

*Better knowledge for safer care*

# Development of the Core Competencies for Patient Safety Research

Patient Safety Research  
Education and Training Working Group  
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**World Health  
Organization**

**Patient Safety**

A World Alliance for Safer Health Care

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## Executive Summary

At least one in 10 patients are harmed while receiving health care in well-funded and technologically advanced hospitals<sup>1</sup>, and this risk may even be greater in non-hospital settings and in developing and transitional countries. As a consequence, tens of millions of patients suffer disabling injuries or death on an annual basis<sup>2</sup>, and some countries spend billions of dollars on additional medical expenses every year<sup>3,4</sup>.

Research is an essential cornerstone for tackling this alarming situation. As well as helping to understand the magnitude and nature of patient harm and focus on critical improvement areas, it also contributes to devising evidence-based strategies and evaluating the effectiveness of potential solutions.

Research into patient safety is still in its infancy, especially in developing and transitional countries where the research capacity, including infrastructures and a critical mass of trained professionals, is limited. WHO Patient Safety places special emphasis on capacity building for patient safety research with an aim to facilitate expanding the trained workforce worldwide. To this end, WHO brought together an international expert task force to reflect on priority global strategies. The task force agreed on the following main directions: (1) to develop a set of core competencies for patient safety research which will guide research education specialists and training programme developers in building education opportunities for researchers acquiring the knowledge and skills needed to conduct patient safety research, and (2) to describe how the competencies could inform curriculum development for patient safety research training.

This document describes the process to develop the core competencies for patient safety research, a process that started in early February 2008 with the setting up of the WHO Patient Safety Research Education and Training working group and ended in December 2008 with the establishment of consensus around the core competencies.

Through a multilayer process that involved developing an initial framework, reviewing the existing literature related to competencies in relevant areas for patient safety research, conducting a series of consultations with potential end-users and international experts in the field from over 35

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<sup>1</sup> WHO Patient Safety Research: Global Priorities for Patient Safety Research. Geneva: World Health Organization, 2009. Available at [http://whqlibdoc.who.int/publications/2009/9789241598620\\_eng.pdf](http://whqlibdoc.who.int/publications/2009/9789241598620_eng.pdf)

<sup>2</sup> The Research Priority Setting Working Group of WHO Patient Safety: Summary of the evidence on patient safety: Implications for Research. Geneva: World Health Organization, 2008. Available at [http://whqlibdoc.who.int/publications/2008/9789241596541\\_eng.pdf](http://whqlibdoc.who.int/publications/2008/9789241596541_eng.pdf)

<sup>3</sup> UK Department of Health: An Organization with a Memory. HMSO, 2000.

<sup>4</sup> Institute of Medicine: To Err is Human. Kohn LT, Corrigan JM, Donaldson MS. Eds., 1999.

countries, and finally, convening a global consensus conference, the final competencies for patient safety research were selected.

These competencies were grouped into three main areas: the science of patient safety, the methodology needed to carry out patient safety research, and the knowledge translation or how to utilize research for policy change to improve patient safety. The final competency list is included later in this document.

Building research capacity is a long term process that requires sustained effort in several fronts. The Core Competencies for Patient Safety Research provide a framework for the ongoing education and training of patient safety researchers worldwide. Establishing formal training programs at accredited academic institutions building upon these set of competencies seems the natural step forward.

# 1. Introduction: The strategy for Patient Safety Research Capacity Building

On 18-19 February 2008, world experts in patient safety research, curriculum development and research capacity development from a wide range of countries gathered in Geneva at the World Health Organization (WHO) Headquarters for the First Meeting of the Expert Working Group on Education and Training in Patient Safety Research.

The aim was to agree on the high level strategy to facilitate expansion of the trained workforce worldwide, and particularly in developing and transitional countries, as well as to identify an actionable roadmap for WHO Patient Safety, together with the plan of work, methodology and basic definitions.

The expert group developed consensus and a shared vision to address the lack of capacity in patient safety research worldwide. There was wide agreement that the desired education and training was not intended to facilitate the production of research for the sake of research, rather the goal is to strengthen professionals' capacity to improve the safety and quality of health care by applying rigorous methodologies and building upon measurement and scientific evidence. The urgency to develop leaders in patient safety research emerged as a primary objective. These leaders were seen as the drivers for change and improvement. Those who, through measurement, will be able to influence progress in achieving safer care. They will require the knowledge and skills to do practical and valid research, as well as to directly guide the development of policies and practices that will make care safer.

There are many audiences that could benefit from new opportunities of education and training, including policy makers, managers and clinicians with an interest in research and in applying research findings , as well as basic and advanced researchers. Depending on the target audience and the competencies they already possess, the strategies for education and training will need to be adapted.

The foundational step to developing the training opportunities consists in identifying the core competencies for patient safety researchers or leaders for change. This was the first mandate that the task force undertook from early 2008 to early 2009, and is described in this document.

## 2. Overview of the Process: Building up competencies for Patient Safety Research

**Competencies** are the requirements for an individual to properly perform a specific task. They encompass a combination of knowledge, skills and attitudes that are considered essential to perform a function. Identifying which are the competencies for patient safety research is the basis to inform further educational activities.

Patient safety research can be defined as an action-oriented field of scientific enquiry that aims to determine: 1) the type and magnitude of unintentional harm caused by unsafe care; 2) the contributing factors and causal pathways that are potentially modifiable, including unsafe systems, processes and behaviours; and 3) the cost-effective and locally adapted interventions that can successfully prevent, reduce or mitigate unsafe care to reduce unintentional harm; as well as to ameliorate the consequences of unsafe acts when they occur. More knowledge – and better use of the knowledge available – are essential for understanding the extent and causes of patient harm, and for developing solutions that can be used in different contexts.

