Evaluation of the WHO Patient Safety Solutions Aides Memoir

Prepared for the Patient Safety Programme
of the World Health Organization

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1. Introduction

As described on the World Health Organization (WHO) patient safety website,[1] "Patient Safety Solutions Aides memoir describe "…system designs or interventions that demonstrate the ability to prevent or mitigate patient harm stemming from the processes of health care." WHO established the goal to establish a set of Patient Safety Solutions Aides memoir (hereinafter called Solutions) that were evidence-based, presented in a standard format, and described in simple terms the actions to take to address risks associated with a particular patient safety problem. Each written Solution was to present the relevant problem and characterize the strength of evidence supporting actions to address it, including potential barriers to adoption, risks of unintended consequences created by the solution, and patient and family roles in the solution. In addition, each Solution was to cite relevant references and other resources.

In 2005, the World Health Organization (WHO) designated the Joint Commission and Joint Commission International as the WHO Collaborating Centre for Patient Safety Solutions. Working with WHO, and with guidance from an International Steering Committee, the Collaborating Centre developed the first set of nine Patient Safety Solutions.

The Inaugural Set of Patient Safety Solutions Aides Memoir

In April 2007, the inaugural set of Solutions was approved by the International Steering Committee for publication and dissemination, for use by WHO Member States as of May 2007. The Solutions were posted on the websites of both WHO and the Collaborating Centre. [2] The following are brief descriptions of topics for the nine Solutions:

- ***Look-Alike, Sound-Alike Medication Names.*** Confusing drug names is one of the most common causes of medication errors and is a worldwide concern. With tens of thousands of drugs currently on the market, the potential for error created by confusing brand or generic drug names and packaging is significant
- ***Patient Identification.*** The widespread and continuing failures to correctly identify patients often leads to medication, transfusion and testing errors; wrong person procedures; and the discharge of infants to the wrong families.
- ***Communication During Patient Hand-Overs.*** Gaps in hand-over (or hand-off) communication between patient care units, and between and among care teams, can cause serious breakdowns in the continuity of care, inappropriate treatment, and potential harm for the patient.
- ***Performance of Correct Procedure at Correct Body Site.*** Considered totally preventable, cases of wrong procedure or wrong site surgery are largely the result of miscommunication and unavailable, or incorrect, information. A major contributing factor to these types of errors is the lack of a standardized preoperative process.

[1] At http://www.who.int/patientsafety/implementation/solutions/patientsafety/solutions_explained/en/index.html.
[2] At http://www.ccforpatientsafety.org/Patient-Safety-Solutions/.

- ***Control of Concentrated Electrolyte Solutions.*** While all drugs, biologics, vaccines and contrast media have a defined risk profile, concentrated electrolyte solutions that are used for injection are especially dangerous.
- ***Assuring Medication Accuracy at Transitions in Care.*** Medication errors occur most commonly at transitions. Medication reconciliation is a process designed to prevent medication errors at patient transition points.
- ***Avoiding Catheter and Tubing Mis-Connections.*** The design of tubing, catheters, and syringes currently in use is such that it is possible to inadvertently cause patient harm through connecting the wrong syringes and tubing and then delivering medication or fluids through an unintended wrong route.
- ***Single Use of Injection Devices.*** One of the biggest global concerns is the spread of Human Immunodeficiency Virus (HIV), the Hepatitis B Virus (HBV), and the Hepatitis C Virus (HCV) because of the reuse of injection needles.
- ***Improved Hand Hygiene to Prevent Health Care-Associated Infections.*** It is estimated that at any point in time more than 1.4 million people worldwide are suffering from infections acquired in hospitals. Effective hand hygiene is the primary preventive measure for avoiding this problem.

As instructed by WHO, the content of each of the nine Patient Safety Solutions was written in the same format, consisting of the following elements:

Patient Safety Solution Title	Opportunities for Patient and Family Involvement
Statement of the Problem and Impact	Strength of the Evidence
Background and Issues	Potential Barriers to Implementation
Suggested Actions	Risks for Unintended Consequences
Looking Forward	References
Applicability	Other Selected Resources

The Collaborative Network

The set of Patient Safety Solutions Aides memoir was one of the first products developed by the Collaborating Centre. These Solutions were to address patient safety issues that were a shared priority of countries around the world. To guide the development work, the Collaborating Centre established and worked with a collaborative network of stakeholders. With the release of the set of nine Solutions in May 2007, WHO and the Collaborating Centre then began a dissemination process to inform stakeholders about their availability and what they contained.

The collaborative network consisted of an International Steering Committee, three Regional Advisory Councils, and three expert panels that served as technical resources to the network. Each of these bodies met regularly and were staffed by the Collaborating Centre staff.

International Steering Committee. Experts from leading patient safety organizations around the world were asked to serve on the Steering Committee, which had the overall responsibility of selecting the priority patient safety issues to be addressed by the Solutions and guiding

development of those Solutions products. With a membership of 40 individuals, the Steering Committee broadly represented countries in all six of the WHO regions.

Regional Advisory Councils. These Councils were a mechanism to obtain feedback on the work on the Solutions emanating from the Steering Committee. Their role was to communicate the specific needs of the regions—and countries within them—to be taken into consideration during the Solutions prioritization, development, and dissemination process. Three Councils were established: Asia-Pacific Council, Middle East and North Africa Council, and Europe Council. A representative from Israel serves on the Europe Council. Although the Collaborating Centre had hoped to establish similar Councils in Africa and South America, this was not possible because of funding limitations. However, North Africa was represented on the Middle East and North Africa Council, and South America was represented on the International Steering Committee.

According to the Collaborating Centre staff, the Steering Committee sought feedback from the Regional Advisory Councils to gain the perspectives of the different regions on patient safety priorities and the Solutions products. The Councils helped drill down details of the Solutions during development, and also provided leadership in dissemination of the Solutions, once released. In addition, the Council meetings have been a source of information on how countries have been using the Solutions, by inviting Council members to do presentations on the state of patient safety in their countries and their use of the Solutions.

Expert Panels. The Collaborating Centre established three expert panels to provide advice on key topical areas involved in the development and dissemination of the Solutions. The membership of each panel included members of the International Steering Committee as well as other individuals with relevant expertise, to further expand the knowledge base behind the Solutions.

- *Patient and Family Advisory Panel* consists of leading U.S. patient safety advocates, and it advises on patient and consumer issues addressed in the Solutions. This panel has had a formal link with the Patients for Patient Safety programme of WHOs World Alliance for Patient Safety.
- *Communications Expert Panel* consists of communications experts from the health care field and other relevant industries such as aviation. This panel identified a comprehensive list of communications issues including team building, culture, and human factors.
- *Medication Safety Expert Panel* consists of experts on topics related to medication management and safety.

Broader network development was pursued by building working relationships with international health-related organizations, such as the International Hospital Federation, the International Council of Nurses, the World Medical Association, the Organization for Economic Cooperation and Development. Relationships also were built with national organizations such as national patient safety agencies, ministries of health, and others. As part of this effort, WHO sent a letter to many Ministries of Health worldwide, introducing the Collaborating Centre and inviting their strategic partnership and collaboration in the Solutions development process.

Evaluation Aims and Approach

The aims of this evaluation were to perform a comprehensive evaluation of the following:

- The concept of patient safety solutions
- The value of the Aide memoir as a product/tool for generating awareness of patient safety solutions and the patient safety risk areas that they address, as well as for framing of evidence-based policies and mechanisms to improving patient safety by WHO Member States.
- The process of development, quality and dissemination of the nine patient safety solutions Aide memoirs;
- The impact in terms of relevance and usability of the developed patient safety solutions Aide memoirs by both developing and developed Member States.

The evaluation design was a retrospective assessment of the concept, value, quality and impact of the nine Patient Safety Solutions Aides memoir established in 2007. This study design was chosen to be able to obtain a mix of perspectives from a variety of stakeholders, including those who are not affiliated with WHO or the Collaborating Centre and those who are.

Questions Addressed by the Evaluation

The following questions were addressed in the evaluation:

1. How effective is the **concept** of patient safety solutions Aide memoirs as the means to generate awareness of patient safety problems and available solutions, and to inform and aide governments as a policy development tool?
    - Is this concept innovative?
    - Does the concept follow the idea of: 'a bad experience of a patient in one place is the source of transmitted learning that benefits future patients in many countries'.
    - How relevant is the concept to the needs and priorities of developing, transitional, and developed countries?
2. What is the **quality or scientific integrity** of the developed Aide memoirs solutions in terms of:
    - Evidence-base in terms of the problem addressed and solution recommended?
    - Evaluating and Scoring the Quality of Evidence
    - Grading the recommendation
    - Effectiveness of dissemination of the solutions
3. How **valuable** are the Aide memoirs in terms of the product?
    - What are needs and priorities of developing, transitional, and developed countries, respectively, regarding patient safety issues?
    - Who are the users (target audiences) of the Aide memoirs? Who should be the users?
    - Is an Aide memoir the right way/process/product to promote the patient safety solution concepts? How well does it respond to the users' needs and priorities?
    - What criteria were used to identify the solutions that were to be developed as Aide memoirs (prioritization and selection) ? How relevant are these 3 selection criteria to the needs and priorities of the developing, transitional, and developed countries?

4. How effective and usable are the following specific components of the Aide memoirs for users in each of the three groups of countries:
    - Aide memoir templates, format and content
    - Prioritization and selection process
    - Field testing through website
    - Potential adaptations used of patient safety solutions Aide memoirs.
5. What impact have the patient safety solutions Aide memoirs had in terms of aiding Member States achieve the objectives of improving patient safety:
    - Which solutions were taken up by Member States (developing, transitional, and developed)?
    - What factors contributed to the extent of uptake of solutions (e.g., level of interest by states, variations in methods or amount of dissemination activity across regions or other geographic areas)?
    - How were the solutions used by the States that used them? Within each State, who were the actual users?
    - Were practical strategies and tactics able to be implemented?
    - Is there any information on evaluation of the impact of using the solutions?
    - What data are available on adoption of practices specified in the solutions?
    - What barriers were encountered that constrained the adoption of solutions, from local, regional, and global perspectives?
6. How can the concept, value, quality and impact of the product be improved? Some of the critical questions are:
    - process for developing solution Aide memoirs
    - Are the solutions topics relevant?
    - Was the intended audience (Ministries of Health) the appropriate target?
    - How could dissemination be improved and broadened

Logic Model That Guided the Evaluation

A preliminary review of the goals of the Patient Safety Solutions Aides memoir, and the work carried out for establishing and disseminating the first nine Solutions, highlighted the complexity of the dynamics involved in the work itself, as well as the international context in which it is performed. To ensure that data collected were accurate and comprehensive, the evaluation was guided by a logic model of the system within which the Solutions had been developed and implemented. Within this system are numerous stakeholder groups, each with unique needs and priorities, which should be understood to assess how well the first set of Solutions have functioned and to best determine if and how to structure and manage this program in the future.

This logic model is shown in Figure 1, which shows the World Health Organization regional structure (on the left) and the parallel regional clustering of its Member States (on the right). The work of the WHO Collaborating Center on Patient Safety Solutions is shown in the center, including each of the key steps undertaken in the selection, development and dissemination process. Throughout the development process, the Collaborating Centre interacted with staff and others involved with WHO, as well as with individuals in many of the Member States.

