
Global Evaluation Study

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In 2009, the WHO Patient Safety Curriculum Guide for Medical Schools was finalized and the pilot study for the testing of the Curriculum Guide was approved by WHO Ethics Review Committee. In January 2010 efforts began to update the WHO Patient Safety Curriculum Guide for Medical Schools into the Multi-professional edition and to incorporate findings arising from the 2009-2010 evaluation of the Medical Schools Curriculum, in order to improve the updated version. In September 2011 the testing of the Multi-professional Curriculum Guide was approved by WHO Ethics Review Committee.

1. Background and Rationale

The Multi-professional Edition of the WHO Patient Safety Curriculum Guide is an updated edition of the Curriculum Guide for Medical Schools, published by WHO in 2009. This Multi-professional edition covers the areas of dentistry, medicine, midwifery, nursing, pharmacy, and other related health-care professions. It is a guide for implementation of patient safety education in health-care schools/universities worldwide. It contains information for all levels of faculty, staff and lays the foundation for capacity building in the essential patient safety principles and concepts. The Curriculum Guide will help to build a foundation of knowledge, skills and attitudes for health-care students that will better prepare them for clinical practice and thus advance efficiency of health care delivery by means of improved patient safety.

The development of the Multi-professional Curriculum Guide began in January 2010. An Expert Working Group comprising of experts from international professional associations in dentistry, medicine, midwifery, nursing and pharmacy, as well as from the WHO regions were brought together to review the Curriculum Guide for Medical Schools,
discuss its evaluation outcomes and contribute towards the development of a multi-
professional edition by adding the perspectives of dentists, midwives, nurses and
pharmacists. The Expert Working Group introduced the available multi-professional
scientific evidence, and provided also case studies from their professional areas to
support interdisciplinary teachings. More than 50 international experts contributed to
preparing this document.

Written with a global audience in mind and in language easily understood, the
Curriculum Guide is composed of two parts: Part A: Teacher's Guide and Part B: 11
patient safety topics. The Multi-professional Curriculum Guide is designed to be easily
integrated into existing health-care education curricula using a flexible approach to meet
individual needs, and is applicable to different cultures and contexts. The 11 topics of
the Curriculum Guide are stand alone modules and are presented in Appendix 1.

The WHO Patient Safety Curriculum Guide for Medical Schools was piloted in 12
medical schools/universities worldwide. The evaluation study confirmed that the
Curriculum Guide can support the introduction of patient safety teachings to existing
university curricula for medical students. It also confirmed that the content and structure
in the Curriculum Guide for Medical Schools was sufficiently flexible to be adapted to
local contexts. However, according to evaluation findings, 'Topic 2: Why applying
human factors is important for patient safety' was rewritten to address the issues raised
about the necessity of additional teaching guidance. The Multi-professional Curriculum
Guide was updated based on the outcomes of the evaluation of the Curriculum Guide for
Medical Schools.

A new evaluation study based on the 'medical schools' evaluation has been developed
to pilot the Multi-professional Curriculum Guide in 12/14 pilot sites including dentistry,
midwifery, nursing and pharmacy schools/universities in the six WHO regions.

Aims of Patient Safety Curriculum Guide

1. Address the global need for patient safety education by creating and
disseminating curriculum resources to facilitate training of health-care students
and prepare them for safe practice in the workplace.
2. Provide a Curriculum Guide that can be easily adapted to suit the educational
needs in patient safety of health-care students and educators.
3. Empower health-care schools and universities to build capacity in teaching patient
safety.
4. Ensure the Curriculum Guide is at all times culturally responsive to the needs of
all countries and applicable to different health education systems.
5. Raise awareness and engage commitment of the need for patient safety teaching
and learning.
2. Goals and Objectives of the pilot study