The development of core competencies for patient safety research found synergies and built upon related fields that share common interests, such as epidemiology and health services research, quality improvement and change management, and knowledge translation among others. It followed a multi-step process based on an initial theoretical framework and a review of the evidence, and incorporated the views of stakeholders and experts in the field of patient safety research from various world health regions. It was finalized with a consensus building process.

The graph below summarises the process followed by the WHO Education and Training Expert Working Group to identify and develop the proposed competencies.

**Figure 1. Overview of the Competencies Development Process and Methodology**

	Jan-Feb 2008	Feb 2008	May-June 2008	July 2008	Aug-Sep 2008	Oct-Nov 2008	Dec 2008
	Core competencies framework	Expert Working Group meeting	Literature review and synthesis	Working Group internal consultation	Consultation of potential end-users	Consultation of international experts	Consensus conference
Objective	To develop an initial framework for patient safety research competencies	To evaluate the core competencies framework	To complement the initial framework through further competencies	To discuss the list, identify complementary competencies and improve the structure of the list	To assess the list's appropriateness for potential end-users in developing and transitional countries	To assess the validity of the list by consulting subject-matter experts	To achieve consensus on competencies and next steps
Methodology	Literature review on relevant aspects of patient safety	Two-days Expert Working Group meeting in Geneva	Searches for publications in several languages and disciplines, and especially articles from developing countries	Working Group internal online survey	Online survey for patient safety researchers, practitioners and policy-makers in developing and transitional countries	Online questionnaire targeting 155 experts from around the world	Conference gathering Working Group members and experts from various areas
Results	Competencies developed and appropriateness for different target audiences and levels of development assessed	Appropriateness of competencies for developing and transitional countries assessed and target audiences identified	29 additional documents identified, leading to a draft list of competencies	Strengths and improvement areas identified and next steps agreed	Thorough assessment of the competencies, highlighting that these were relevant to developing and transitional countries	Strengths and improvement areas identified, including accessibility and usefulness of the list and grouping of the competencies	List discussed, recommendations for improvement integrated, consensus on first edition of the list reached and next steps agreed

### 3. Detailed description of the competencies development process

#### Stage 1. Initial Core Competencies Framework

The starting point for the development of patient safety research competencies consisted in the definition of an initial conceptual framework. A background review of publications related to patient safety research, educational theories, competency development and knowledge research translation, facilitated this task.

Three different types of issues were considered from the beginning when developing this framework:

1. The profiles of the trainees
2. The socio-economic environment where training would take place
3. The level of expertise

For the definition of this framework experts used the physician competency framework model developed by the Royal College of Physicians and Surgeons of Canada<sup>5</sup> which contemplates the following hierarchical levels:

1. Roles: or the different functions of the individuals
2. Domains: or particular areas of activity or interest
3. Competencies: or knowledge abilities and skills needed to carry out one's role
4. Content Areas

As a result of the initial literature review the following framework was proposed:

- 1. Roles**
  - Policy/Management Scientist
  - Clinician scientist
  - Researchers (basic and advanced)
- 2. Domains**
  - Promoting patient safety in practice
  - Designing and conducting research
  - Using research evidence to make health systems safer
- 3. Competencies**
  - To be defined
- 4. Content areas**
  - To be defined

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<sup>5</sup> The framework is available at <http://rcpsc.medical.org/canmeds/index.php>

Table 1 provides a draft outline of the relative importance of competencies according to each professional profile which was based on a preliminary consensus within the expert working group experts.

**Table 1: Matrix of competencies for the three different professional profiles or patient safety research competencies\***

Competencies	Policy / Management researcher	Clinician researcher	Academic researchers
1. Knowledge in patient safety science & theory	√	+	√
2. Research design and methodology	√	√	+
3. Knowledge translation	+	√	√

(√) essential competency; (+) additional emphasis may be required

\* Proposed by Liane Ginsburg and Peter Norton in the background paper

## Stage 2. Literature review and synthesis

In order to identify the specific competencies and content areas, a review of the growing literature on professional competencies development, with a specific focus in the field of health care professions, public health, health services research and epidemiology was the following step in the process. The review also examined publications on competencies for knowledge translation, leadership and change management.

Several databases, such as PubMed, Science Direct, and Google Scholar, were searched for using specific keywords (Table 2). The search criteria were designed to identify publications in English, French, and Spanish. They covered a range of medical and allied health disciplines but excluded articles whose scope was too limited or that focused on a particular speciality. Efforts were made to identify articles from reference lists and gray literature, and to seek out publications from developing countries.

**Table 2: Search strategy**

Key words	Search strategy
PATIENT SAFETY COMPETENCIES	"patient safety"[Title] AND "competencies"[Title/abstract]
RESEARCH COMPETENCIES	"research competencies"[Title/Abstract] OR ("research"[Title] AND "competencies"[Title])
LEADERSHIP COMPETENCIES	"leadership competencies"[Title/abstract]

In total, twenty-nine (29) documents (See Appendix A) were selected for inclusion in the review and synthesis of competencies relating to patient safety research. This led to an initial draft list of patient safety research competencies (version 1.0) that were grouped into 3 themes: (i) **Promoting patient safety in practice**, (ii) **designing and conducting research**, and (iii) **using research evidence to make health systems safer**.

