

# The WHO patient safety curriculum guide for medical schools

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Accepted 20 June 2010

## ABSTRACT

**Background** The urgent need for patient safety education for healthcare students has been recognised by many accreditation bodies, but to date there has been sporadic attention to undergraduate/graduate medical programmes. Medical students themselves have identified quality and safety of care as an important area of instruction; as future doctors and healthcare leaders, they must be prepared to practise safe healthcare. Medical education has yet to fully embrace patient safety concepts and principles into existing medical curricula. Universities are continuing to produce graduate doctors lacking in the patient safety knowledge, skills and behaviours thought necessary to deliver safe care. A significant challenge is that patient safety is still a relatively new concept and area of study; thus, many medical educators are unfamiliar with the literature and unsure how to integrate patient safety learning into existing curriculum.

**Design** To address this gap and provide a foothold for medical schools all around the world, the WHO's World Alliance for Patient Safety sponsored the development of a patient safety curriculum guide for medical students. The *WHO Patient Safety Curriculum Guide for Medical Schools* adopts a 'one-stop-shop' approach in that it includes a teacher's manual providing a step-by-step guide for teachers new to patient safety learning as well as a comprehensive curriculum on the main patient safety areas. This paper establishes the need for patient safety education of medical students, describes the development of the *WHO Patient Safety Curriculum Guide for Medical Schools* and outlines the content of the Guide.

## INTRODUCTION

Patient safety has been on the reform agenda of many countries since the publication of studies documenting the extent of harm caused by healthcare,<sup>1, 2</sup> but the case for education and training of healthcare students in patient safety first formally recognised nearly a decade ago in the report *To Err is Human*<sup>3</sup> is only now gathering momentum. Since then, other reports<sup>4, 5</sup> have echoed the need for patient safety education. Medical students have identified the absence of patient safety education and voted in 2004 for increased attention to quality and safety,<sup>6</sup> and again in 2007 when the Association for Medical Education in Europe<sup>7</sup> recommended that patient safety education be integrated from the start of existing undergraduate courses.

Despite this groundswell of opinion, little coordinated international effort has occurred to integrate patient safety science and practice into undergraduate medical curricula. Trainees have identified substantial deficiencies in patient safety knowledge across a range of training areas and specialties.<sup>8</sup> This lag between learners' desires and faculty delivery is perhaps understandable, considering that medical schools find it difficult to translate patient safety knowledge into curricular change.<sup>9, 10</sup> What patient safety knowledge and skills should we teach? What competencies do healthcare professionals need to keep patients safe? The Australian Patient Safety Education Framework<sup>11</sup> (APSEF), published in 2005, presented a potential solution. The APSEF is an evidence-based description of the knowledge, skills and behaviours that healthcare professionals need to ensure safe patient care<sup>12</sup> according to their level of experience and supervision. In 2008, The WHO World Alliance for Patient Safety acted to fill the gap in patient safety education for medical students by sponsoring the development of a universal patient safety curriculum guide for medical schools worldwide. While it is clearly recognised that nursing and allied healthcare professions would also benefit from such a guide and that the gold standard is a multiprofessional integrated curriculum, a pragmatic decision was made to first pilot and focus internationally on medical students.

## Context for patient safety education

While patient safety is a relatively new concept, it embraces many medical education principles first considered by Flexner in the early 20th century, the need for a strong scientific basis alongside analytical and critical thinking.<sup>13</sup> He also recognised attributes such as ethical practice, professionalism, population health, compassion and integrity to be equally important.<sup>14</sup>

The main difference between patient safety requirements and the list of ethical attributes described above<sup>15, 16</sup> is that many of the ethical codes have developed from the perspective of the doctor while patient safety attributes are designed from the perspective of the patient. The discipline of patient safety offers a new framework for delivering healthcare, one that merges traditional obligations and duties of doctors with a contemporary recognition of the complex environment and the needs of patients.