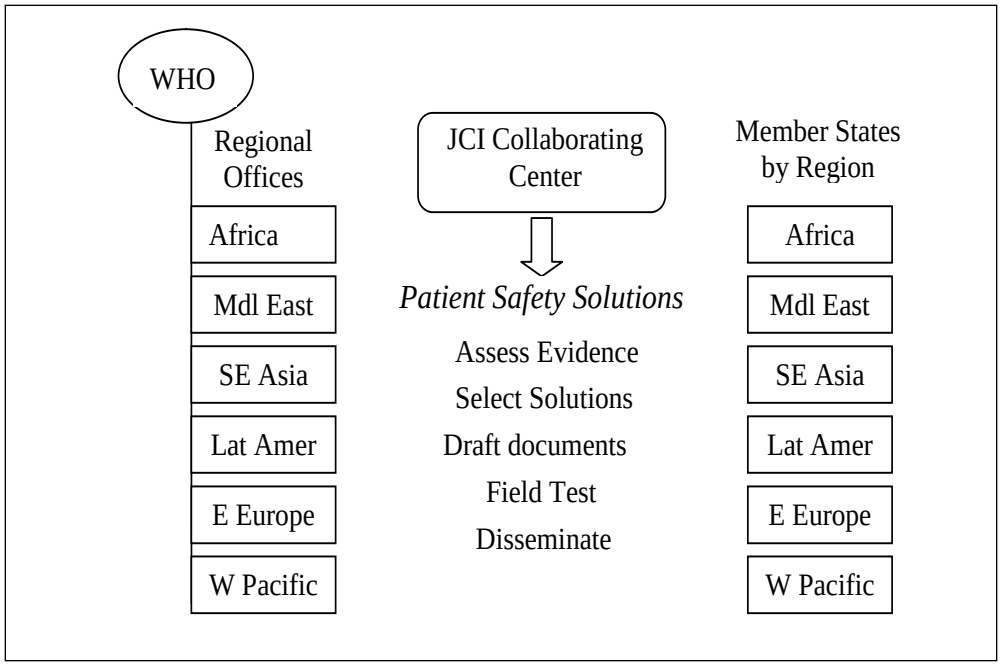

Figure 1. Logic Model of the WHO Patient Safety Solutions Development and Dissemination

All of these organizations, and the individuals who are part of them, are stakeholders in this process. Further, we understood that each set of stakeholders provided its own unique perspectives and priorities as the solutions were being developed, and likewise, will have a variety of views and reactions to the completed Solutions products.

Organization of This Report

The organization of this report reflects that of the evaluation itself. The evaluation methods are described in Section 2. The results of the evaluation are then presented in the subsequent two sections. Section 3 contains results regarding the Patient Safety Solutions products themselves and how they were developed, and Section 4 contains results regarding the dissemination of the Solutions products. In Section 5, an overall summary of findings is presented along with suggestions for possible future actions by WHO.

2. Evaluation Methods

The evaluation was designed to collect and analyze information on the views of the diversity of stakeholders for the Patient Safety Solutions Aide memoirs, in particular, the users in the Member States who are the target audiences for Aide memoirs. Three major evaluation tasks were carried out:

- Design and conduct a survey of a sample of stakeholders in Member States, in particular end users of the Solutions, and analyze the results of that survey.
- Conduct interviews with WHO staff in the regional offices and with other stakeholders, to gather qualitative data on the topics addressed by the evaluation questions.
- Examine relevant written materials and other information resources (e.g., websites) to document the work involved in the solutions development process, as well as to examine the establishment of evidence as the basis for the Solutions.

Data Collection Methods

Table 1 shows how data was collected to address the evaluation questions, including which question(s) were addressed by each data collection method. For the question regarding the scientific integrity of the Solutions, the data gathered addressed the perceptions of stakeholders regarding the strength of the evidence for each Solutions (i.e., the science behind them); full analysis of the evidence base itself was beyond the scope of this evaluation.

The stakeholder groups were asked to provide feedback on each of the sets of evaluation questions, as shown in Table 2.1. The differing views obtained from the various groups helped to reveal where there was agreement on issues or items and where there was not. It also helped to discern new issues that had not been anticipated at the start of the evaluation.

Table 2.1 Methods for Collecting Data To Address Each Set of Evaluation Questions

Evaluation Question Sets	Member State Survey	WHO Regional Office Interviews	Other Stakeholder Interviews	Review documents
How effective is the **concept** of Patient Safety Solutions Aide memoirs?	X	X	X	
What is the **quality or scientific integrity** of the developed Aide memoirs Solutions?	X	X	X	X
How **valuable** are the Aide memoirs for Member States?	X	X	X	
What **impact** have the Patient Safety Solutions Aide memoirs had for Member States in improving patient safety?	X	X	X	X
How can the concept, value, quality and impact of the product be improved?	X	X	X	

Review of Existing Written Materials

Materials that documented and described the work involved in developing and disseminating the Patient Safety Solutions were obtained from the WHO Geneva office and the Collaborating Centre. These materials included minutes from International Steering Committee meetings, reports prepared by the Collaborating Centre, results of the field review of the draft Solutions products, forms and tools used in the process, a written dissemination plan for the Solutions, and other documents.

Factual information was obtained from these materials about the structure of the collaborative network of stakeholders created to guide the development of the Solutions, as well as the process they carried out to identify priority patient safety issues, establish a common format for the Solutions, develop contents for the Solutions products, and disseminate the resulting products to stakeholders around the world. This information was used to develop the summary that documents the products, development process, and dissemination, to serve as a foundation for the assessment steps in the evaluation. The assessment used data on stakeholders' views regarding these topics obtained from the qualitative interviews and the member state survey.

Interviews with Key Informants

Individual, semi-structured interviews were conducted by telephone with the WHO Regional Office staff and other stakeholders, guided by a written interview protocol. The interview contents covered all the evaluation questions. In consultation with the staff of WHO Geneva, the Collaborating Centre, and WHO regional offices, a list of individuals to be interviewed were developed, and contact information for those individuals was obtained.

A total of 21 individuals were interviewed, including interviews with WHO Headquarters staff, all the WHO Regional Office leads, staff at the Collaborating Centre, and 10 individuals in five WHO regions. A summary of the interview counts is provided in Table 2.2.

Table 2.2 Profile of Individual Interviews Conducted for the Evaluation

Type of Interview	Number of Individuals Interviewed
WHO Headquarters staff	3
WHO Regional Office staff *	7
Collaborating Centre staff	4
Other stakeholders (by region):	
African	1
Pan American	4
European	3
Eastern Mediterranean	1
Southeast Asia	0
West Pacific	1
Total number interviewed	24

* Two interviews were conducted with two staff each.

Survey of Member State Stakeholders

The survey of member states stakeholders was developed collaboratively by the consultant for the evaluation and the WHO Geneva staff. The contents of the survey were guided by the

questions being addressed by the evaluation, as well as by information in written materials and feedback by WHO regional office staff via qualitative interviews.

A draft of the survey was reviewed by research staff at WHO Geneva and the WHO Evaluation Centre team at Johns Hopkins Hospital and Medical Center, with revisions made in response to these reviews. Then three individuals in the field were requested to complete the survey as usability test of the instrument. Again, revisions were made based on what was learned from their feedback.

The survey was prepared in English and was translated into Arabic, Spanish, and French. It was administered as a web-based survey using Survey Monkey. A datafile was generated with the survey responses that was used for evaluation analysis. The link to the survey was posted on the WHO website to be available to stakeholders interested in completing it.

Two sampling mechanisms were used to recruit participants in the survey:

1. A "purposive" sample of key individuals in WHO regions, countries, and the Collaborating Centre network were asked to respond to the survey, attempting to cover a range of countries in all six WHO regions. The sample list was identified based on WHO staff knowledge in Geneva and the Regional Offices.
2. Notification was sent to individuals on the WHO email distribution list with an invitation to complete the survey and give them the link to the survey site.

The survey was in the field for five months, from January through May 2011. Several reminders were sent to stakeholders with the goal to achieve a sample of completed surveys that could provide statistically significant comparisons across WHO regions.

Power Calculations To Determine Target Survey Sample Size

The goal was to obtain at least 500 completed surveys from each WHO region. This goal was established based on power calculations performed to determine the number of completed surveys required to detect a statistically significant difference across regions for responses to questions on a five-point ordinal scale that a subset of survey respondents were to complete. A two-step power calculation was performed, assuming that the same number of survey responses would be obtained for each WHO region, the results of which are in Table 3.

First, assuming that the true proportion of WHO member state members who are aware of the Patient Safety Aide Memoirs is 40%, then this proportion could be estimated across all regions with 95% confidence to within roughly 3% if the sample size was 200 per region (12000 total). The proportion could be estimated to within roughly 2% if the sample size is 500 per WHO region (3000 total). In addition, for estimation of this proportion within each WHO region, the precision of the within-region estimate would be 6.8% for a sample size of 200 and 4.3% for a sample size is 500 (Table 3).

Next, the sample size needed to detect differences in responses by a subset of survey respondents to questions with ordinal scales was estimated. The respondents who said they were aware of the Patient Safety Aide memoirs were asked a series of follow-up questions regarding the Solutions as a resource for them. A four-point ordinal scale was used for these items: not at all, slightly, moderately, a great deal, with an additional response option of "don't know." The goal was to determine if differences in responses exist across WHO regions in the proportion of members who respond positively (moderately or a great deal) to these questions.

It was assumed that 40% of the respondents would be aware of the Patient Safety Solutions and that the largest differences in proportion of positive responses was 10, 15 or 20%. For each of these three cases, 1,000 hypothetical datasets were simulated, and the proportions of simulated datasets for which a chi-square test showed statistically significant differences in positive responses across all regions (at a 5% significance level) were estimated. As shown in Table 2.3, the estimated power for the three cases ranged from roughly 65% to 96%, depending on sample size.

Table 2.3 Power Calculations Used to Determine Targeted Sample Size per WHO Region

Number of respondents per WHO region	Precision to estimate P(aware) *	Expected number responding to questions	Power to detect a statistically significant difference across region for responses of "moderately" or "a great deal"		
			Expected difference: 0.10	Expected: difference: 0.15	Expected difference: 0.20
200	6.8%	80	65%	73%	84%
300	5.5	120	72	85	91
400	4.8	160	75	88	95
500	4.3	200	79	91	96

* P = probability; assumes P(aware) = 0.40

Analysis of Data Collected

Three analytic methods were used, one for each type of data collected, the results of which were synthesized together to generate overall findings and recommendations. The analyses addressed factual information on the development and dissemination of the Solutions, the perceptions of stakeholders interviewed about the Solutions program, and results of the stakeholder survey.

Description of the Development and Dissemination Processes

The primary sources of information about the development and dissemination processes were documents provided by the staff at WHO and the Collaborating Centre, along with telephone discussions with them to verify facts and gather additional detail. Using this information, the steps in the Solutions development process were summarized, including the structure established for the collaborative process, decisions made about topics for the Solutions, and engagement of stakeholders to get their feedback on draft products. The process for disseminating the Solutions, once released, also was summarized, including the dissemination plan established, actual dissemination activities, and feedback from stakeholders on how the Solutions were being used in their countries. These descriptions are located at the start of each of the relevant chapters in this report.