The main themes that emerged under the area of **Promoting patient safety in practice**, were that health professionals should:

- communicating and collaborating to promote continuous quality improvement
- institutionalizing a culture of patient safety
- encouraging the use of standardized protocols
- using informatics and technology to improve safety
- emphasizing a systems approach to safe and quality care
- considering human factors and safety design to prevent patient safety incidents
- handling patient safety-related incidents in a timely and open manner

The main competencies that emerged under the theme of **designing and conducting research** had to do with:

- understanding and applying research methods
- conducting ethical research that answers important questions and contributes to the body of knowledge on patient safety
- Practical skills identified included:
  - conducting literature reviews
  - formulating sound research questions
  - defining objectives

- obtaining necessary ethical approvals
- designing research protocols
- engaging in data collection
- analyzing, interpreting and disseminating research findings and translating them into concrete proposals for action or change
- computer literacy
- grant writing
- management of the logistics of the research process
- teaching and mentoring other researchers

The competencies grouped under the theme of **using research evidence to make health systems safer** included:

- finding, appraising, and synthesizing the evidence
- translating research findings into concrete changes
- communicating effectively to various audiences
- employing change management techniques
- taking a leadership role in promoting patient safety within an organization or system

### **Stage 3: Internal consultation**

The preliminary list of competencies was submitted to the Expert Working Group for comments and feedback, as well as for key areas that had not yet emerged. The review showed general agreement and helped to reorganize some of the competencies in a more coherent manner. Responses were collated and revisions were made accordingly to the preliminary list of patient safety research competencies.

The Working Group members highlighted the importance for involving additional expertise aiming to incorporate broader geographical and multidisciplinary viewpoints to better assess the impact of the different regional, social, economic, and cultural contexts on competency development, as well as to respond to the training needs of a variety of researcher profiles. Several questions raised during the internal consultation remained to be addressed by additional rounds of external consultations. Most notably, these questions dealt mainly with how the competencies would be used by patient safety researchers with different profiles, and also whether the competencies are applicable across different social, economic and cultural contexts, particularly in developing and transitional countries. For instance, patient safety researchers need to achieve varying levels of attainment in each of the competency areas depending on their profile and career interests, thus the different profiles, and the levels of attainment that would be expected for each profile, needed to be better defined. As well, particular concern was expressed in the internal consultation that the initial draft did not address developing country concerns, or delineate whether or how the

competencies for patient safety research in developing countries might differ from those in more developed countries. Are the competencies "absolute and inviolable" or are they context-specific? These important but unanswered questions guided the direction that the future consultations would take. In particular, it led to the decision to focus the next round of consultations on potential end users of the competencies in developing and transitional countries.

#### **Stage 4: External Consultation with potential end-users**

A broader external consultation involving patient safety researchers, health care practitioners and policy-makers primarily from developing and transitional countries. was organized with the aim to assess the completeness, clarity, usefulness and appropriateness for local contexts of the preliminary list of competencies for training future patient safety researchers.

The consultation was organized through an internet based survey and participation was open and purposive through contact networks and snow-ball techniques. Approximately 100 patient safety researchers, health care professionals, and policy-makers from all over the world participated in the consultation. Particular efforts were made to reach respondents from developing and transitional countries. Finally, 73 respondents represented 35 developing and transitional countries across all six WHO regions.

The majority of the respondents were early to mid-career professionals. However, the sample also included senior professionals over 50 (23%) and junior professionals under 35 (12%). Most of the returned questionnaires were from academics (41%), physicians (23%) and "other" professionals (21%), followed by government officials, students, nurses, allied health workers, and hospital administrators (less than 15% in total). Ninety-six percent of the repliers were involved in research, mainly health services research (53%), quality improvement research (51%) and epidemiological research (49%), with one third focusing on safe medicines and devices and another third on health care-associated infections. Men and women were quite equally represented (55% and 45%, respectively). Table 3 indicates the level of agreement of the respondents to the list of competencies.

**Table 3: Assessment of draft core competencies by potential end-users**

Assessment criteria	Percentage of respondents agreeing (n=73)
<b>Percent reporting the competencies:</b> <ul style="list-style-type: none"> <li>• are easy to understand</li> <li>• do not require modification</li> <li>• are well adapted to local contexts</li> <li>• would be useful for training patient safety researchers</li> <li>• do not need to be complemented</li> <li>• do not require removing any of the competencies</li> </ul>	86% 82% 88% 100% 59% 100%
<b>Percent reporting the competencies would be useful:</b> <ul style="list-style-type: none"> <li>• as a systematic basis for training</li> <li>• to evaluate the progress of trainees</li> <li>• for defining learning objectives</li> <li>• to emphasize different knowledge and skills needed</li> <li>• as a basis to be tailored to different trainee profiles</li> </ul>	82% 78% 75% 73% 51%
<b>Competency area considered the main priority for training patient safety researchers in their own country:</b> <ul style="list-style-type: none"> <li>• patient safety theory and practice</li> <li>• designing and conducting research</li> <li>• translating findings into safer care</li> </ul>	42% 33% 25%
Percent aware of training opportunities for patient safety researchers in their country	18%

An important outcome of the consultation was the agreement on the three competency areas as relevant for all profiles of patient safety researchers, although to varying degrees. More than two thirds of the repliers thought that *patient safety theory and practice* is important for all patient safety researchers, although there was some variation between policy-makers (68%), practitioners (79%) and academics (69%). *Designing and conducting research* is most important for academics (85%), but also relevant for policy-makers (50%) and practitioners (56%). *Translating research findings into safer care* was also considered important for all profiles of patient safety researchers (policy-makers 77%, practitioners 59%, and academics 62%).

The responses also indicated that the most important characteristic or skills of a competent patient safety researcher are knowledge of research methods, integrating research and practice, knowledge translation skills, leadership and communication, cultural competence, understanding systems thinking, involving patients, and ethical sensitivity. These results helped guide further revisions to the draft competencies.