Patient safety is the freedom for a patient from unnecessary harm or potential harm associated with healthcare.<sup>17</sup> It refocuses learning on the patient and the multiple interactions that can either heal or harm them. Many studies<sup>1 18 19</sup> highlight that alongside the enormous benefits of medical care are significant risks for patients. Managing these risks is a great challenge that requires a culture of safety to be established throughout medicine, from redesigning health systems to training doctors competent in both the clinical sciences and safety sciences.<sup>20</sup>

### Why do medical students need to know about patient safety?

Patient safety education and training is required learning for all levels of training but particularly during the early years when students are establishing the foundations for their clinical practice. They need underpinning knowledge about patient safety as well as know how to apply the principles and concepts at the bedside. Students can begin to learn practical lessons about patient safety as soon as they enter the classroom, ward or clinic. Patient safety should not be approached as yet another subject to teach; rather, it applies to all areas of clinical medicine. Being aware that errors occur is not enough. A safe practitioner integrates patient safety concepts and principles into their clinical practice. This requires more than classroom teaching: it requires teachers to demonstrate how they act to keep patients safe.

By helping students to recognise each patient as an individual and to see how that patient's safety depends on more than any one person's clinical skills in isolation, medical students themselves can be role models. As future doctors and leaders, they must be aware of the multiple factors that influence healthcare outcomes and act to reduce the opportunities for errors. They need to know how the system of healthcare operates and impacts on the quality and safety of healthcare.

### How ready are medical schools for patient safety education?

Patient safety is a complex topic which includes new areas of knowledge such as human factors, systems, root cause analysis and risk reduction. Its principles and concepts apply to all areas of medicine. This makes it a challenge to teach and to integrate into the medical curriculum. The literature on patient safety education in medical schools is underdeveloped and shows that patient safety teaching is varied and ranges from single-session interventions<sup>9 21</sup> to educational programmes fully integrated across all years of school-based training.<sup>22</sup> Some medical schools have adapted a modular approach to patient safety education, delivering content in either a single session or several sessions within a narrow time frame.<sup>9 21 23–25</sup> Others have introduced 1- or 2-day intensive courses.<sup>26 27</sup> While these are pragmatic ways of introducing new material without major curricular redesign, patient safety and its education are ideally integrative in nature. Very few medical schools have an integrated approach with examples describing patient safety teaching across two existing blocks (6 months) of a second-year medical programme,<sup>28</sup> across an entire second year of another programme,<sup>29</sup> and even across all the years of medical training.<sup>22</sup> Many more medical schools teach patient safety than are described in the literature; however, this is far from universal. Some medical faculties and medical educators are yet to be convinced that patient safety is an essential part of the undergraduate medical curriculum and remain reluctant to incorporate knowledge that originates from outside medicine, such as systems thinking and quality-improvement methods.<sup>30</sup>

A central motivation for the WHO in selecting this project was to encourage and assist medical schools to develop patient safety education in their medical schools. One cannot expect medical schools to redesign or adapt curricula if they are unfamiliar with

the requirements of the discipline of patient safety. Medical educators come from varied backgrounds (clinicians, clinician educators, non-clinician educators, managers, health professionals), and their collective experience is necessary to deliver a rigorous medical programme. Many are experts in their particular disciplines and usually keep up to date using the accepted professional pathways for their area, but patient safety knowledge requires additional learning outside these traditional routes. To be an effective patient safety teacher, health professionals need the knowledge, tools and skills to enable them to teach about patient safety in their institutions.

### WHO Patient Safety Curriculum Guide for Medical Schools

The *WHO Patient Safety Curriculum Guide for Medical Schools* is a comprehensive curriculum guide designed to be implemented either in part or in whole by any medical school irrespective of geography or culture. The *WHO Curriculum Guide* project team was guided by three principles: producing a curricular guide for medical schools worldwide on patient safety; creating a learning environment where teachers can access resources to teach patient safety to medical students; and supporting an evidence base for effective use of a patient safety curriculum in medical schools.