Analysis of Stakeholder Interview Results

The written protocol used to conduct the interviews and record responses was structured to develop information on stakeholders' perspectives regarding the evaluation questions established for the evaluation. After completion of each interview, the notes were organized to populate each of these questions. The following groupings were used for the analysis:

Category	Topics
Concept of Patient Safety Solutions	Effectiveness of the Solutions concept The intended audiences for the Solutions Needs and priorities of member states Appropriateness of priorities addressed
Development of the Solutions	The development process Stakeholder involvement in development Evidence base for the Solutions The Solutions products
Dissemination of the Solutions	Availability of the Solutions products Dissemination strategy and process Stakeholder awareness of the Solutions Use of the Solutions

When all interviews were completed, the results were consolidated into an Excel workbook, in which the columns were the question topics, and each row was one respondent's responses on each of these topics. Then the contents of each topic (worksheet column) were analyzed to identify common themes and variations in responses across respondents. These results were summarized in a narrative format, and they are presented in the relevant sections of this report.

Analysis of Stakeholder Survey Results

A total of 956 surveys were completed by stakeholders in the six WHO regions. Of these, 75 individuals completed only the first three questions (what is your country, what type of organization are you in, and what is your current health- care role). Therefore, the effective sample is 881 completed surveys. Although this is a substantially smaller sample than had been planned, it was sufficiently large to generate useful estimates of stakeholders views and experiences with the Solutions. It was possible to examine regional differences in patient safety needs and responsiveness of the Solutions to those needs. For other topics, however, only overall estimates could be developed due to small sample sizes. The counts of respondents for are reported with each set of survey results.

The questionnaire was designed so that information could be gathered from any stakeholder relevant to the WHO patient safety initiatives, even if they did not have a working knowledge of the Solutions. The questions were arranged so that the broadest response could be obtained for questions regarding the patient safety needs and priorities in the WHO Member States, as well as stakeholder perceptions of how well the Patient Safety Solutions responded to those needs. Then a subset of respondents who reported they had been aware of the Solutions before the survey were the subjects for most of the remaining questions, which required familiarity with the Solutions to answer effectively. Finally, a smaller set of respondents who had actually used the Solutions in local patient safety improvement initiatives were asked questions about how they used the Solutions, and how useful they were to the improvement efforts.

The distribution of respondents by region is shown in Table 2.4. The largest percentage of respondents were from the Pan American, European, and Western Pacific regions, with fewer respondents from the other three regions.

Table 2.4 Distribution of Stakeholder Survey Respondents by WHO Region

Region	Number	Percentage
African	34	3.6
Eastern Mediterranean	91	9.5
European	285	29.8
Pan American	338	35.3
South East Asian	61	6.4
Western Pacific	147	15.4
Total	956	100.0

The distribution of respondents by the type of organization they represent is shown in Table 2.5. State ministries or departments of health, membership organizations, and individual health-care organizations were well represented in the survey respondents. The smallest percentages of respondents were from consumer or patient advocacy groups and from the WHO regional or country offices.

Table 2.5 Distribution of Stakeholder Survey Respondents by Type of Organization

Type of Organization	Number	Percentage
Ministry of health or department of health	209	21.9
WHO regional or country office	19	2.0
Health care membership organization	199	20.8
Consumer or patient advocacy group	24	2.5
An individual health-care organization	376	39.3
Other	129	13.5
Total	956	100.0

The distribution of respondents by their health-care role is shown in Table 2.6. The largest percentages of respondents were either health-care administrators or managers, physicians, or registered nurses. Small percentages of respondents were from each of the other listed groups.

Table 2.6 Distribution of Stakeholder Survey Respondents by Health-Care Role

Health-Care Role	Number	Percentage
Health-care administrator or manager	235	24.6
Physician	172	18.0
Registered nurse	221	23.1
Other health-care clinical background	26	2.7
Health-care attorney	5	0.5
Health policy analyst	23	2.4
Health/health-care researcher	53	5.5
Health-care consumer	16	1.7
Other	205	21.4
Total	956	100.0

3. Findings: the Patient Safety Solutions Products

The results presented in this Section address evaluation questions related to the actual products of the Patient Safety Solutions Aides memoir. These include the effectiveness of the underlying concept of the Solutions, the value of the Solutions to users, the evidence-base assessment, and the effectiveness of the written products actually produced. For each topic, the pertinent evaluation questions being addressed are listed, followed by a presentation of evaluation results. The Section ends with a discussion of findings based on these results.

The results presented for each topic are a combination of results from the stakeholder survey, individual interviews, and review of written materials and resources. Through this approach, it is possible to synthesize the diverse perspectives of different stakeholders. It also allows the analysis to combine quantitative data from the survey with qualitative data from the individual interviews, to "tell a cohesive story" with the interview information helping to interpret the survey results and capturing the dynamics of stakeholders' experiences with the Patient Safety Solutions.

The Concept of Patient Safety Aides Memoir

Question: How effective is the **concept** of patient safety solutions Aide memoirs as the means to generate awareness of patient safety problems and available solutions, and to inform and aide governments as a policy development tool?

Results of the individual interviews provide thoughtful discussions of the concept of the Solutions, including some variety of opinions regarding what the Solutions should be or not be. Using some of these identified concepts, the survey queried survey respondents about how strong a role they thought the Solutions played in each of those capacities.

Survey results

As shown in Table 3.1, respondents were asked to assess the strength of each Solutions role on a 1-to-4 scale, from not at all strong to extremely strong, and they also were given the option to mark "don't know". These questions were asked of the subset of 493 survey respondents who indicated that they were aware of the Solutions before completing the survey, so they had at least some familiarity with the products and how they were used in their countries.

The role assessed as strongest was its innovativeness as an information tool or alert. This is seen in both the large percentages who rated this role as moderately (41.4%) or extremely (35.5%) strong and the relatively small percentage who responded they did not know (10.6). Two other roles that were rated highly were generation of awareness of patient safety issues and usefulness to health care providers. The high ratings for these roles is consistent with the intent for the Solutions that had been defined by WHO.

On the other hand, the role that was rated lowest was usefulness to other organizations, such as professional associations or consumer organizations (23.7% moderately strong and 19% extremely strong). This item also had the largest percentage of respondents who marked "don't know" for this item (29.0%).

Table 3.1 Survey Respondents Assessments Regarding Roles of the Patient Safety Solutions

Roles of the Solutions (N=493)	Percentage of Responses By Strength of Role				
	Not at all	Slightly	Moderately	Extremely	Don't Know
Innovative as an information product or alert	2.4	10.1	41.4	35.5	10.6
Generate awareness of patient safety issues	4.3	17.0	35.1	29.2	14.4
Useful to health care providers	4.9	13.8	33.3	30.6	17.4
Help with development of solutions to safety issues	5.3	18.9	35.3	25.2	15.4
Useful to government as a policy information tool	4.5	17.7	29.8	24.5	23.5
Useful to other health care organizations	6.3	21.1	23.7	19.9	29.0

Another consideration in assessing the roles of the Solutions for addressing countries' patient safety needs and priorities is the intended target audiences for these products. When asked who they thought should be the target audiences, the survey respondents gave the responses displayed in Figure 3.1. The audience they identified most frequently was personnel delivering health care (90%), followed by health organization managers (86%). Of interest, patients and families were the third most frequently identified (66%), with ministry of health leads close behind it (60%). The least frequently identified group was advocacy groups (52).

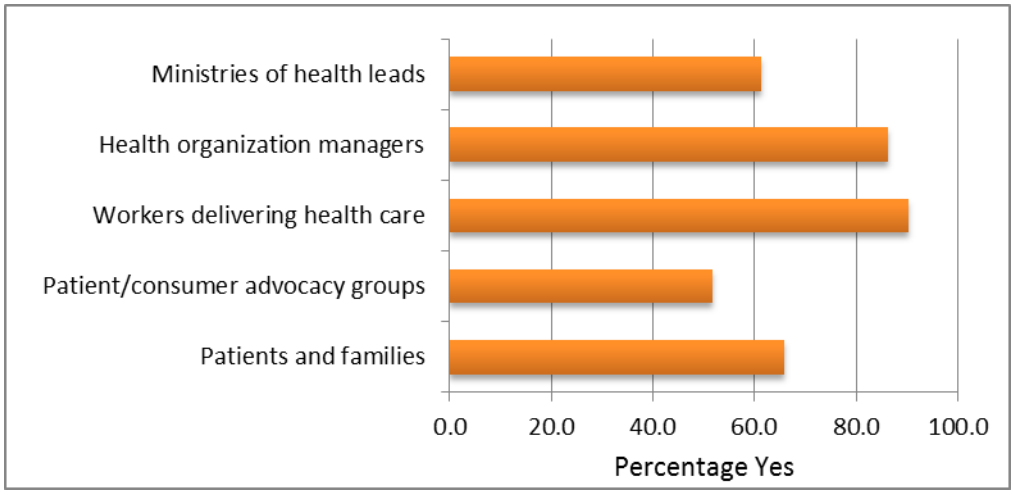

Figure 3.1 Target Audiences Identified for the Patient Safety Solutions Identified by Survey Respondents (N=809)

Regional differences were found in the target audiences identified by survey respondents, with the differences being statistically significant for three of the target audiences. Ministries of

health leads were identified more frequently by stakeholders in the African and Eastern Mediterranean regions, but less frequently by those in the European and Pan American regions. Stakeholders in the South East Asia identified workers delivering health care less frequently than did those in other regions. Finally, patients and families were identified as a target audience more frequently by stakeholders in the African and Pan American regions.

Table 3.2 Target Audiences for the Patient Safety Solutions Identified by Survey Respondents, by Region

	Percentage That Identified Each Target Audience					
Audience	AF	EM	EUR	PAHO	SEA	WP
Number of respondents	25	74	234	304	46	126
Ministries of health leads *	80.0	78.4	54.3	57.9	60.9	69.1
Health organization managers	88.0	87.8	82.1	88.5	80.4	88.9
Workers delivering health care *	88.0	83.8	91.9	91.8	73.9	94.4
Patient/consumer advocacy groups	64.0	52.7	45.3	54.9	45.7	54.0
Patients and families *	76.0	60.8	60.0	74.7	56.5	60.3

* Differences across regions are statistically significant ($p < 0.05$)

Interview Results on the Solutions Concept

The Basic Concept. There was general agreement among the individuals interviewed that the basic concept of the Patient Safety Aides memoir was appropriate and useful. Respondents shared a sense that the Solutions have established a global set of standards for priority patient safety issues and have been a useful resource regarding key issues faced by countries across the world. There also was agreement that the key strength of the Solutions was in raising awareness and educating governments and health care organizations on important patient safety issues.

Several respondents reported that they received positive responses to the Solutions from physicians, other health care workers, and policy makers when they were introduced to them. Positive features identified were the concise nature of the Solutions, the evidence that supported them, and the provision of some direction for end users on how to address the issues. The Solutions also were seen as giving credibility to work being championed locally on patient safety issues, because they are products of WHO, which is a credible information source.

On the other hand, it was commented that countries may not know what to do with the Solutions because they do not contain sufficient specific direction about what steps should be taken to improve performance on the priority safety issues. Further, several noted that not all the Solutions will be used everywhere; people will choose to use those that are most relevant to their own problems. In addition, the Solutions need to be adapted to be useful for addressing local needs and situations. Therefore, although they may be useful for raising policy makers' awareness, additional information and guidance will be required to help policy makers turn that knowledge into action.