## Stage 5: International experts Consultation

A second round of consultation was addressed to renowned international experts in patient safety from around the world. The purpose was to assess the face validity of the list of core competencies, as well as their completeness, clarity, understandability and moreover, their suitability for capacity-building.

An on-line questionnaire was sent to a sample of 155 patient safety experts who were selected from WHO Patient Safety lists and networks, including the External Leads of WHO Patient Safety, the members of the Research Advisory Council, as well as other international experts. The majority of the participants were from Europe and North America (two thirds in total), but efforts were made to include experts in low and middle income countries. The Eastern Mediterranean (16%), Western Pacific (14%) and African (2%) regions were also represented. Forty-six responses were included for analysis. The respondents were mostly academics (40%), managers and policy-makers (28%) and health care practitioners (28%).

Overall, the respondents gave positive responses as seen in table 4. The experts also highlighted areas of improvement such as making the competencies more accessible, sub-dividing competencies that cover multiple concepts, grouping together those where there is overlap, and removing some elements. They further recommended better adapting the competencies to local contexts, for instance by putting greater emphasis on promoting effective collaboration, as well as adding competencies that cover related disciplines such as organizational theory, human factors engineering, appropriate knowledge and application of information technology, and assessing the quality of evidence.

**Table 4: Assessment of draft core competencies by external experts**

Assessment criteria	Percentage of respondents agreeing (n=155)
<b>Percent reporting the competencies:</b> <ul style="list-style-type: none"> <li>• are easy to understand</li> <li>• do not require modification</li> <li>• are well adapted to local contexts</li> <li>• would be useful for training patient safety researchers</li> <li>• do not need to be complemented</li> <li>• do not require removing any of the competencies</li> </ul>	<p>85%</p> <p>70%</p> <p>87%</p> <p>93%</p> <p>50%</p> <p>85%</p>
<b>Percent reporting the competencies would be useful:</b> <ul style="list-style-type: none"> <li>• as a systematic basis for training</li> <li>• to evaluate the progress of trainees</li> <li>• for defining learning objectives</li> <li>• to emphasize different knowledge and skills needed</li> <li>• as a basis to be tailored to different trainee profiles</li> </ul>	<p>80%</p> <p>50%</p> <p>72%</p> <p>80%</p> <p>54%</p>

The experts also suggested that competencies could be modified to tailor them to specific researcher profiles and contexts.

Based on these responses, modifications were made to the preliminary list of core competencies, which then served as a discussion basis for the ensuing consensus conference.

### **Stage 6: Final consensus conference**

The final stage of the competency development process consisted on a consensus conference aimed at revising the existing list of competencies and agree on the final wording and content of the first edition of the core competencies. The meeting also aimed to identify steps for their further validation and dissemination and their incorporation into existing or new training programs, particularly in developing and transitional countries.

A two-day conference was held in early December 2008, gathering 21 members of the task force and 3 experts in competency development, consensus building and capacity building. The primary discussion points of the first day focused on whether the preliminary list of competencies should be amended, whether any competencies should be added, whether the list needed to be tailored to different researcher profiles and skill levels, and whether the competencies were appropriate for different contexts.

On the second day, the experts discussed how to incorporate the competencies into training programmes. This could be achieved through a roadmap for delivering education and training and by building upon existing resources and educational programmes worldwide.

During the conference, the description of core competencies was refined to better align them with their purpose. The competencies were also amended to better reflect the fact that a solid patient safety foundation was critical to distinguish patient safety research competencies from general research competencies. It was also agreed to identify the basic and advanced levels of the competencies where possible for different levels of the target audience. With these changes, the first edition of the Competencies for Patient Safety Research was agreed upon.

The First Edition of the WHO Core Competencies for Patient Safety Research is displayed in Table 5. They are grouped into three broad categories: 1) understanding the science of patient safety, 2) conducting and managing research projects, and 3) ensuring that research findings are put into action to improve the safety of patient care and improve patient outcomes. Each of these categories includes many different competencies and related content areas that would need to be covered.

The experts also developed a plan for the further validation of the first edition of the core competencies, which included the piloting of competency based curriculum in educational programmes. The group recommended to further advance the work towards facilitating global guidance for educational curriculum development, and to explore options for the incorporation of the competencies into training programmes worldwide.

Some areas where further work would be needed to expand capacity for patient safety research worldwide, may include the development of patient safety research training modules, the promotion of mentoring opportunities, in connection with fellowships and post-graduate training streams among others. Strong emphasis was placed on the need to develop local and clinically relevant solutions to increase patient safety research capacity.

**Table 5: Core competencies to carry out patient safety research**

**1. Describe the fundamental concepts of the science of patient safety, in their specific social, cultural and economic context. These concepts include the following items, among others:**

- 1.1 Basic definitions and foundational concepts, including human factors and organizational theory
- 1.2 The burden of unsafe care
- 1.3 The importance of a culture of safety
- 1.4 The importance of effective communication and collaboration in care delivery teams
- 1.5 The use of evidence-based strategies for improving the quality and safety of care
- 1.6 The identification and management of hazards and risks
- 1.7 The importance of creating environments for safe care
- 1.8 The importance of educating and empowering patients to be partners for safer care

**2. Design and conduct patient safety research. These competencies include the ability to perform but are not necessarily restricted to the following:**

- 2.1 Search, appraise and synthesize the existing research evidence
- 2.2 Involve patients and carers in the research process starting with defining the research objectives
- 2.3 Identify research questions that address important knowledge gaps
- 2.4 Select an appropriate qualitative or quantitative study design to answer the research question
- 2.5 Conduct research using a systematic approach, valid methodologies and information technology
- 2.6 Employ valid and reliable data measurement and data analysis techniques
- 2.7 Foster interdisciplinary research teams and supportive environments for research
- 2.8 Write a grant proposal
- 2.9 Obtain research funding
- 2.10 Manage research projects
- 2.11 Write-up research findings and disseminate key messages
- 2.12 Evaluate the impact of interventions as well as feasibility and resource requirements
- 2.13 Identify and evaluate indicators of patients safety for use in monitoring and surveillances
- 2.14 Ensure professionalism and ethical conduct in research