The *Curriculum Guide* was developed by a team from the University of Sydney and Monash University and assisted by an Expert Consensus Working Group with representatives from the six WHO regions. The *Curriculum Guide* writing team used the APSEF to identify the topic areas and competencies for the level of students under clinical supervision. The APSEF was used because it provided a comprehensive evidenced based description of the competencies required by students under clinical supervision. Each topic was developed into a chapter using a standardised template (see box 1) by the team member expert in that area and reviewed by the team during regular face-to-face/teleconferenced meetings held throughout the *Curriculum Guide's* development. The expert group provided review and comment on the curriculum, case studies and region-specific advice and resources.

The *Curriculum Guide* recognises that there is a divide between the real world of the hospital and clinic compared with the lecture halls at a university. It addresses this divide by acknowledging the varying levels of preparedness of hospitals or clinics to adapt to patient safety principles. We know that students will see behaviours that are unsafe and contrary to the patient safety learning outcomes set out in the *Curriculum Guide*. We address this by identifying patient safety areas that are known to be routinely violated. We suggest new ways for the

#### Box 1 Topics in the *WHO Curriculum Guide*

1. What is patient safety?
2. What is human factors engineering, and why is it important to patient safety?
3. Understanding systems and the impact of complexity on patient care
4. Being an effective team player
5. Understanding and learning from errors
6. Understanding and managing clinical risk
7. Introduction to quality improvement methods
8. Engaging with patients and carers
9. Minimising infection through improved infection control
10. Patient safety and invasive procedures
11. Improving medication safety

**Table 1** Framework for managing conflicts in medical situations

Area or attribute	Examples	Old way	New way
Paternalism consent	Student asked to get consent from a patient for a surgical procedure the student has never heard of before	Accept task, do not let senior staff know level of ignorance about procedure, talk to the patient about the procedure in a vague and superficial way so as to get the patient's signature on the consent form	Decline the task and suggest that a doctor with some familiarity with the procedure would be more appropriate for this task. Accept the task, but explain you know little about the procedure so will need some teaching about it first and request that one of the doctors comes along to help/supervise.
Infallibility of doctors; attitude to mistakes	Mistakes are only made by people who are incompetent or unethical. Good doctors do not make mistakes.	Accept the culture that says doctors who make mistakes are 'bad' or 'incompetent.' Try harder to avoid making a mistake. Remain silent, or find someone or something else to blame when you have made a mistake. Look at the mistakes others make and tell yourself you wouldn't be that stupid.	Understand that everyone will make mistakes at some time and that the causes of errors are multifactorial involving latent factors not immediately obvious at the time the error was made. Look after your patients, yourself and your colleagues in the event of an error and actively promote learning from error.

students to approach old problems. Table 1 gives two examples of two topics out of a set of 11.

**Challenges to patient safety education**

Discussions about adverse events and medical errors are universally difficult. In some cultures and hospitals, openness about errors may be new with no systems in place for reporting and analysing errors. In other places, systems may exist but are largely ignored by the health professionals.

Most organisations, irrespective of their location, find any change difficult, particularly when they are not convinced of the need to change. Understandably, healthcare workers can feel threatened or challenged when someone, particular a junior, sees and does things differently. Therefore, patient safety education requires an additional layer—that of a supportive faculty. Unless students are supported with positive coaching and discussion about their experiences, much of the teaching and learning about patient safety at medical school will be undermined. Many students are reluctant to talk about their concerns when they observe unethical or unprofessional behaviour. The *Curriculum Guide* includes tips for students in managing workplace cultures.

**Content and structure**

Box 2 sets out the objectives of the *WHO Curriculum Guide*.