Respondents made a distinction between *generating awareness* about patient safety issues and *supporting implementation* of safety improvements. It was felt that the Solutions have served better for raising awareness, and that the other WHO patient safety initiatives (e.g., Challenges, High 5s) have been more focused on and effective for supporting implementation. In fact, the safety issues addressed in the other initiatives are among those that the Solutions have made

visible to users. This distinction was highlighted by one respondent's observation that just producing the Solutions is not sufficient; they need to be seen as a starting point in an ongoing initiative that continues to push for action toward improvement and sustainable culture change.

Several respondents noted that some countries feel overwhelmed by all of the WHO patient safety initiatives, and they do not know how they fit together to support patient safety improvement efforts by governments and providers. It was suggested that WHO further define and communicate the full scope of the Alliance for Patient Safety, its vision for each product within the package, and how the Solutions fits into it. By more clearly packaging the Solutions together with its other patient safety initiatives, WHO could create a more comprehensive resource for end users. One person specifically suggested that the Solutions be used as a component of a larger WHO knowledge management library, which would serve as an information resource on information and tools to support the patient safety work being carried out by countries and users within them.

The following specific issues were identified in the interviews regarding the concept of the Patient Safety Solutions:

- The current Patient Safety Solutions are useful, but WHO should reassess priorities periodically in future work on the Solutions.
- A need was identified for a policy brief that is less technical than the Solutions.
- As WHO has focused work on the Challenges and High 5s, the other issues covered by the Solutions have become forgotten.
- Some concern was expressed that there may be inconsistencies in the contents of the different WHO patient safety products, including the Solutions.

Intended Audiences. In general, the respondents perceived that the intended audiences for the Patient Safety Solutions were the policy makers in the WHO member states, including ministries of health, other governmental units, and professional associations. Several of them specifically noted that such support of policy makers was consistent with the WHO mandate to support its member states, such that WHO tends to focus its attention at the governmental level, rather than institutional level. It was commented that, with this strategy, it has been up to the countries to take the next steps to disseminate the Solutions to providers and health care organizations within them.

There was a prevailing sentiment among those interviewed that other stakeholder groups also should be target audiences, including professional associations, medical schools, hospitals, other providers, and patient populations. Some felt strongly that the real targets for the information in the Solutions should be those at the point of care delivery. Indeed, several commented that during the development of the Solutions, there was quite a bit of discussion about who the audiences should be. It was decided to focus on governments as the primary target, while providing knowledge and tools that also could be used by front-line health personnel.

In particular, several respondents saw the need for the voice of patient advocacy as a target audience and a partner in facilitating change. Because patient organizations and advocacy organizations were not targeted, they probably do not have the patient safety knowledge that they should have, which they could use to encourage providers to act. As part of the Solutions, they felt it would be important to provide guidance on how patients could help the process.

It was noted that the reality in the field is complex, with at least two basic layers of activity—decision making and implementation—involved in stimulating patient safety improvement actions, which need to be linked. Some questioned whether the ministers of health were the correct audience because there is such fast turnover in those positions that those in office may not be familiar with what is happening in the field. In addition, ministries in developing countries often are powerful in only a small slice of the system. It was noted further that the WHO offices are not linked into the management process for health care systems.

There was some consensus that a strategy is needed that can reach the providers and patients, working with and through the connections at the policy level, with recognition of their limitations. Included in this strategy should be mechanisms for WHO regional and country offices communicate and work with the countries. It was suggested that WHO start by working with the governments and subsequently move through to the professional societies, working with different levels of government and professional associations to reach them. It also was noted that an updated strategy for a second round of Solutions now addresses four target audiences—the ministries of health, health professionals, provider organizations, and patient and families—and the new Solutions will provide an implementation guide for each audience.

Respondents noted that expanded efforts at dissemination will be required to get the Solutions to the front line (health care workers, nurses, doctors). Currently, providers are more aware of the WHO Challenges, because WHO has asked them to work on the Challenges, where it has not emphasized the Solutions at that level. When dealing with providers, WHO also needs to take into account the widespread problems with infrastructure, particularly in developing countries, that constrain how much progress can be made in patient safety improvements. This would require adaptation of implementation strategies to the realities "on the ground".

A change in target audiences would have implications for the design of the Patient Safety Solution products, including implementation guidance for different audiences and other possible revisions for clarity to each group. It also was noted that the current Solutions are focused on hospital issues, and that need more attention to primary care is needed. This too would involve new products because, even if the safety issues are the same, for example, hand hygiene, the interventions in primary care will differ from those in the hospital setting.

Value of the Product to Users

Question: How **valuable** are the Aide memoirs in terms of the product?

This question addresses how well the Solutions products match the needs of the WHO member countries. This assessment requires examination of what those needs are, who the target audiences of the Solutions are, the process through which the Solutions products were developed, and the effectiveness of the Solutions products in addressing the needs and those audiences.

Needs and Priorities of Countries

Survey Results

The stakeholder survey included a question regarding the importance of patient safety, in general, for the countries in which the respondents lived, as well as two questions that asked them to identify the top five patient safety issues in their countries. As shown in Table 3.3, some

respondents reported that patient safety was a high priority in their countries, with 78.0% reporting it was a moderately or very high priority. However, 18.7% reported that patient safety was only somewhat of a priority, and another 2.0% said it was not at all a priority. The priorities varied by WHO region, with stakeholders in the European and Western Pacific regions giving patient safety the highest priorities. These differences across regions were statistically significant.

Table 3.3 Level of Priority for Patient Safety in Respondents' Countries, by WHO Region

	Total	AF	EM	EUR	PAHO	SEA	WP
Number respondents	881	29	83	258	322	52	137
Distributions by Priority Level							
Not at all	2.0	6.9	7.2	0.4	1.6	5.8	0.7
Somewhat	18.7	27.6	28.9	16.3	18.3	40.4	8.0
Moderately high	27.5	37.9	26.5	33.0	22.1	28.9	27.7
Very high	50.5	24.1	32.5	49.6	57.8	23.1	62.0
Don't know	1.3	3.5	4.8	0.8	0.3	1.9	1.5
Percentage reporting moderately or very high priority	78.0	62.0	59.0	82.6	79.9	52.0	89.7

The specific clinical-care patient safety issues that survey respondents identified as the top five issues in their countries are displayed in Figure 3.2. Three groupings of priorities emerged in these results. The two issues of health-care associated infections and medication errors were most frequently identified in the top five priorities. A second group or priorities consisted of surgical and anesthesia errors, patient fall injuries, misdiagnosis, pressure ulcers, and medical device events. The remaining issues fell into a third group of lower priority issues.

The issues that were most frequently included in stakeholders' top five clinical-care issues overall, also tended to be among the highest priorities across regions, as shown in Table 3.4. This table shows, for each WHO region, only the top five clinical-care patient safety issues identified by stakeholders from each region, giving the percentage that identified each issue. Those issues with no percentages reported were not among the top five for a region.

The only clinical care issues that were consistently reported in the top five for all six regions were health-care associate infections and medication errors. The remaining three of the top five issues varied across regions, with only the stakeholders in the Western Pacific region reporting all of the same issues that were identified overall. Stakeholders in the African and South East Asia regions identified issues that differed most from the overall priorities, but were shared by the two regions. These were misdiagnosis, which was among the overall top five, as well as unsafe practices for childbirth and counterfeit drug problems, which fell farther down the overall priority list.

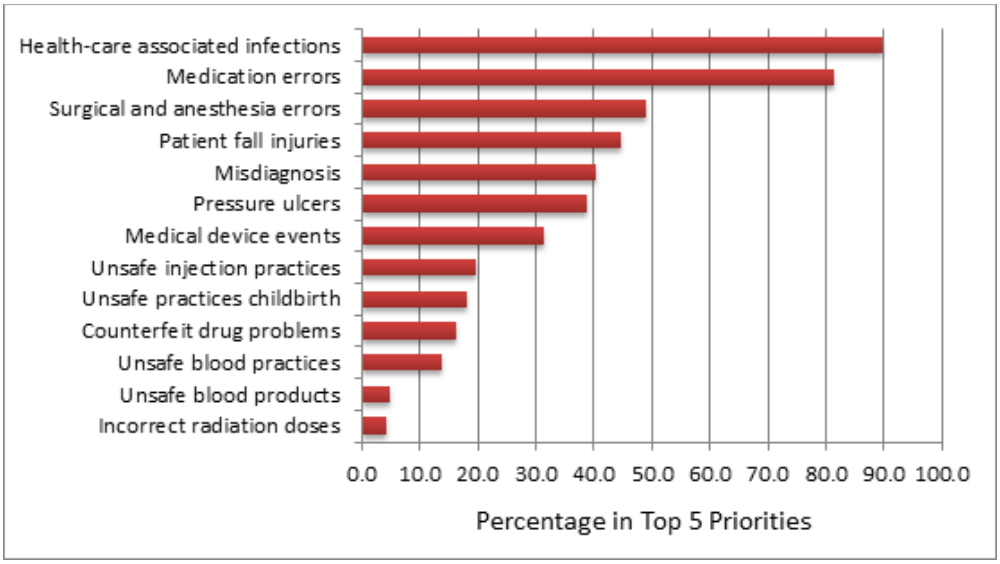

Figure 3.2 Clinical Care Issues Identified by Survey Respondents As One of Their Country's Five Top Patient Safety Priorities (N=881)

Table 3.4 Top Five Clinical Care Safety Issues in Stakeholders' Countries, by WHO Region

	AF	EM	EUR	PAHO	SEA	WP
Number of respondents	29	83	258	322	52	137
Health-care associated infections	**82.8**	**88.0**	**92.6**	**88.8**	**82.7**	**91.2**
Medication errors	**69.0**	**73.5**	**83.3**	**80.8**	**76.9**	**88.3**
Surgical and anesthesia errors		**51.8**	**48.1**	**50.9**		**53.3**
Patient fall injuries			**43.4**	**56.5**		**53.7**
Misdiagnosis	**44.8**	**51.8**			**46.2**	**43.8**
Pressure ulcers			**44.2**	**45.3**		
Medical device events						
Unsafe injection practices						
Unsafe practices childbirth	**51.7**	**33.7**			**38.5**	
Counterfeit drug problems	**44.8**				**51.9**	
Unsafe blood practices						
Unsafe blood products						
Incorrect radiation doses						

The specific system-process patient safety issues that stakeholders identified as the top five issues in their countries are displayed in Figure 3.3. The issue of poor communication and coordination was identified clearly as the most important issue, followed by poor safety climate and worker stress and fatigue. The issues with the lowest priority were poor test follow-up procedures and unsafe care for the frail and elderly.

The issues most frequently included in stakeholders' overall top five system-process issues also tended to be among the highest priorities across the regions, as shown in Table 3.5. The main difference among regions was the identification of organizational latent failures as an issue by the African, European, and Western Pacific regions, which was not one of the overall top five issues.