**3. Be part of the process of translating research evidence to improve the safe care of patients. The skills involved include but are not restricted to the ability to contribute to:**

- 3.1 Appraise and adapt research evidence to specific social, cultural and economic contexts
- 3.2 Use research evidence to advocate for patient safety
- 3.3 Define goals and priorities for making health care safer
- 3.4 Translate research evidence into policies and practices that reduce harm
- 3.5 Partner with key stakeholders in overcoming barriers to change
- 3.6 Promote standards and legal frameworks to improve safety
- 3.7 Institutionalize changes to build supportive systems for safer care
- 3.8 Apply financial information for knowledge translation
- 3.9 Promote leadership, teaching and safety skills.

## 4. Discussion

Patient safety research competencies are "the fundamental knowledge, ability, skills and expertise needed to carry out research in the area of patient safety and to use the research evidence to make health care safer." These include both the knowledge-based and skills-based competencies to conduct research that aims to better understand the magnitude and type of patient harm as well as the underlying causes of unsafe care, to enable translating research findings into practices and policies that make care safer. The First Edition of Competencies for Patient Safety Research emphasizes (a) understanding of safety, (b) understanding of research, and (c) translating research into practice. It can be tailored to different audiences, contexts and levels of attainment. These competencies can then be used to guide educational and research institutions in developing curricula and training programs for patient safety researchers, as well as assessing success in capacity strengthening in this new and growing field.

Patient safety research is a multi-disciplinary field. Thus patient safety researchers come from a broad range of disciplines including clinical medicine, health services research, epidemiology, psychology, economics, health administration and the social sciences. One thing they share is an overarching interest in making care safer for patients, regardless of how they approach the subject. There are therefore many different profiles of patient safety researchers. Some are academic researchers, such as university professors who are actively engaged in research and teaching as their primary pursuits. Others are practitioner researchers, including health professionals actively engaged in patient care but who also conduct research that can be directly applied to improve patient outcomes and reduce harm in practice. Finally, there are policy-makers and managers who are mostly engaged in designing policies and programs and can use the research evidence for making care safer on a broader scale. All of the different types of patient safety researchers are important and have important roles to play in reducing harm.

Building research capacity is a long term process that requires sustained effort, both in terms of formal training opportunities, but more importantly, in providing a nurturing environment for conducting research and applying research findings. Developing core competencies for patient safety research is the first step in this process. The ultimate goal is to improve patient safety based on measurement and the best evidence.

## **APPENDIX A**

### **REFERENCE LIST OF DOCUMENTS FOR SYNTHESIS OF COMPETENCIES**

#### **Patient Safety Competencies**

- 1- Walton M, National Patient Safety Education Framework. Sydney, Australia: The Australian Council for Safety and Quality in Health Care and The University of Sydney, 2005.
- 2- Royal College of Physicians and Surgeons of Canada and Canadian Patient Safety Institute - Canadian Patient Safety Competencies Project, Safety Competencies Framework, May 2008 Draft for Approval; <http://www.patientsafetyinstitute.ca/education/safetycompetencies.html>
- 3- IOM used key findings from its Quality Chasm report to develop the 5 Core Competencies for Health Professions Education 2003  
<http://www.michigancenterfornursing.org/mimages/kornthomas.pdf>
- 4- Quality and Safety Education for Nurses. *Quality and Safety Competencies*. Chapel Hill, NC. 2007.  
<http://qsen.org/competencydomains/>
- 5 - Cronenwett L, Sherwood G, Barnsteiner J, Disch J, Johnson J, Mitchell P, Taylor Sullivan D, Warren J. Quality and safety education for nurses. *Nursing Outlook*. 2007;55(3):122-131.
- 6- Singh R, Naughton B, Taylor JS, Koenigsberg MR, Anderson DR, McCausland LL, Wahler RG, Robinson R, Singh G. A comprehensive collaborative patient safety residency curriculum to address the ACGME core competencies, *Medical Education*. 2005;39(12):1195–1204.  
[http://www.aafp.org/online/etc/medialib/aafp\\_org/documents/clinical/research/dcerps-pc/pat-saf-conf/hrsa-fund-coll.Par.0001.File.tmp/research\\_ranjitsingh.pdf](http://www.aafp.org/online/etc/medialib/aafp_org/documents/clinical/research/dcerps-pc/pat-saf-conf/hrsa-fund-coll.Par.0001.File.tmp/research_ranjitsingh.pdf)
- 7- Academy of Medical Royal Colleges. Curriculum for the foundation years in postgraduate education and training. London: Department of Health, 2004.
- 8- Sandars J, Bax N, Mayer D, Wass V, Vickers R. Educating undergraduate medical students about patient safety: Priority areas for curriculum development. *Medical Teacher*. 2007; **29(1)**:60-61.
- 9- Sachdeva A, Philibert I, Leach D, Blair P, Stewart L, Rubinfeld I, Britt L. Patient safety curriculum for surgical residency programs: Results of a national consensus conference. *Surgery*, 2006;141(4): 427 - 441.