The *WHO Curriculum Guide* is in two parts: the Teacher's Guide (Part A) and the Curriculum Topics (Part B). Part A is

designed to support Part B, providing practical advice and information to teachers for each stage of the curriculum and laying the foundations for capacity-building in patient safety education by providing information and guidance on the structure of the curriculum, how to implement it, curriculum integration, curriculum development, use of narrative, assessment, evaluation, the hidden culture, available resources and activities to assist student learning. The rationale for each of the topics is also included.

Part B comprises the Curriculum topics. Eleven topics were selected for inclusion in the *Curriculum Guide* (see box 1), covering 16 of the 22 learning topics that make up the APSEF. Topics not included in the *Curriculum Guide* were those that would already be covered in a medical school curriculum such as consent, evidence-based practice and learning and teaching. Information technology was excluded because of the disparity in access to technology among university medical schools and health services.

Each topic follows a standard educational format as described in box 3. The content of the topic is designed for both students and teachers. Each topic can be adapted to suit the medical school and teachers' needs, whether delivered as web-based Learning Topics with activities designed around the learning outcomes, or as lectures using the power point slides designed to accompany the content. Some of the teaching and learning activities suggested in the Curriculum Guide include interactive or didactic lectures, case-based examples, small group discussions, simulation exercises, role-play scenarios, team-building exercises and reflective activities.

**Box 2 Objectives of the WHO Patient Safety Curriculum Guide for Medical Schools**

- ▶ To prepare medical students for safe practice in the workplace
- ▶ To inform medical schools of the key topics in patient safety
- ▶ To enhance patient safety as a theme throughout the medical curriculum
- ▶ To provide a comprehensive curriculum to assist teaching and integrating patient safety learning
- ▶ To further develop capacity for patient safety educators in medical schools
- ▶ To promote a safe and supportive environment for teaching students about patient safety.
- ▶ To introduce or strengthen patient safety education in medical schools worldwide
- ▶ To raise the international profile of patient safety teaching and learning
- ▶ To foster international collaboration on patient safety education research in the higher education sector.

**Box 3 Template used for each topic**

- Learning objective
- Learning outcomes
- What students need to do (performance requirements)
- What students need to know (knowledge requirements)
- How to teach this topic
  - Teaching strategies and formats
  - Teaching and learning activities
  - Case studies
- Tools and resources
- How to evaluate this topic
- Electronic resources
- How to assess this topic
- Slides for topic

**Table 2** Application of correct patient identification principles across disciplines

Discipline	Patient safety application
Obstetrics	How are newborn babies identified as belonging to their mother so that babies are not accidentally mixed up and leave hospital with the wrong parent (s)?
Surgery	If a patient needs a blood transfusion, what checking processes are in place to ensure they receive the correct blood type?
Ethics	How are patients encouraged to speak up if they do not understand why the doctor is doing something to them that they were not expecting?

### Integration and application

The *Curriculum Guide* recognises that most medical curricula are already filled beyond capacity; thus, topics were designed to be either integrated into existing teaching or introduced as stand-alone modules. Table 2 shows how a patient safety principle (correct patient identification) has specific application in established disciplines. Table 3 provides for several *Curriculum Guide* topics examples of subject areas in which these topics may be integrated, demonstrating the wide range of options for incorporating patient safety content into existing curricula.

An example of an opportunity for integration of *Curriculum Guide* content into existing medical school curricula is the revision of problem-based learning (PBL) cases to include patient safety topics. The PBL format reflects principles and activities that promote patient safety in the workplace—including collaboration and teamwork, clarification and respect of each person's roles and responsibilities, identification of problems and solutions, and peer-to-peer teaching and learning—and thus represents an excellent vehicle for patient safety education. Patient safety-related objectives can be added to those described for the case, and the trigger can be expanded or altered to elicit additional discussion on patient safety topics without sacrificing the original content of the case. Table 4 describes the revision of a respiratory sciences case to incorporate learning related to medical error.