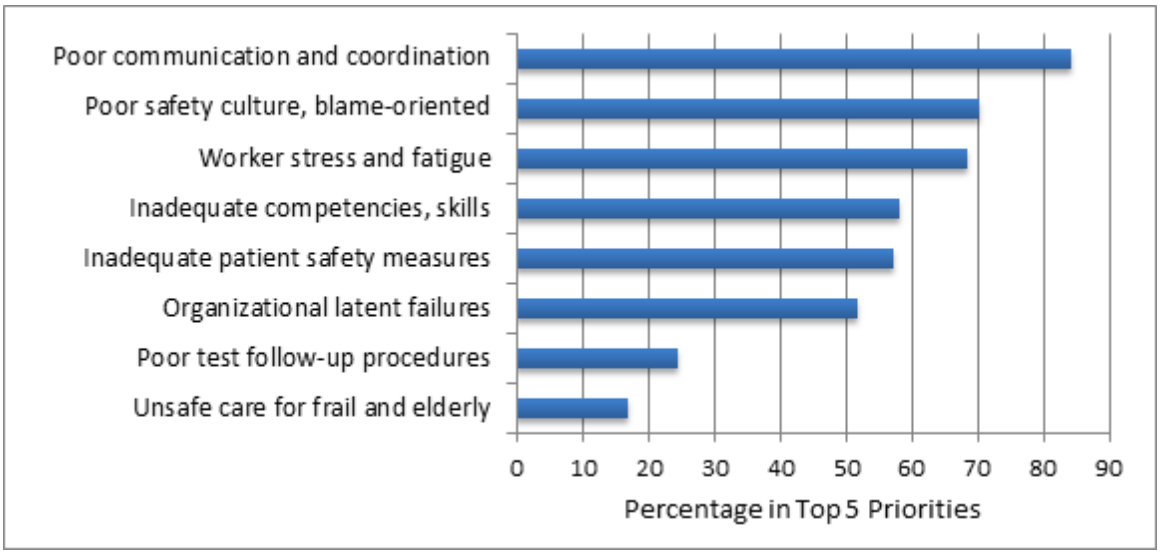

Figure 3.3 System Process Issues Identified by Survey Respondents As One of Their Country's Five Top Patient Safety Priorities (N=881)

Table 3.5 Top Five System Process Safety Issues in Respondents' Countries, by WHO Region

	AF	EM	EUR	PAHO	SEA	WP
Number of respondents	29	83	258	322	52	137
Poor communication and coordination	**75.9**	**81.9**	**80.6**	**85.4**	**82.7**	**92.0**
Poor safety culture, blame-oriented	**75.9**	**81.9**	**71.2**	**66.5**	**76.9**	**66.4**
Worker stress and fatigue		**66.3**	**67.4**	**72.1**	**55.8**	**71.6**
Inadequate competencies, skills	**86.2**	**67.5**		**56.2**	**73.1**	**64.2**
Inadequate patient safety measures	**69.0**	**71.1**	**52.7**	**54.4**	**73.1**	**55.5**
Organizational latent failures	**55.2**		**58.1**			**55.5**
Poor test follow-up procedures						
Unsafe care for frail and elderly						

Interview Results on Countries' Patient Safety Priorities

There was general consensus among the interview respondents that the patient safety needs of countries vary, but that some needs are shared across many countries. Not surprisingly, it was felt that economic status was an important factor in segmenting countries based on need, with the safety needs of developing countries tending to differ from those of more developed countries.

There also was a feeling that the patient safety challenges were more severe in developing countries than in developed countries. Some respondents felt that developed countries are now delving into the second and third tier issues, which are more focused on specific issues (e.g., medication reconciliation, maybe teamwork), whereas developing countries are addressing first-priority, basic safety needs related to having a basically sound health care system (e.g., hand hygiene, reporting, surgery checklist).

Most respondents could identify some needs for the countries in which they resided and worked, although they were less able to speculate about the needs of other countries. Some respondents suggested that many countries, both developed and developing, are increasingly viewing patient safety as an important priority. As more countries move forward on addressing their issues, the experiences of countries that already have pursued patient safety actively could be shared to support their improvement efforts.

Respondents in developing countries highlighted that infrastructure issues (such as clean water, biological waste disposal) are important factors that both affect patient safety in their health-care systems and constrain progress in improving safety. They reported that leaders in developing countries may say they have policies and guidelines, but it is often more difficult to translate that policy into action on the front-line. In addition, where basic health care needs are not being met, patient safety becomes a second-tier issue. In some countries, inequality in access and quality (such as across private and public systems) also weaken the emphasis placed on patient safety and specific safety issues.

Several respondents offered specific examples of infrastructure issues, in several tiers. The first tier is management and administration, where many people are admitted to the hospital, but they do not know why they are there and many of them die. The next tier is procurement of basic resources, in which unavailability of needed equipment and consumable supplies leads to, for example, failure in getting an emergency patient to the hospital in time, or performance of surgery by physicians and health care workers with no gloves or faulty suture material. The third tier is competencies of clinical staff, with many of them not adequately trained to do the job and mentoring for inexperienced people is not available. Finally, all of these issues are linked to inadequate capacity of organizational management, in terms of both resources and skills of management personnel, including poor maintenance of physical facilities.

In countries with infrastructure issues, respondents suggested that patient safety needs should not be approached as specific risks to mitigate, but as an integral element of the fabric of care delivery, to be addressed along with other issues as part of system strengthening. For example, hand hygiene is part of the larger issue of hygiene, cleanliness, and clean water supply; and surgery checklists fit into the larger quality an capability of surgical facilities. If WHO used this emphasis on safety as part of system strengthening, it could enhance attention to safety issues.

According to many of the respondents, patient safety is a relatively new concept to many countries. It was noted, however, that countries are now becoming more aware of the issues and are measuring the amount of damage to patients in their countries. They are finding mortality results similar to those reported in the original Harvard study that stimulated the United States to take on patient safety as a priority issue.

The following specific patient safety issues and needs were identified in the interviews:

- AIDS, injection safety, infections are priorities for many African countries
- Medication reconciliation is not a high priority for many developing countries.

- Russian-speaking countries have different needs from western European countries, due to weaker infrastructure and mechanisms for actions, and effects of their cultural and political environments.
- Health-care associated infections, injection devices, and infant mortality are big issues for developing countries.
- Issues with procedures have been identified in Mexico, with need for more supervision and better teamwork development.
- Difficulty in implementing improvements in hand washing in many countries. Some in developed countries do not accept it because they view it as a developing world issue. Some resistance to hand hygiene by Asians because of dislike of washing hands; better to push hand washing in the context of managing infections.

Responsiveness of the Solutions to Users' Priorities

This assessment examines users' assessments of how responsive the Solutions products are to their countries' patient safety needs, as well as their views about who are (or should be) the target audiences for the Solutions. The first information source on this topic is the Field Review of the draft Patient Safety Solutions conducted by the Collaborating Centre in 2007 (see details below in the discussion of the development process). Responses by participants regarding the relevancy of each Solution to their countries are summarized in Table 3.6, which presents the percentages of respondents who gave the highest rating on relevancy for each Solution. Results are compared across developing, transitional, and developed countries.

Table 3.6 Percentages of Field Review Respondents Who Strongly Agreed that the Solution Topic Is Relevant to Health Care Services in Their Country

	Percentage Who Strongly Agreed		
Patient Safety Solution	Developing	Transitional	Developed
Look/Sound-Alike Medication Names	75%	69%	71%
Patient Identification	57	78	82
Communication in Patient Handovers	62	62	69
Correct Procedure at Correct Body Site	65	62	80
Control Concentrated Electrol Solutions	53	80	68
Medication Accuracy at Care Transitions	70	80	75
Avoiding Catheter and Tubing Misconnect	36	57	62
Single Use of Injection Devices	62	100	49
Improved Hand Hygiene for Infection	77	83	82

Source: WHO Collaborating Centre, 2007 Patient Safety Solutions Field Review Results and Proposed Revised Solutions, 2007

These responses suggest that the nine Solutions may be slightly more relevant to developed countries than developing countries. However, with only two exceptions, large percentages of respondents (>50%) strongly agreed that every Solution was very relevant to their country. In particular, large percentages in all three categories of countries deemed the Solutions for medication reconciliation and hand hygiene to be relevant. The two exceptions were for avoiding catheter and tubing misconnection (36% for developing countries) and single use of injection devices (49% in developed countries).

The largest contrasts found between developing and developed countries were for concentrated electrolyte solutions, catheter tubing misconnections, wrong site surgery, and patient identification, all of which were more relevant for *developed* countries. On the other hand, needle re-use and injection safety was more relevant for *developing* countries.

Survey Results

The respondents to the stakeholder survey in 2010 had views similar to those of the field review respondents regarding the relevancy of the nine Patient Safety Solutions, as shown in Figure 3.4. Almost 80% of them rated improved hand hygiene for infection as extremely relevant to their countries priority issues, and large percentages of them also rated patient identification and communication in patient handovers as extremely relevant. On the other hand, fewer than 50% of the stakeholders identified control concentrated electrolyte solutions or avoiding catheter and tubing misconnects as extremely relevant.

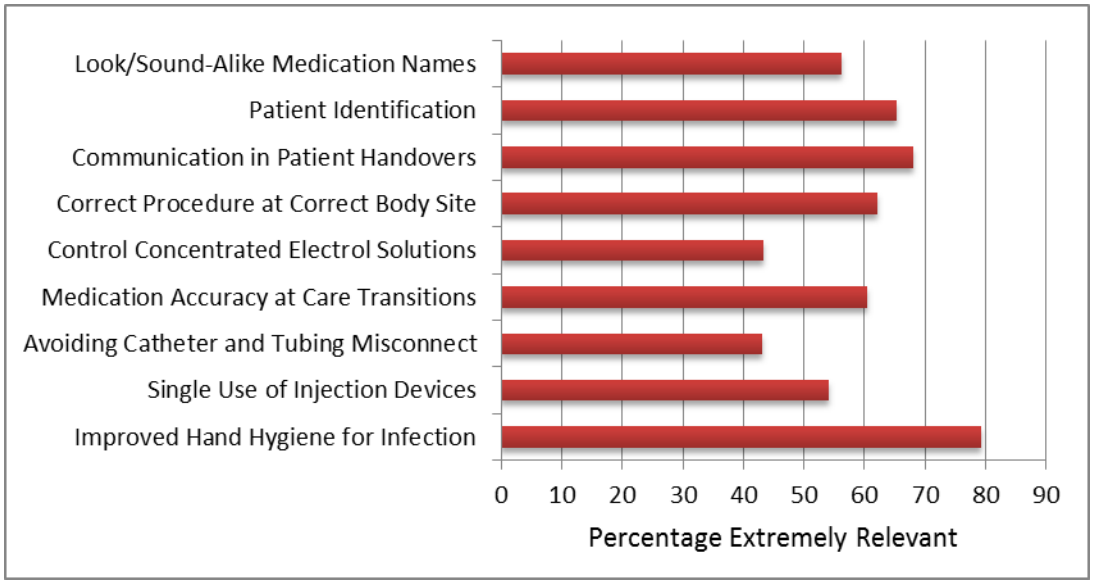

Figure 3.4 Patient Safety Solutions Rated by Survey Respondents As Extremely Relevant to Their Countries Priorities (N=826)

Although stakeholders' assessment of the relevancy of the Patient Safety Solutions was consistent across regions for most of the Solutions, as shown in Table 3.7, there were statistically significant differences in relevancy for four of the Solutions. These were look-alike, sound-alike medication names, communication in patient handovers, medication accuracy at care transitions, and single use injection devices.