The purpose of the evaluation of the Curriculum Guide is to assess the effectiveness of the Curriculum Guide as a resource for teaching patient safety to undergraduate and postgraduate health-care students in the fields of dentistry, midwifery, nursing and pharmacy. The evaluation study is designed to assess the performance of the Curriculum Guide relative to Aims 2 through 5 (in background). For Aim 2, the evaluation will focus on the effectiveness of the Curriculum as an educational resource to prepare health-care students for safe care. For Aim 3 the evaluation will test the effectiveness of Part A of the Curriculum Guide in building capacity of the educational providers/teachers in patient safety. For Aims 4 and 5, the evaluation will assess the relevance and effectiveness of the Curriculum for health-care schools/universities located in both developed and developing countries in all six of the WHO regions. This will allow assessment of differences across countries' income levels as well as a variety of cultural requirements and types of health-care education systems.

This evaluation will not address Aim 1 since this study is limited to examining experiences in this early test of the Curriculum. Aim 1 addresses the impact of the Curriculum when fully disseminated and applied, following completion of this test and evaluation.

The following questions will inform the evaluation:

a. Does the Curriculum Guide contain the necessary and sufficient topics and information to allow its effective use in undergraduate training of health professionals?

b. What is the impact upon student learning of the inclusion of patient safety teaching in the Curriculum Guide?

c. In what ways can this Curriculum Guide be used to support the widespread implementation of explicit patient safety education globally?

d. How could the Curriculum Guide be modified in the future to best support teaching of patient safety to students in different environments?

These questions have been addressed in the 2009-2010 evaluation study of the Patient Safety Curriculum Guide for Medical Schools and will be used for the evaluation of the Multi-professional Curriculum Guide targeting the additional professional groups (dentists, midwives, nurses and pharmacists). The evaluation of the Multi-professional Curriculum Guide will develop information on the following specific aspects (criteria) of use of the Curriculum Guide by universities/schools:

- The introduction and acceptability of the Curriculum Guide to schools/universities teaching dentistry, nursing, midwifery and pharmacy.
- The effectiveness of the Curriculum Guide in building institutional capacity for patient safety, as well as knowledge and teaching skills of educators.
- The usability of the Curriculum Guide as an education guide for health education in universities and schools.
- The value of the Curriculum Guide to students.
• The impact/effect of the Curriculum Guide on students’ knowledge of patient safety.
• Successes and challenges experienced by the schools/universities in implementing the Curriculum Guide.
• Differences in experiences with the Curriculum Guide related to economic or cultural factors.
• Any improvements that could be made to the Curriculum Guide, from both the students and staff perspectives.

Because the goal of this evaluation is to pilot test the Curriculum Guide before making it more widely available for use, the evaluation focus will be on the Curriculum Guide’s effectiveness as a teaching tool for educators.

Other important aspects of effectiveness include impacts of the Curriculum Guide on subsequent patient safety work by students following their graduation and on reduction in adverse events. However, to address these aspects of effectiveness would require a longer-term effectiveness study that would necessitate a longitudinal outcome evaluation. WHO may later build upon this initial evaluation with a longitudinal outcome evaluation, but it is beyond the scope of information needed to complete the development and dissemination of the Curriculum for use in the field, and it also would require substantial additional resources to perform.

3. Evaluation Design

3.1 IMPLEMENTATION AND EVALUATION SCHEDULE

WHO is in the process of identifying the schools/universities to participate in the evaluation of the Multi-professional Curriculum Guide by July 2011. It is anticipated that these schools/universities will commence teaching selected topics from the Curriculum Guide (at least four topics from the 11 patient safety topics in the guide) from September 2011, or thereafter in a sequential manner with different sites starting implementation at different dates over a period of four months. (See topic list in Appendix 1)

The timing of the commencement of the evaluation will be linked directly to the time each participating school/university commences teaching selected topics from the Curriculum Guide to their students. The evaluation data collection at each participating university/school will:

• begin in the first week of teaching the courses;
• end two to three weeks after the completion of the courses.