### Evaluation

The final draft of the WHO Curriculum Guide was produced in 2008 after validation by a worldwide panel of medical educators and patient safety experts. The Guide is currently being piloted and evaluated in each of the six WHO regions within a variety of different medical schools. The number of topics implemented (minimum of three) and modes of delivery adopted vary between participating medical schools, but each pilot site follows a standardised approach to evaluation that includes pre- and postdelivery questionnaires, focus groups and online discussion forums for students and teachers. The pilot and evaluation are scheduled to be completed by the end of 2010.

**Table 3** Examples of integration areas for *Curriculum Guide* topics

Curriculum guide topic	Potential subject areas for integration
Minimising infection through improved infection control (Topic 9)	Microbiology Procedural skill training Infectious diseases Clinical placements
Improving medication safety (Topic 11)	Pharmacology Therapeutics Clinical placements
What is patient safety? (Topic 1)	Ethics Introduction to the clinical environment Clinical and procedural skills training

**Table 4** Example of incorporating patient safety learning into problem-based learning cases

Trigger	James is a 15-year-old boy. He arrives at the hospital from a local clinic with noisy breathing and an itch. James' father reports he was fine 30 min earlier and suddenly became unwell. On examination, James looks distressed and nervous; he has a puffy face, enlarged lips, swollen eyes and red blotches on his skin.
Additional information	The father tells you James was like this once before after having penicillin; he says James was told not to take the drug again. James had seen a doctor earlier today for a runny nose, sore throat and fever, and was prescribed amoxicillin. James' father is worried his son might be allergic to this new medication.
Additional discussion questions	<ul style="list-style-type: none"> <li>▶ How might James been given amoxicillin when he has a known allergy to penicillin?</li> <li>▶ Why was James prescribed an antibiotic when the most likely cause of his symptoms is a viral upper respiratory tract infection?</li> <li>▶ This problem was preventable; has someone made a mistake?</li> <li>▶ How can this be prevented?</li> <li>▶ What is the doctor's role; what is the patient's role?</li> </ul>
Additional learning objectives	<ul style="list-style-type: none"> <li>▶ List a doctor's responsibilities when prescribing medication</li> <li>▶ List strategies to minimise patients being given the wrong medications that might harm them</li> </ul>

### CONCLUSION

The availability of a universal patient safety curriculum guide provides universities with an opportunity to develop their own patient safety curriculum. The WHO Curriculum Guide aims to assist faculties in demystifying patient safety knowledge and skills, and is designed to help medical school teachers to deliver patient safety learning. The Curriculum Guide is freely available on the WHO website for any medical school to use, and has already been downloaded in hundreds of countries. Patient safety is a worldwide problem, and collaborative efforts have the potential to enhance medical education at a rapid rate. This project has the potential to break down competitive barriers and share resources that ultimately will benefit patients from all over the world.

### Author footnote

The Expert Group convened by the World Alliance of Patient Safety comprises the following: B Flanagan, Monash University, Victoria, Australia; J Harrison, Monash University, Victoria, Australia; T Shaw, University of Sydney, New South Wales, Australia; C Roberts, University of Sydney, New South Wales, Australia; S Barnett, University of Sydney, New South Wales, Australia; R De Alwis, International Medical University, Kuala Lumpur, Malaysia; M Saad Al-Moamary, King Saud Bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia; A Eid, International Federation of Medical Students' Associations (IFMSA); R Flin, University of Aberdeen, Old Aberdeen, UK; P Claver Kariyo, School of Medicine, Bujumbura; BL Lingard, University of Toronto, Toronto, Canada; J Martinez, Universidad Del Salvador, Buenos Aires, Argentina; C Soe, Ministry of Health, Myanmar; L Young-Mee, Korea University College of Medical Education, Seoul, Republic of Korea; M Zhang, Sichuan University, Chengdu, China; A Ziv, The Israel Centre for Medical Simulation, Sheba Medical Centre, Tel Hashomer, Israel.

### Competing interests

None.

**Provenance and peer review** Not commissioned; externally peer reviewed.

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