Survey respondents also were asked whether additional information sources about patient safety were available to them, in addition to the Patient Safety Solutions. Their responses, shown in Table 3.8, indicate that 78.2% of them had access to other information sources. Although this may seem substantial, it also suggests that more than 20% of them did not. Further, the responses varied regionally, with only 64.8% of those in the Eastern Mediterranean region and 69.6% of those in the South East Asian region saying they had access to additional information.

Table 3.7 Patient Safety Solutions Rated by Survey Respondents As Extremely Relevant to Their Countries Priorities, by Region

	AF	EM	EUR	PAHO	SEA	WP
Number of respondents	26	76	238	309	47	130
Look/Sound-Alike Medication Names*	46.2	56.7	48.7	61.5	46.8	63.1
Patient Identification	61.5	65.8	63.0	65.7	57.5	71.5
Communication in Patient Handovers *	73.1	65.8	62.2	69.6	57.5	79.2
Correct Procedure at Correct Body Site	57.7	57.9	56.3	65.4	51.1	72.3
Control Concentrated Electrol Solutions	42.3	47.4	43.7	40.8	38.3	48.5
Medication Accuracy at Care Transitions*	50.0	59.2	55.5	62.8	51.1	70.8
Avoiding Catheter and Tubing Misconnect	50.0	35.5	46.6	43.4	36.2	41.5
Single Use of Injection Devices *	61.5	51.3	51.3	54.4	57.5	58.5
Improved Hand Hygiene for Infection	76.9	73.7	77.3	79.6	83.0	84.6

* Differences across regions are statistically significant ($p < 0.05$)

Table 3.8 Availability of Additional Information on Patient Safety, Reported by Survey Respondents, by Region

Region	Number Responding	Percentage Who Said Yes
Total	809	78.2
By region:		
African	25	72.0
Eastern Mediterranean	74	64.8
European	234	81.2
Pan American	304	81.9
South East Asian	46	69.6
Western Pacific	126	76.2

Interview Results on Responsiveness of the Solutions to Needs

The Collaborating Centre worked with the International Steering Committee in the selection of the Solution topics, using a consensus process methodology (see below for details about the process). One respondent who participated in the selection process commented that before the process took place, there had been a predisposition that developing countries would have different needs in different areas, but the relevance of this set of Solutions to both developed and developing countries became self-evident for everyone involved. Another participant indicated that if the process had been repeated, it was unlikely the priorities of the Steering Committee would change much. There was clear agreement on most of the topics selected, and only a few of the topics were more important to some Committee members than others. Some topics, such as hepatitis and HIV, were removed from the list because they were serious problems for only a part of the world.

Interview respondents who did not participate in the selection process also tended to view the Solutions as responsive to the world needs, although a few said they did not have enough

information to make that judgment. The following specific observations, questions, and issues were raised for consideration by WHO:

- The Solutions are focused on hospital care, not primary care, which also is important.
- HAIs a big priority but not addressed by aide memoires thoroughly. Go into various alternatives for reducing infections. Invasive devices usage.
- Needle injections is a larger issue for developing countries than for developed countries.
- The Solutions fit well with the European perspective; even with important differences between eastern and western Europe, these nine Solutions are relevant for both areas.
- It has been somewhat challenging for the African region to prioritize safety issues because of differences in needs across countries.
- A criticism heard in SE Asia was that the Solutions were common sense Western solutions, but did not resonate with needs of other countries.
- One respondent identified specific relevancy of the Solutions to SE Asia needs:
    - Very relevant – patient ID, medication names, patient hand-overs, hand hygiene.
    - Moderately relevant – surgery at correct body site, transitions in care, tubing mis-connections, injection devices.
    - Less relevant – electrolyte solutions.
- It was suggested that the Solutions be tailored to reflect different countries' needs.
- There may be too many Solutions, which may have overwhelmed recipients about what to do with them. It might be better to drill down in fewer Solutions and put more content and work into each one.

Some respondents saw possible conflicts between the Solutions work and other WHO patient safety projects. Since establishment of the Patient Safety Solutions, the High 5s project has focused on implementation of five of the Solutions, to establish global standards for implementing some of the actions addressed by the Solutions help developing countries. When faced with several WHO initiatives, however, a country trying to establish a program needs to have clear guidance on what to do. It was noted that the member states want to know how the various WHO initiatives fit together; the perception is that WHO programs are vertically siloed, with little coordination or interaction among them.

The Patient Safety Solutions Development Process

The first set of nine Patient Safety Solutions Aides memoir were developed by the Collaborating Centre with the guidance of the International Steering Committee. The process was designed and executed as a collaborative effort, as reflected in the collaborative network structure created to perform the work (see Section 1 for description of the network).

As a first step in the development process, the following definition of a Patient Safety Solution was established. A Patient Safety Solution is:

> "…any system design or intervention that has demonstrated the ability to prevent or mitigate patient harm stemming from the processes of health care."

To guide the selection process, it was established that the initial Solutions were to be applicable to a wide variety of countries and health care settings, be evidence-based, and be presented in a standard format. Each individual Solution was to present the problem, provide a series of recommendations, and describe the strength of evidence supporting the Solution. It then was to identify potential barriers to adoption, risks of unintended consequences created by the Solution, patient and family roles in the Solution. Finally, it would list references and other resources.

The Collaborating Centre developed an initial set of 12 potential Solutions for consideration by the International Steering Committee, which was subsequently narrowed to nine (see Section 1 for the list of Solutions). Further revision of the selected Solutions was undertaken with the active involvement of Steering Committee members. The draft solutions were also vetted with various expert panels and advisory groups in the collaborative network.

According to the Collaborating Centre staff, they found reasonably good consensus among participants on the priorities for patient safety challenges, and therefore, for the Solutions that were selected. At the same time, some differences arose on approaches to some of the issues, often reflecting cultural differences that were more specific to country than regional. One exception to priorities identified was for single use of injection devices, which some Asian country representatives said was not a problem.

The nine draft Solutions then underwent an international Field Review, using an electronic survey that could be accessed online on both the Centre and WHO websites. The field review was conducted from November 2006 through February 2007. Revisions to the Solutions products were made in response to the field review feedback. The final set of the nine Solutions was approved by the International Steering Committee at its April 2007 meeting.

The Field Review for the Patient Safety Solutions

The goal of the Field Review was to obtain widespread feedback and practitioners' perspectives on the Solutions regarding feasibility, culturally appropriate, and changes needed to adapt the Solutions locally. Suggestions also were sought from the field regarding other patient safety issues that should be addressed in the future. The audiences for this review included leading patient safety entities, accrediting bodies, Ministries of Health, international health professional associations, and WHO and Joint Commission International network of contacts.

Field review participants were recruited from all resources of the collaborative network and WHO, including asking members of the steering committee and advisory councils to develop lists of individuals. Invitations also were sent to hospitals through the JCI information base, as well as its traditional sources, and the survey was advertised on its website.

According to the Field Review report, a total of 868 individuals accessed the field review survey, with representation from countries in all six WHO regions. The majority of respondents (53.9%) worked for a hospital or other health care delivery organization. Respondents were well distributed across types of professions. The majority of respondents (71.5%) represented urban location or geographical areas. Seventy-six (76%) percent of those responding represented developed countries, followed by developing countries (17.2%) and transitional countries (6.5%).

Field review respondents could choose the Solutions for which they wanted to provide comments. As shown in Table 3.9, the percentages of respondents who offered comments on varied widely by Solution.

For each Solution on which they commented, the Field Review participants were asked to score the solution on each of the following seven dimensions, with respect to their organization and their country:

- Relevancy of Solution topic to health care services
- Potential for information in the Solution to resolve patient safety issues
- Barriers to adopting the Solution
- Appropriateness of terms and language in the Solution
- Amendments needed (language, specifications, content) to adopt Solution
- Any unintended consequences if the Solution was adopted

Table 3.9 Percentages of Field Review Respondents Providing Comments on Each Patient Safety Solution

Patient Safety Solution	Percentage of Respondents Who Commented
Concentrated Electrolyte Solutions	1.9%
Catheter tubing misconnections	2.6
Needle re-use & injection safety	3.8
Wrong Site Surgery	4.2
Hand off Communication	5.6
Medication Reconciliation	6.7
Patient Identification	10.9
Hand Hygiene	15.7
Look-alike, Sound-Alike Medications	23.2

Source: WHO Collaborating Centre, 2007 Patient Safety Solutions Field Review Results and Proposed Revised Solutions, 2007

The report on the Field Review contains the results for all of these dimensions. This resource offered information that is useful not only to guide modifications to the original nine Solutions but also for future work on additional Solutions or other WHO patient safety priorities.

Interview Results on Development of the Solutions

Perspectives on the Development Process. As described above, the Collaborating Centre worked with the International Steering Committee to select the first set of Patient Safety Solutions, using a consensus process methodology. According to participants in that process, this process took place over a two-year period, culminating in identification of nine Solutions to be included in the first set. For the formal selection step, over 40 Steering Committee members gathered together in a brainstorming session. A large number of concerns were raised in the discussion, sharing them from each country's perspective, and the concerns were distilled into grid of choices. Following the discussion, all the candidate issues were posted on a wall and participants were asked to vote for the six issues they felt were most important by placing sticky dots on the wall by those issues. Respondents noted that, following the selection process, the final candidate Solutions were further tested in a field review that sought feedback from people across the world on the priority issues they had identified.

In general, respondents who participated in that process felt that the process was effective and that consensus on the nine Solutions emerged quickly. One stakeholder group that was not

considered strongly in the selection process, however, was the patient population. Some respondents felt that better information on patient priorities could have enriched the selection process, through conduct of a consumer survey to obtain feedback from a large number of individuals across different regions.

To some participants, the selection process felt quite subjective because it did not use a scientific, systematic process and prioritization grid with selection criteria. They felt that because selection was not systematic enough, bias might have been introduced based on who was on the committee and what was the "issue of the day." Some felt that the Committee needed to defend its selection based on WHO core principle of equity across countries, and this process could not support them in doing that.

On the other hand, other participants were comfortable with the process, feeling that the period of discussion (before voting) allowed people to hear the views of others, which influenced how they voted on the final set of candidate issues. They felt that the process was well considered and designed, and that it achieved consensus on the issues to be addressed by the Solutions.

Some respondents expressed concern that the WHO staff who had overseen the Solutions development work in 2006 did not provide consistent guidance as the selection process proceeded. The WHO staff were engaged in the selection process, but after completion of that process and the field review, they wanted to change the contents.

Stakeholder Involvement in Development. Interview respondents identified the three mechanisms that provided for stakeholder involvement in the Solutions selection process, which created an international dialogue about what is known about patient safety issues and what the priorities should be. The first—and primary mechanism—was the International Steering Committee, which had a membership of more than 40 individuals representing countries around the world. The second was the three Regional Advisory Councils—the Asia-Pacific, Middle East and North Africa Council, and Europe Councils. The last was the field review through which people across the world were asked to complete a survey regarding the priorities and contents of the draft Solution documents.