#### **Research Competencies**

- 10- AHRQ Health Services Research Competencies  
<http://www.ahrq.gov/fund/training/hsrcomp.htm>
- 11- American Occupational Therapy Foundation, Academic Development Committee. *Research Competencies for Occupational Therapy*. Bethesda, Md.. American Occupational Therapy Foundation; 1999.  
<http://www.aotf.org/html/competencies.shtml>
- 12- Faculty of General Dental Practice (UK), Royal College of Surgeons of England. *Research Competencies Framework*. London: Faculty of General Dental Practice 2007.  
<http://www.fgdp.org.uk/pdf/competencies.pdf>
- 13- Hynak-Hankinson MT. Research Competencies in the Dietetics Curricula . *Journal of the American Dietetic Association*.1997; 97(10):S102-S106.
- 14- [Harrison L](#), [Hernandez AR](#), [Cianelli R](#), [Rivera MS](#), [Urrutia M](#). Perspectives of Latin American nursing professors and leaders about research competencies needed by nurses with different levels of academic preparation. *Int J Nurs Educ Scholarship*.2005;2:Article 24.
- 15- Burke L, Schlenk E, Sereika S, Cohen S, Happ M, Dorman J. Developing Research Competence to Support Evidence-Based Practice. *Journal of Professional Nursing*. 2005; 21(6):358-363.
- 16- University of North Carolina School of Nursing. Research Competencies for Doctoral Students. *School of Nursing Handbook, 2007-2008*. Chapel Hill, North Carolina.  
[http://nursing.unc.edu/current/handbook/grad\\_researchCompetency.html](http://nursing.unc.edu/current/handbook/grad_researchCompetency.html)

- 17- Baldwin, K.M., Lyon, B.L., Clark, A.P., Fulton, J., Davidson, S., Dayhoff, N., Developing Clinical Nurse Specialist Practice Competencies, *Clinical Nurse Specialist*.2007; 21 (6):297-302.  
[http://www.ena.org/publications/Dateline\\_ENA/Research/ProposedCompetenciesforposnng.pdf](http://www.ena.org/publications/Dateline_ENA/Research/ProposedCompetenciesforposnng.pdf)
- 18- Peterson C, Hays-Kimmons J, Cole J. Short-Term Effectiveness of an Outcomes Research Training Curriculum Within a Coordinated Program. *Journal of the American Dietetic Association*. 2007;108(1):120 - 124.
- 19- Bernotavicz F, Clark SJ, Detgen A, Lahti M, Shaler G, Town K. Human Services Staff Development and Training Roles and Competencies. Evaluator/Researcher. 2002;  
[http://calswec.berkeley.edu/calswec/01Lahti\\_paper.pdf](http://calswec.berkeley.edu/calswec/01Lahti_paper.pdf)

## Knowledge Translation Competencies

- 20- Nieva V, Murphy R, Ridley N, Donaldson N, Combes J, Mitchell P, *et al.* From Science to Service: A Framework for the Transfer of Patient Safety Research into Practice. *Advances in Patient Safety XXXX*; 2: XX.  
<http://www.ahrq.gov/libproxy.lib.unc.edu/downloads/pub/advances/vol2/Nieva.pdf>
- 21- [Taylor CA](#), [Taylor JC](#), [Stoller JK](#). Exploring leadership competencies in established and aspiring physician leaders: an interview-based study. *J Gen Intern Med*. 2008; 23(6):748-54.
- 22- [Strand GA](#). Community leadership competencies in the Northeast US: implications for training public health educators. *Am J Public Health*. (1981) Apr;71(4):397-402.  
<http://www.ajph.org/cgi/reprint/71/4/397>
- 23- [Mouradian WE](#), [Huebner CE](#). Future directions in leadership training of MCH Professionals: cross-cutting MCH leadership competencies. *Matern Child Health J*. 2007; 11(3):211.
- 24- [McKenna MK](#), [Gartland MP](#), [Pugno PA](#). Development of physician leadership competencies: perceptions of physician leaders, physician educators and medical students. *J Health Adm Educ*. 2004 Summer;21(3):343-54.
- 25- Contino, DS. Leadership Competencies: Knowledge, Skills, and Aptitudes Nurses Need to Lead Organizations Effectively. *Crit Care Nurse*. 2004 Jun; 24(3): 52-64.  
<http://ccn.aacnjournals.org/cgi/content/full/24/3/52>
- 26- Swinburn B, Gill T, Kumanayika S. Obesity Prevention: a proposed framework for translating evidence into action. *Obesity Review*. 2005; 6(1) 22-33.
- 27- Jacobson N, Butterill D, Goering P. Development of a Framework for Knowledge Transfer: understanding user context. *Journal of Health Services Research and Policy* 2005; 8(2): 94-99.
- 28- Armstrong R, Waters E, Roberts H, Oliver S. The role and theoretical evolution of knowledge translation and exchange in public health. *Journal of Public Health*. [2006; 28(4):384–389.
- 29 - American Public Health Association, Core Competencies for Public Health Professionals.

## Other Documents

- 30- Conway JB, Nathan DG, Benz EJ, Shulman LN, Sallan SE, Reid Ponte P, *et al.*, Key Learning from the Dana-Farber Cancer Institute's 10-Year Patient Safety Journey. Dana Farber Cancer Institute. Boston; 2006.

## Patient Safety Research Competencies: A Review and Synthesis of the Literature

### First round of consultations on the preliminary synthesis of existing competencies

Thank you for your input on this first draft of a synthesis of existing competencies relating to the areas of patient safety, research and knowledge translation.

The overall project to develop competencies for patient safety research is being led by Professors Peter Norton and Liane Ginsburg, who have produced a detailed background paper on this subject which was presented at the first meeting of the Expert Working Group on Education and Training for Patient Safety Research which was held in Geneva in February 2008.

The framework proposed in the background paper was used as the starting point of this review and synthesis of the literature on competencies, and will feed into the further development of the patient safety research competencies framework.