This approach will enable collection of data at the same times relative to start dates for all schools, allowing generation of consistent data across schools/universities for descriptive and comparative analyses. This means that, if schools/universities start their courses at different times, the total evaluation will start when the first school/university starts its courses and will end after the last school/university finishes its courses.

Participation as a pilot site to the evaluation study is voluntary. Criteria for qualifying each pilot site have been developed:
1. The Faculty or School is a Dentistry, Midwifery, Nursing and Pharmacy Faculty, or School within a University.

2. University, Faculty, or School is recognized by a national approving or regulatory body (e.g. Ministry of Education or Health) or certification from the relevant credentialing national body.

3. University, Faculty, or School will provide in writing to WHO evidence of local approvals including Ethics Review approvals for testing the Multi-professional WHO Patient Safety Curriculum Guide in a timely manner and will be prepared to start the class within 6 months after receiving the finalized Curriculum Guide.

4. University, Faculty, or School agrees to review all the topics of the Curriculum Guide and to implement and teach at least 4 out of the 11 topics for the pilot study.

5. University, Faculty, or School is willing to participate in the evaluation and to appoint a contact person to serve as liaison with the WHO evaluators. It agrees to perform the tasks identified in the Evaluation Information Note (see attached copy).

6. University, Faculty or School has demonstrated an interest in teaching patient safety topics.

3.2 Evaluation Components

3.2.1. Sample of Schools/Universities

A total of 12/14 schools/universities, two from each of the six WHO regions, will be selected to participate in the testing of the Curriculum Guide, which will be determined based on schools/universities volunteering and selection of those that meet evaluation criteria. Among these 12/14 schools, 3 will be nursing schools, 3 will be midwifery schools, 3 will be dentistry schools, and 3 will be pharmacy schools. The sample design is summarized in Table 1: Outline. The cells of the table will be populated so there will be a mix of schools/universities by geography and health-care professional training.

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3.2.2. Stakeholders to be Considered

It is well understood that different groups of people (called stakeholders) experience the same activity or programme quite differently depending on how the topic is delivered, their perspectives and how they may be affected by it. It will be important to capture the
perspectives of the four stakeholder groups who will be involved with implementing or on the receiving end of the Curriculum Guide being tested here. This evaluation is designed to collect data from each of the following four groups:

1. **Institutional executives**: in the schools of nursing, midwifery, dentistry and pharmacy (e.g. deans, heads of department, other);
2. **Implementation coordinators**: university staff/educators who coordinate the introduction and implementation of students' curricula;
3. **Teaching faculty**: educators who teach the curriculum topics;
4. **Students**: in the schools/universities where the courses are offered.

### 3.2.3. Data Collection Methods

The evaluation components and schedule are shown graphically in the following diagram (Figure 1). On the top row of the diagram, above the timeline, are shown the steps involved in carrying out the pilot implementation of the Curricula Guide at the participating schools/universities. Below the timeline, the data collection schedule for the evaluation is shown. This includes operation of a Community of Practice, as well as several individual and group interviews and the student surveys, each shown individually in the diagram.

1) **WHO Community of Practice**

University and faculty members at the participating schools/universities will be invited to join a WHO Community of Practice to discuss the use of the Curriculum Guide among themselves and provide feedback for the evaluation, which will also be a support mechanism for them. These discussions will be archived in a database on faculty experiences with the Curricula Guide. The WHO EZCollab platform will be used for this purpose. Faculty members will be invited via email to participate in this discussion forum. This community-based service will allow for collaborative learning, exchange of information, individual knowledge, experiences, and lessons learned from implementation of the topics from the WHO Patient Safety Curriculum Guide: Multi-professional Edition. Faculty who chooses to participate in this online Community of Practice will be able to discuss technical and programmatic issues related to this project. EZcollab allows for participation in discussions by e-mail or online. Participants can customize communication: decide to get e-mails when they want – immediately, or as a daily or weekly digest. EZcollab communities provide an online archive of discussions, documents, contacts and special announcements.