During the Solutions selection process, the Collaborating Centre consulted with the three Advisory Councils on the suggested priority issues to be addressed, in a secondary phase after decisions were made by the Steering Committee. The final draft set of issues identified by the Steering Committee was shared with them for comments and suggestions. The Councils met every 3 to 4 months during Solutions development, with full agendas for each meeting. Respondents indicated that, although Council members often had good comments from various perspectives, they were not closely involved in actual development of the Solutions topics. In addition, some reported that Council members were not in full agreement with everything selected for the Solutions, but they did not have sufficient time at their meetings for in-depth discussions of the issues and choices.

According to respondents, the Advisory Councils were asked for advice on the feasibility of implementation as well as possible economic and political barriers to anticipate, and they their feedback also was sought on the selection of topics for the Solutions. The final Solutions products were brought to the Councils for support in dissemination of the products.

Interview respondents commented on several specific issues regarding stakeholder involvement in the Solutions selection and development process:

- For regions not represented by Advisory Councils, efforts were made to invite individuals from those regions to participate in Steering Committee meetings and other engagements.
- There was inadequate demographic diversity among the stakeholders involved in the process, and to the extent that some groups are not represented, the products generated could be biased toward the needs and preferences of those who were involved.
- It is important to engage stakeholders well enough to be sure that the work done is responsive to the needs of whatever target audiences are identified for the Solutions or other patient safety work?
- Patients need to be engaged more as the Solutions and other WHO patient safety products are developed, embracing this untapped resource and making them partners in driving change. This was not done proactively in the development of the nine Solutions, but WHO patient safety is appreciating that concept now.
- In the next phase of development, one new Solution should address consumer education and information regarding disclosure and learning around adverse events, with the goal of making the general population better informed about patient safety issues and what they can do to help correct them.
- WHO regional offices were not brought into the Solutions development process until a couple of years after the work started; they became more engaged at that time.
- A suggestion had been made that the Solutions be piloted in several countries, to test implementation on a small scale and evaluate what is required to make them most usable.

Assessment of the Evidence Base

Question: What is the **quality or scientific integrity** of the developed Aide memoirs solutions in terms of:

This question addresses the strength of the scientific evidence supporting each of the Solutions, including the existence of published studies that provide evidence as well as the extent to which such evidence was considered in the process of selecting the Solutions topics and presented in the written products.

Survey Results

The subset of survey respondents who were aware of the Solutions were asked about the scientific integrity of the Solutions. The survey results suggest that the respondents were satisfied with the strength of evidence supporting the Solutions. As shown in Table 3.10,. very small percentages of them had no or little confidence in the scientific integrity of the Solutions. However, substantial percentages of them (10.8% to 16.6%) reported "don't know" for all of the Solutions except for improved hand hygiene for infection, for which only 8.9% reported "don't know." As a result, only 80.8% (overall) were moderately or extremely confident about the scientific integrity; these percentages did not vary much across the Solutions.

Table 3.10 Confidence of Survey Respondents in the Scientific Integrity of the Patient Safety Solutions

Patient Safety Solutions (N = 452)	:Percentage by Amount of Confidence		
	Not at All, or Slightly	Moderately or Extremely	Don't Know
Full set of Solutions, overall	5.1	80.8	14.2
Look/Sound-Alike Medication Names	8.0	78.8	13.3
Patient Identification	6.4	82.7	10.8
Communication in Patient Handovers	6.9	81.2	12.0
Correct Procedure at Correct Body Site	5.1	83.2	11.7
Control Concentrated Electrol Solutions	6.2	77.2	16.6
Medication Accuracy at Care Transitions	5.8	79.6	14.6
Avoiding Catheter and Tubing Misconnect	1.8	77.0	16.2
Single Use of Injection Devices	5.3	81.4	13.3
Improved Hand Hygiene for Infection	5.5	85.6	8.9

Interview Results on the Evidence Base for the Solutions

The views of interview respondents about the strength of evidence for the Solutions were mixed. Some were comfortable that there was a reasonable evidence base for the nine Solutions at the time they were identified, and that there would not be a major challenge for using them. Others felt that many of the nine Solutions were grounded in common sense, and that therefore it was not necessary to work terribly hard to research evidence for them. According to Steering Committee participants, concerns about inadequate evidence had not been expressed by the Committee members as the Solutions were being developed.

An alternative viewpoint distinguished between the evidence that was available in 2006 versus the larger research base that has since become available. Several respondents were satisfied with the evidence applied at that time, but felt there was a need now to update it using more recent research results.

Others had more negative views, expressing concern that the Solutions are not really evidence–based, and that the evidence quoted was either old (as much as 20-30 years old) or superseded by new evidence in peer-review journals. Some respondents reported they were not satisfied with the research presented to support the Solutions, feeling that a more systematic review should have been done to ensure that all the relevant research had been found. They wanted citations to more recently published papers, including full references of journal and date of publication. They also felt that the evidence base felt too American, which could lead people in other countries to tend to discount it. They felt that efforts should be made to obtain evidence from a range of countries to make the need for action more compelling for users.

One respondent indicated that the WHO staff who handled this work after 2007 had raised the issue of the adequacy of the evidence more visibly after the first set of Solutions had been developed. This led to use of a more rigorous process to document and rate the evidence available for candidate issues, in a second round of Solutions development.

The respondents generally recognized the importance of performing a rigorous review of the scientific evidence, especially to support the educational focus of the Solutions, and of involving

people who work in each area to be sure a solid evidence base is laid. Even though many of the first Solutions may have been common sense, they still have to be defended, and the availability of stronger evidence supports that process. The ready availability of more scientific background also would be very helpful for advocating actions with countries. Several respondents, however, cited the difficulty of measuring the effects of many safety practices, with the result that many safety interventions do not yet have a strong evidence base.

The Patient Safety Solutions Written Products

Question: How effective and usable are the specific components of the Aide memoirs for users?

This question addresses the format and contents of the written products, as well as any issues regarding the need to adapt the documents in response to specific local needs.

Survey Results

The subset of survey respondents who had actually used the Solutions in their patient safety work were asked about the effectiveness of the components of the Solutions products. In general, they appeared to be satisfied with the usefulness of these products, with 82.7% of them reporting that they overall format and presentation was moderately to very useful. Responses varied, however, for the individual sections of the document. The sections identified as most useful were the statement of the problem (86.1% moderately to very useful) and strength of evidence (85.5% moderately to very useful).

Table 3.11 Usefulness of the Patient Safety Solutions Products to Survey Respondents

Patient Safety Solutions (N = 317)	:Percentage by Amount of Usefulness		
	Not at All, Slight	Moderate to Very	Don't Know
Overall format and presentation	6.9	82.7	10.4
Section of the Solution Document			
Statement of the problem	4.7	86.1	9.2
Associated issues	8.8	78.9	12.3
Suggested actions for Member States	12.6	74.1	13.3
Looking forward	8.2	79.8	12.0
Strength of evidence	4.7	85.5	9.8
Opportunities for patient and family involvement	13.9	74.8	11.4
Potential barriers	11.7	74.8	13.6
Risks of unintended consequences	8.2	76.3	15.5

The least useful sections were suggested actions for member states, opportunities for patient and family involvement, and potential barriers, all of which had higher percentage of respondents rating them as not at all or slightly useful. An issue that should be considered in interpreting these results is the relatively high percentages (9.2% to 15.5%) do marked "don't know."

Interview Results on the Written Products

Only a few respondents had comments during the interviews about the usability of the format and content of the Patient Safety Solutions. Most seemed to be satisfied with the balance

between brevity and information, which often is difficult to achieve. In particular, it was commented that the Solutions are very concise and easy to read and distribute. The following specific comments were offered about the written products:

- The written Solutions are not in a format that can be implemented easily by people at the hospital level. For this audience, more actionable information and instructions on how to carry out the suggested actions would be required.
- Focus guidance for actions on each of the specific target groups that would be using this information to implement changes.
- Consider adapting the written Solutions to the needs of each region, to make them more applicable to users in the region.
- A more attractive design for the products would be helpful, such as making a small booklet that professionals can put in their pockets.
- Review draft documents with health workers and other potential users to get feedback on what should be in the documents and how to make them useful and usable.
- Make the Solutions more relevant and workable for potential users, so they are convinced it will be worth the effort to implement changes.

A theme that emerges from these comments was expressed well by one of the respondents: "We need to know what is the purpose of the product—to teach (need to give more content information), or to instruct on actions (maybe already know content, then just give instructions). A clear choice between these functions can guide the emphasis for future Solutions products.

Highlights of Findings Regarding the Solutions Products

The concept of the Patient Safety Solutions appears to have been well accepted. Most stakeholders interviewed felt that its primary role was to generate awareness, and that it should be used in conjunction with other WHO patient safety products and tools. They sought further guidance from WHO regarding its vision for the Alliance for Patient Safety and how the Solutions fit into that larger vision and package.

Variations in local patient safety need and priorities were found across countries. Although some differences between developing and developed countries were reported, some issues were shared across many countries, which offered an opportunity for the Solutions to address issues of importance to a large number of them. Indeed, the topics selected for the first set of Solutions were generally accepted as being of high priority and broadly applicable across countries of differing developmental status. This assessment emerged in results of the Field Review of the 2007 Solutions as well as in the stakeholder interviews and survey.

Stakeholders generally perceived that the key audience that WHO had designated for the Solutions was policy makers at the national level of countries. They also tended to agree that this target was too narrow, and that the audiences should be expanded to include health care providers and patient populations, as other important stakeholders for patient safety. This view was supported by the survey results, in which three groups were identified as target audiences by larger percentages of respondents than were the ministries or departments of health.

A variety of opinions emerged regarding the process used to develop the Solutions, and the quality of scientific evidence supporting each Solution. Substantial input by stakeholders was sought at many points in the development process. Despite this participative approach, opinions ranged from satisfaction that the process was effective in reaching strong consensus on Solutions topics to concerns about a lack of scientific structure for the process. Similarly diverse opinions were expressed about the adequacy (or not) of the evidence base to support each Solution, which also emerged in the survey results. Several specific issues and suggestions were raised for consideration by WHO in future work on the Patient Safety Solutions.

4. Findings: Dissemination and Impacts of The Patient Safety Solutions Aides Memoir

On May 2, 2007, WHO launched the Patient Safety Solutions Aides memoir at a telephone and on-site press conference at the National Press Club in Washington, DC. Press releases on the Solutions were released, and a press kit for the media was provided.

In this section, evaluation results are presented regarding the effectiveness of the dissemination of the Patient Safety Solutions Aides memoir, with a focus on the impacts of the Solutions on patient safety activities and improvements in the WHO member states. Although a central goal of the Solutions is to achieve improvements in patient safety practices, several intermediate steps are required to achieve those impacts. These include ensuring the availability and accessibility of the Solutions products, broad dissemination of them, achieving awareness of the Solutions among target audiences, and supporting uptake and use of the Solutions in patient safety activities at the country and local levels.

Results are presented for each of these topics, drawing upon information from the stakeholder survey, individual interviews, and review of written materials and resources. Through this approach, the diverse perspectives of a diversity of stakeholders can be synthesized. It also allows the analysis to combine quantitative data from the survey with qualitative data from the individual interviews, to "tell a cohesive story" and to capture the dynamics of stakeholders' experiences with the Patient Safety Solutions.