Although in the literature there are no competencies specifically for patient safety researchers, almost 30 existing documents on competencies were identified in the areas of patient safety, research and knowledge translation.

We would be very grateful for your assistance in answering the following questions which should take **about 20 minutes** of your time. Thank you in advance for your help. If you need more space, please use a blank page.

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Please open the PDF called "Competencies review internal consultation document"

---

**Question 1:** Do you agree with the way that the competencies have been **structured** according to: 1) role, 2) domain, 3) competency, and 4) content area?

Yes, this is a logical way of structuring (please mark with "X"): \_\_\_\_\_  
No, consider restructuring as follows (please type):

---

**Question 2:** Do you think that the "**core roles**" of patient safety expert, researcher and knowledge translator are appropriately structured and complete?

Yes, this is appropriately structured and complete (please mark with "X"): \_\_\_\_\_  
No, consider changing as follows (please type):

---

**Question 3:** Do you think that the "**additional roles**" of leader, communicator, teacher and mentor, patient safety advocate, ethical role model and team player are appropriately structured and complete?

Yes, this is appropriately structured and complete (please mark with "X"): \_\_\_\_\_  
No, consider changing as follows (please type):

---

**Question 4:** Do you think that the "**domains**" listed for patient safety expert, researcher and knowledge translator are appropriately structured and complete?

Yes, this is appropriately structured and complete (please mark with "X"): \_\_\_\_\_  
No, consider changing as follows (please type):

---

**Question 5:** Do you think that the "**competencies**" listed for patient safety expert, researcher and knowledge translator are appropriately structured and complete?

Yes, this is appropriately structured and complete (please mark with "X"): \_\_\_\_\_  
No, consider changing as follows (please type):

---

**Question 6:** Do you think that the "**content areas**" listed for patient safety expert, researcher and knowledge translator are appropriately structured and complete?

Yes, this is appropriately structured and complete (please mark with "X"): \_\_\_\_\_  
No, consider changing as follows (please type):

---

**Question 7:** Do you think the **list of references** at the back of the document is complete? If no, please suggest other references to be included, particularly from the gray literature:

Yes, the list of references is complete (please mark with "X"): \_\_\_\_\_  
No, the following references are missing (please type):

---

**THANK YOU FOR YOUR INPUT**

**Please send your completed responses to:**

Aimee McHale, c/o Dr. Andermann, World Alliance for Patient Safety, WHO  
IER/PSP, Room L.319, Avenue Appia 20, CH - 1211, Geneva, Switzerland  
Fax.: +41 22 791 1388, Email: [mchalea@who.int](mailto:mchalea@who.int)

**Appendix C : External Consultation Survey**  
**Competencies for Patient Safety Researchers Questionnaire**

**Section A: Competencies for Researchers in Patient Safety**

Competencies are the fundamental knowledge, ability, skills and expertise needed to carry out patient safety research. These have been defined below in three broad areas:

1. Patient safety theory and practice
2. Designing and conducting research
3. Translating research into safer care

COMPETENCY AREAS FOR PATIENT SAFETY RESEARCHERS

**1) Patient safety theory and practice**

- 1.1) Creating a culture of patient safety
- 1.2) Communicating effectively and working in teams
- 1.3) Using evidence-based strategies for improving quality and safety of care
- 1.4) Managing risk and preventing harm
- 1.5) Ensuring professional and ethical conduct through training and leadership
- 1.6) Knowledge of additional root disciplines related to patient safety

**2) Designing and conducting research**

- 2.1) Identifying and addressing important knowledge gaps
- 2.2) Being able to select an appropriate study design and analyse data
- 2.3) Conducting research using a systematic approach and valid methodologies
- 2.4) Building interdisciplinary teams and supportive environments for research
- 2.5) Managing the research project from conception to knowledge transfer and utilization
- 2.6) Maintaining competence & ensuring ethical conduct through training and leadership

**3) Translating research into safer care**

- 3.1) Synthesizing and contextualizing the existing research evidence
- 3.2) Disseminating research findings and advocating for patient safety
- 3.3) Translating research into policies and practices to reduce harm
- 3.4) Institutionalizing changes to build supportive systems for safer care

1. Do you think these competency areas are **easy to understand**? (please tick **ONE** only)  
 Yes  
 No - if no, please write why not and how to make it more clear:  
\_\_\_\_\_
2. Do you think these competency areas should be **modified** in any way? (please tick **ONE** only)  
 Yes - if yes, please explain how you would modify them:  
 No  
\_\_\_\_\_
3. Do you think there are competency areas that should be **added**? (please tick **ONE** only)  
 Yes - if yes, please write which should be added and why:  
 No  
\_\_\_\_\_
4. Do you think there are competency areas that should be **removed**? (please tick **ONE** only)  
 Yes - if yes, please write which should be removed and why:  
 No  
\_\_\_\_\_

5. Overall, are the competency areas **appropriate and well-adapted** for the context of your country? (please tick **ONE** only)
- Yes
- No - if no, please write why not and how to make it better adapted:
- 
6. Do you feel that the above competency areas **would be helpful** as a basis for training future professionals involved in patient safety research and measurement for change in your country? (please tick **ONE** only)
- Yes
- No - if no, please explain why it would not be helpful and how to improve it:
- 
7. In your country, **in what ways** do you think having a set of competencies **would be useful** as a basis to train people to do patient safety research? (please tick **ALL** that apply)
- Systematic basis for training  Emphasizes multiple skills needed
- Defines learning objectives  Other
- Used to evaluate progress  Not useful
- Tailored to different profiles  Don't know
8. Which broad category of competency areas do you feel should be the **top priority for additional training** in your country? (please tick **ONE** only)
- Patient safety theory and practice
- Designing and conducting research
- Translating research into safer care
9. In your own words, **what do you consider to be the most important characteristic or skill** of a competent patient safety researcher? (please **WRITE**)
- 
10. In your country, are there **competencies** that are being used as a basis to train people to do research related to patient safety? (please tick **ONE** only)
- Yes - if yes, please send the competencies by email to [rukinir@who.int](mailto:rukinir@who.int)
- No
- Don't know

### **Section B: Competencies for Different Profiles**

Patient safety research is done by a variety of people in different settings who require different levels of attainment in the various competency areas. Therefore these competencies need to be tailored to different profiles of researchers and research users.