This easy-to-use system and its resources can be accessed via the Internet. It also provides an opportunity to network with other experts, and share ideas, successes, experiences, and lessons learned.

This information also will guide data collection during the summative evaluation (in individual and focus groups interviews), when it will be possible to further examine themes and issues that emerge from the discussions in the Community of Practice.

The relevant stakeholder perspectives are those of the faculty members including the 'Implementation coordinators' and 'Teaching faculty'.
In the formative evaluation, data will be collected and analyzed to assess the experiences of the schools/universities in implementing the Curriculum Guide, specifically to provide feedback to WHO regarding capacity building, implementation issues and suggestions for improvements, as well as to generate guidance for other schools/universities that could be using the Curriculum Guide in the future.

The formative evaluation will consist of two phone interviews with the 'Implementation coordinators' at each school/university (total of 24/28 interviews).

1. The first interview will take place at the time when preparations for teaching the Curriculum Guide have been completed and each school/university has just started teaching the Curriculum Guide topics it chose to use. This timing will allow the collection of accurate information on the preparation process, up through and including the starting of the courses, while the 'Implementation coordinators' memory of these experiences is fresh. This approach is taken to avoid effects of recall bias, which can occur as the courses are being taught and new issues arise that can overlay earlier implementation memories.

2. The second interview will take place at the second week after the completion of courses. The implementation experiences during the teaching period will be captured in this interview with the 'Implementation coordinators' after the courses are completed.

The before and after interviews will be semi-structured and discussion points will be shared before the interview. These interviews will focus on gathering data on their
expectations, development of educators’ capacity and actual experiences as they initiated and conducted courses using the Curriculum Guide, as educators initiate and conduct the course(s). The relevant stakeholder perspectives are those of the ‘Implementations coordinators’. Data collected from the first interviews at the onset of the evaluation will be used as the baseline. The comparison between data collected before and after the evaluation will provide information on the value, effectiveness and impact of the Curriculum Guide and what needs to be improved.

3). **Summative Evaluation**

In the summative evaluation, data will be collected and analyzed to assess the effectiveness of the Curriculum Guide, specifically to address Aims 2 through 5 and all except one of the goals for the evaluation (which is addressed by the formative evaluation). The relevant stakeholder perspectives are those of the ‘Institutional executives’, ‘Teaching faculty’ and students who took the courses.

The summative evaluation will consist of four components designed to collect data from the three key stakeholder groups identified for the evaluation.

a. Interviews conducted at the end of the courses using topics from the Curriculum Guide:
   1. Individual phone interviews with ‘Institutional executives’ at the 12/14 participating schools/universities;
   2. Group interviews with ‘Teaching faculty’ who taught the courses;

b. Surveys (paper-based) for students being taught the topics from the Curriculum Guide:
   3. Set of knowledge questions to complete the first day of course;
   4. Survey to complete the last week of the course, which will include the same knowledge questions as well as other questions about their experience with the course.

Student surveys will be de-identified. The ‘before’ and ‘after’ knowledge questions will be able to determine how much students learned about patient safety. Under no circumstances the surveys will be used to ‘test’ or assess students’ knowledge as part of their academic achievements.

3.2.4. **Data Analysis**

Qualitative and quantitative methods will be used to analyse the data collected in the evaluation, with separate analyses performed for the formative and summative evaluations. In the formative evaluation, comparisons of interview responses at the start and end of the curriculum courses will provide a longitudinal perspective on implementation experiences and lessons learned. In the summative evaluation, qualitative and quantitative data will be used together to assess effectiveness of the Curriculum Guide from the perspectives of different stakeholder groups, schools, and countries.
4. Dissemination of Results and Publication Policy

4.1. Final evaluation report

After the completion of data collection, compilation and analysis, the external evaluation consultant will prepare a draft written report of the evaluation results, documenting the evaluation design, data collection methods, assessment of the schools’ experiences in implementing the Patient Safety Curriculum Guide, assessment of different issues including content and effectiveness of the Curriculum Guide, impact, adaptability, potential widespread use and suggestions for actions by WHO to improve the Curriculum Guide based on the evaluation outcomes. After review and comment by project manager and principal investigators, the consultant will revise the report accordingly and submit a final report to WHO-HQ.

