the knowledge of the processes and good communication skills to raise concerns effectively. Raising concern also involves exercising appropriate behaviours with colleagues and seniors.

Example 4 – utilising existing opportunities to develop learning

4.1 Students could be asked to apply a quality improvement model to improve an important but simple good practice, such as increasing the rate of hand washing, under supervision.

4.2 - Students could be asked to apply a quality improvement model or the appropriate stages of a model to the outcomes of an audit project they have conducted.

4.3 - Through a small group session, students could be given a previously carried out quality improvement exercise to critically evaluate for possible next steps.

Box 1 – Examples demonstrating curriculum development principles

1. Aspden P, Corrigan, J., Wolcott, J. Patient safety: achieving a new standard for care. . Washington, DC: National Academies Press; 2004.
2. Brennan TA, Leape, L.L., Laird, N.M., Hebert, L., Localio, A.R., Lawthers, A.G., Newhouse, J.P., Weiler, P.C., Hiatt, H.H. Incidence of adverse events and negligence in hospitalized patients: results of the Harvard Medical Practice Study I. . New England Journal of Medicine. 1991;324:370-6.
3. GMC. Standards for medical education and training - consultation on draft standards. London: General Medical Council 2015.
4. WHO. WHO Patient Safety Curriculum Guide: multi professional edition. . Geneva, Switzerland. : 2011.
5. Walton MM, Shaw, T., Barnet, S., & Ross, J. . Developing a national patient safety education framework for Australia. Quality and Safety in Healthcare. 2006;15(6):437-42.
6. King J, Anderson, C.M. The Canadian interprofessional patient safety competencies: their role in health-care professionals' education. Journal of Patient Safety. 2012;8(1):30-5.
7. Biggs J. Enhancing teaching through constructive alignment. Higher Education 1996;32:347-64.
8. Carruthers S, Lawton, R., Sandars, J., Howe, A., Perry, M. . Attitudes to patient safety amongst medical students and tutors: Developing a reliable and valid measure Medical Teacher. 2009;31:e370-6.
9. Plsek PE, Greenhalgh, T. . Complexity science: The challenge of complexity in health care. BMJ. 2001;323:625-8.
10. Orr J. The good, the bad, and the four hour target. BMJ. 2008;337:a195.
11. Batalden PBD, F. . What is ‘‘quality improvement’’ and how can it transform healthcare? BMJ Quality and Safety. 2007;16:2-3.
12. Boud D. Feedback: ensuring that it leads to enhanced learning. The Clinical Teacher. 2015;12:3-7.
13. Novack DHE, R M; Paulsen, R H. Toward creating physician-healers: fostering medical students' self-awareness, personal growth, and well-being. Academic Medicine. 1999;74:516-20.
14. Bostick GH, M.; Miciak, M. . Novel clinical learning from a student-led clinic. The Clinical Teacher. 2014;11:512-5.
15. Norcini JJ. Work based assessment. BMJ. 2003;326:753-55.
16. Nursing Times. Change one thing, and help improve patient safety today: EMAP Publishing Limited; 2010 [cited 2016 11th January 2016]. Available from: http://www.nursingtimes.net/break-time/whats-new-in-nursing/change-one-thing-and-help-improve-patient-safety-today/5011298.fullarticle.
17. Anderson Wallace Ltd. Patient Stories London: Skyewebsites; 2016 [cited 2016 11th January 2016]. Available from: http://www.patientstories.org.uk.
18. Doncaster and Bassetlaw NHS trust. Gina's Story. South Yorkshire2015. Available from https://www.youtube.com/watch?v=IJfoLvLLoFo