The following questions in this section are based on 3 proposed profiles for patient safety researchers:

First, there are **ACADEMICS**, who may have Masters or PhD training in research. They are likely to be university professors working in academia.

Second, there are **PRACTITIONERS**, who may be physicians, nurses or other allied health workers working in clinical care. They often conduct research part-time as well as try to apply findings to improve patient care.

Finally, there are **MANAGER/POLICYMAKERS**, who may be health administrators, clinical leaders or government officials. They may or may not be engaged in primary research or do secondary research (e.g. systematic reviews). They use research findings in promoting change and designing policies and practices to make care safer.

For each of the 3 profile types, please select the patient safety competency areas that you consider to be **ESSENTIAL**, to provide the knowledge and skills required for this type of profile

(please tick ALL THAT APPLY).

### 1. PATIENT SAFETY THEORY AND PRACTICE

	ACADEMICS	PRACTITIONERS	MANAGER/POLICY MAKERS
Creating a culture of patient safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communicating effectively and working in teams	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using evidence-based strategies for improving quality and safety of care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Managing risk and preventing harm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensuring professional and ethical conduct through training and leadership	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of additional root disciplines related to patient safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

For each of the 3 profile types, please select the patient safety competency areas that you consider to be ESSENTIAL, to provide the knowledge and skills required for this type of profile (please tick ALL THAT APPLY).

### 2. DESIGNING AND CONDUCTING RESEARCH

	ACADEMICS	PRACTITIONERS	MANAGER/POLICY MAKERS
Identifying and addressing important knowledge gaps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Being able to select an appropriate study design and analyse data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conducting research using a systematic approach and valid methodologies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Building interdisciplinary teams and supportive environments for research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Managing the research project from conception to knowledge transfer and utilization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maintaining competence & ensuring ethical conduct through training and leadership	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

For each of the 3 profile types, please select the patient safety competency areas that you consider to be ESSENTIAL, to provide the knowledge and skills required for this type of profile

### 3. TRANSLATING RESEARCH INTO SAFER CARE

	ACADEMICS	PRACTITIONERS	MANAGER/POLICY MAKERS
Synthesizing and contextualizing the existing research evidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Disseminating research findings and advocating for patient safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Translating research into policies and practices to reduce harm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Institutionalizing changes to build supportive systems for safer care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Section C: About you**

1. Which **country** do you work in? (if more than one, please **WRITE** the country where you work the most)

\_\_\_\_\_

2. What is your **age**? (please tick **ONE** only)

Under 35 years       35 to 50 years       Over 50 years

3. What is your **gender**? (please tick **ONE** only)

Male                       Female

4. What is the **main type of work** that you do? (please tick **ONE** only)

<input type="checkbox"/> Nurses and allied health worker	<input type="checkbox"/> University professor (academics)
<input type="checkbox"/> Physician	<input type="checkbox"/> Government official
<input type="checkbox"/> Hospital administrator	<input type="checkbox"/> Other
<input type="checkbox"/> University student	

5. Do you do research in any of the following **areas related to patient safety**? (please tick **ALL** that apply)

- |  |  |
|--|--|
| <input type="checkbox"/> Safe medicines and devices        | <input type="checkbox"/> Epidemiological research        |
| <input type="checkbox"/> Blood and injection safety        | <input type="checkbox"/> Health services research        |
| <input type="checkbox"/> Health care associated infections | <input type="checkbox"/> Qualitative research            |
| <input type="checkbox"/> Quality improvement               | <input type="checkbox"/> Evidence based medicine         |
| <input type="checkbox"/> Change management                 | <input type="checkbox"/> Economic evaluations            |
| <input type="checkbox"/> Human factors / safety design     | <input type="checkbox"/> Writing research protocols      |
| <input type="checkbox"/> Measuring harm                    | <input type="checkbox"/> Patient involvement in research |
| <input type="checkbox"/> Understanding causes              | <input type="checkbox"/> Ethical issues in research      |
| <input type="checkbox"/> Developing solutions              | <input type="checkbox"/> Other                           |
| <input type="checkbox"/> Evaluating impact                 | <input type="checkbox"/> Do not do research              |

6. In your opinion, how great a priority is patient safety research in your country as compared to other health research priorities? (please tick **ONE** only)

- |  |  |
|--|--|
| <input type="checkbox"/> High priority     | <input type="checkbox"/> Not at all a priority |
| <input type="checkbox"/> Moderate priority | <input type="checkbox"/> Don't know            |
| <input type="checkbox"/> Low priority      |  |

7. In your country, are you aware of any **specific training programs** to train people to do research related to patient safety? (please tick **ONE** only)

- Yes - if yes, please write the name of program and contact details
- No
- Don't know

8. If you are interested in becoming involved in the future mentoring and training of leaders in patient safety research, please write your **contact information** below:

Your name:  
Your position:  
Your institution:  
Your email:  
Your phone number:

**Thank you for your participation**

**Please send your completed questionnaires to: [rukinir@who.int](mailto:rukinir@who.int)**

**or by fax: +41 22 791 13 88**