4.2. Communication of results across pilot sites

Following data analysis, the evaluation report including the specific evaluation experiences from each pilot site will be shared through emails, teleconferences and the WHO Community of Practice to all participating pilot schools/universities. The WHO Curriculum Guide team will actively discuss the evaluation findings with the 'Implementation coordinators' of each pilot site so that faculty members can incorporate relevant findings into patient safety teachings. The WHO Curriculum Guide team will work with the pilot sites towards further integration and strengthening of patient safety courses across the academic years and more clinical/health subjects (e.g. pharmacology, microbiology, pathology, surgery, therapeutics etc) that can house patient safety topics. This process has already been applied following the completion of the evaluation of the Curriculum Guide for Medical Schools during which the WHO Curriculum Guide team and pilot sites discussed how best to strengthen patient safety teachings across more clinical subjects. Several pilot sites which tested the Curriculum Guide for Medical Schools have already spread the patient safety courses from Year 1 to year 5 medical students, as well as across different clinical subjects. No evaluation result will be published before communicated across pilot sites.

4.3. Dissemination of results

The evaluation outcomes will be disseminated through following channels:

1. WHO Patient Safety website and WHO-PSP newsletter;
2. WHO Regional Offices, the international professional associations which have contributed to the content of the Curriculum Guide, pilot schools/universities;
3. articles in peer-review journals: WHO will take the lead in developing articles.
4. international/national conferences.

4.4. Publication policies

Data ownership arising from the evaluation study and copyright of any prospective publication, evaluation-outcome materials, reports, e-postings, or articles in peer review journals are vested in WHO.
1. **Regarding publications**: this includes any type of report, information products, advocacy materials and any materials in electronic format. All publications will follow up the WHO publishing policies available at WHO intranet: [http://intranet.who.int/homes/whp/whopublishingpolicies/](http://intranet.who.int/homes/whp/whopublishingpolicies/).

2. **Regarding articles**: authorship of the article(s) will be attributed according to the 'Uniform Requirements for Publication' as guidelines for authorship highlighted by the 'International Committee of Medical Journal Editors', which is agreeable by WHO. Publications foreseen from the evaluation study will duly acknowledge all pilot sites and names of appropriate persons in pilot sites participating in this study. The wording of the acknowledgements will be agreed between WHO and each pilot site. It is not anticipated that pilot sites will generate their own peer-review papers as they will be informed that WHO will be developing one paper based on the evaluation outcomes of this global study.

### 5. Project Management

This evaluation study has been organized into the following 4 phases (sumarized in the Table 2), which includes phase 1: preparatory phase; phase 2: testing of the Curriculum Guide; phase 3: data compilation and analysis; and phase 4: final report. Each phase along with the encompassing activities that were planned and executed are described below.

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* It is not expected that all 12 pilot sites will start testing the Curriculum Guide at the same time, but rather over a period of 4 months.

### 6. Sustainability

Should this evaluation study demonstrate that the implementation of the Curriculum Guide topics actually contributes to building a foundation of knowledge and skills in patient safety for both educators and students, WHO will follow up by continuing to build capacity in patient safety education through the implementation of e-courses based on the Curriculum Guide for the benefit of educators and students in developed, transitional and developing countries. The e-courses will be delivered free-of-charge to anyone wishing to take them. They will serve as a means to support distant-learning and self-learning, particularly to help sustain patient safety training and education in resource-poor countries.