Question: What **impact** have the patient safety solutions Aide memoirs had in terms of aiding Member States achieve the objectives of improving patient safety:

- Which solutions were taken up by Member States (developing, transitional, and developed)?
- What factors contributed to the extent of uptake of solutions (e.g., level of interest by states, variations in methods or amount of dissemination activity across regions or other geographic areas)?
- How were the solutions used by the States that used them? Within each State, who were the actual users?
- Were practical strategies and tactics able to be implemented?
- Is there any information on evaluation of the impact of using the solutions?
- What data are available on adoption of practices specified in the solutions?
- What barriers were encountered that constrained the adoption of solutions, from local, regional, and global perspectives?

Availability and Distribution of the Products

Placement of Patient Safety Solutions on Websites

Public websites have become key resources for enabling broad availability of products to potential users. In this case, both WHO and the Collaborating Centre have websites with sections dedicated to their patient safety activities and products, including the Patient Safety Solutions.

The WHO Website

The main page for the Patient Safety section of the WHO website includes information about the Patient Safety Solutions program, which is found by clicking on the Implementation Change menu in the left column of that page. However, the products themselves are not accessible for download via that page. Instead, they are located on the page that reports about the 2 May 2007 launch of the Patient Safety Solutions, along with language translations of the Solutions and the media information developed as part of the launch, which is accessed via the News and Events menu in the left column of the main Patient Safety page.

Because of the lack of direct links to the Solutions program and products, it takes three steps to get from the Implementing Change page to the set of Solutions products on the launch page under News and Events, and this path is not visible to website users. Because the launch was several years ago, it is extremely difficult to get to that page via News and Events. The only ways to do it are to navigate Implementing Change → Patient Safety Solutions → What are Patient Safety Solutions → launch event (link given at very bottom of the page).

The 2 May 2007 press release about the Solutions launch has a link entitled "The complete Patient Safety Solutions" but the destination page is missing. In addition, a summary of the press kit is posted on the Collaborating Centre's website, but the full press kit is no longer posted (the link from the press kit to the Solutions on the CC's website is broken).

The WHO Collaborating Centre Website

The Collaborating Centre has its own website for its WHO patient safety work, which was launched in March 2005. An online compendium of Patient Safety Practices resides on the website and provides links to safe practices, forms, tools, and other valuable information on other international patient safety websites. The compendium was launched in April 2006 and grew to include over 900 links. The site can be accessed from the Centre's home page, from the Joint Commission website home page, from the Joint Commission International website home page, and at www.jcipatientsafety.org/psp. The WHO website also has a link to the site.

According to the Collaborating Centre staff, this website was an important part of its communication about the Patient Safety Solutions. It is very easy to find the Solutions products on this website because the site's home page has a direct link to them. Due to limited resources, little work has been done to improve the website, but improvements are being planned.

Translations into Other Languages

The Collaborating Centre and WHO translated the Solutions into other languages. Chinese, German and Spanish translations of the Solutions were posted on the Centre's website in December 2007, and an Arabic translation was posted in March 2008. A press release in the week of May 19, 2008 announced the availability of these translations. Arabic, Chinese, French and German versions are also posted on the WHO website.

In searching the Centre's website, however, it was found that two separate pages have links to various translations, but the translations referenced are inconsistent. Its home page has links to Arabic, Chinese, Spanish and German translations, while a separate page on its website has links to Arabic, Chinese, French and German translations. These documents include all nine Solutions in one PDF file for each language translation, rather than in separate files.

Other translations have been done at the regional and local levels, but they are not official WHO translations or posted on the WHO or Collaborating Centre websites. According to the Collaborating Centre, the solutions have been, or are in the process of being translated into Chinese, Georgian, German, Hebrew, Italian, Portuguese, Arabic, Spanish, Russian and French.

Interview Results on Availability of the Solutions Products

Two aspects of the availability of the Patient Safety Solutions are considered: accessibility of the materials and relevant information on websites and through other avenues, and availability of the products in different languages. In general, respondents emphasized that access to the information is key to the dissemination process.

Accessibility of Solutions Materials. Some of the interview respondents reported that they had looked for the Solutions information on the WHO patient safety website and the Collaborating Centre website. They found that it was difficult to find the Solutions information, and also to find links from the WHO site to the Collaborating Centre site, and vice versa. In addition, one respondent was at a patient safety conference last October where WHO distributed a CD of WHO patient safety tools and resources 2010, and the Patient Safety Solutions file on the CD was blank.

Availability in Different Languages. There was strong support among the respondents for translating the Solutions documents into different languages, in particular the official WHO languages. Some languages they identified as important were Russian, Spanish, French, and Portuguese. Russian is needed because many countries in central and eastern Europe use Russian and English is not used widely there. French is needed because it is used in many African countries as well as France. Spanish and Portuguese are needed for Latin American countries as well as Spain and Portugal.

Respondents were aware of several translations of the Solutions done in individual countries, for example, Georgia, Denmark, and Israel. They felt that this process can and should continue as countries need translations in their home languages, but that it was important for WHO to make available a set of translations in languages used by large proportions of the world populations.

Some respondents noted the importance of producing good translations, specifically citing criticisms of the French and Spanish translations that had been made earlier. In particular, medical terms need to be addressed properly in each language. Translation issues for Spanish are good examples of the challenges faced in developing good translations. Not only are there substantial differences between Latin American and Iberian Spanish, but there are many differences in the versions used by different Latin American countries that need to be addressed in the translation process.

Legal issues related to translations also were raised. Some respondents inquired whether a country would run into legal and ownership issues if it produced a translation of the Solutions, and whether it could use the WHO logo on its translated version of the Solutions. This issue would require formal guidance from WHO Geneva to ensure the countries are managing the translations properly.

Dissemination Strategy and Implementation

The Collaborating Centre had the lead role in developing and carrying out a strategy for dissemination of the Patient Safety Solutions to the WHO member states. It developed a

dissemination plan, which it reviewed with the Steering Committee. The implementation of this strategy began when the availability of the new Patient Safety Solutions was announced at a press conference on May 2, 2007. According to the dissemination plan, the internet was targeted as a major vehicle for disseminating the new solutions. In addition, it was planned to distribute hard copies of the Solutions, as the budget permitted.

The components of the dissemination plan, and summaries of the extent to which each component was carried out, are presented in Table 4.1. All but a few of the planned dissemination activities were performed, resulting in fairly broad distribution of the Solutions materials and information to key stakeholder organizations and groups. One limitation appears to have been a delay in providing the materials to the WHO regional offices, in either electronic or paper format, so they might then distribute them to providers and health-related organizations within their regions.

The Collaborating Centre provided updates to the International Steering Committee on the dissemination activities. Among the activities were distribution of the Solutions at several key international meetings including the following:

- WHO World Assembly in May 2007
- National Patient Safety Foundation Congress in May 2007
- An International Conference on Patient Safety in Madrid in December 2007
- The Arab Health Conference in Dubai in January 2008.
- A meeting in Warsaw in 2008
- A Caucasian regional meeting in October 2008 in Tbilisi
- the annual meeting of the International Society for Quality in Health Care

In addition, the Solutions were published in a special edition of the *Joint Commission Journal on Quality and Patient Safety*, and they were featured in the Center's electronic newsletter, *Patient Safety Link*, one-by-one with associated resources. As of the end of June 2008, this "e-zine" had 9,928 subscribers.

The Collaborating Centre also reported that 7,000 hard-copy sets of the solutions were printed and distributed at health care conferences around the world (5,000 by WHO and 2,250 by the Collaborating Centre). With nine solutions in each set, this translates into 66,250 copies of solutions distributed. In addition, 2,000 electronic copies with the solutions were produced and distributed on CD-ROM.

Since the release of the solutions on May 2, 2007, the Collaborating Centre reported that the solutions posted on its website were accessed 256,790 times in the 8-month period between the release of the Solutions in May 2007 and December 2007 (Table 4.2). This equated to 32,099 times per month, or approximately 1,070 times per day. In the first five months of 2008, the solutions were accessed 155,987 times, or 31,610 times per month and 1,054 times per day. The monthly number of hits has remained fairly stable over time. A total 471,978 hits to the Solutions have occurred since they were launched. The Solutions receiving the greatest number of hits during the 18-month period were look-alike, sound-alike medications, communication during patient hand-overs, and performance of correct procedure at correct body site.

Table 4.1 Implementation of the Dissemination Plan for the Patient Safety Solutions

Planned Action	What Was Accomplished
Electronic distribution of the solutions:	
• Posting of the new Solutions on the WHO World Alliance for Patient Safety Website.	Done
• Posting of the Solutions on the Joint Commission International Center for Patient Safety website.	Done
• Distribution by news alert in the monthly newsletter of the World Alliance for Patient Safety	Done
• Distribution in the monthly newsletter of the International Center for Patient Safety.	Done
• Request that the core partners of the World Alliance for Patient Safety post link to the solutions on their websites.	Done
• Send the Solutions to the WHO Regional Offices for their websites .	Appears to not have been provided to some offices.
• Send the Solutions to the Joint Commission International Regional Offices.	Done, though some delays
• Send the Solutions to the electronic listserv of groups and individuals who were invited to participate in the field review.	Done
Distribution of hard copies of the solutions:	
• At the press conference on May 2 in Washington, D.C.	Done
• To WHO Regional Offices	Appears to not have been provided to some offices.
• To the WHO country offices and ministries of health of the 50+ countries that WHO has close contacts with	Done
• WHO HQ Collaborating Departments	Done
• To World Alliance core partners	Done
• At the World Health Assembly	Done
• At approximately ten World Alliance events in 2007	Done
Other Actions by the Collaborating Centre	
• Publish the Solutions in a special edition of the Joint Commission Journal on Quality and Safety.	Done
• Translate into the six official languages of the WHO: Arabic, Chinese, French, Russian, Spanish, and English.	Done but some withdrawn due to quality issues.
Dissemination by organizations on International Steering Committee:	
• Posting of links to Solutions on their websites	Not known
• Report on launch of the Solutions in their newsletters	Not known

Table 4.2 Reported Patient Safety Solutions Hits on the Collaborating Centre Website, May 2007-July 2008

Solution #	May –Dec 2007 (8 months)	Average hits per month 2007	Jan – July 2008 (7 months)	Average hits per month 2008	Total Hits (15 months)
1 Look-Alike, Sound-Alike Medication Names	31,910	3,989	27,493	3,928	59,403
2 Patient Identification	33,306	4,163	30,216	4,317	63,522
3 Communication During Patient Hand-Overs	36,195	4,524	28,302	4,043	64,497
4 Performance of Correct Procedure at Correct Body Site	16,906	2,113	9,020	1,289	25,926
5 Control of Concentrated Electrolyte Solutions	13,408	1,676	5,090	727	18,498
6 Assuring Medication Accuracy at Transitions in Care	18,905	2,363	13,182	1,883	32,087
7 Avoiding Catheter and Tubing Mis-Connections	8,430	1,054	4,201	600	12,631
8 Single Use of Injection Devices	5,704	713	4553	650	10,257
9 Improved Hand Hygiene to Prevent HAI	19,653	2,457	17,131	2,447	36,784
Preamble	9,323	1,165	5,420	774	14,743
Preamble and 9 Solutions*	57,347	7,168	27,213	3,888	84,560
Translations (8 months)					
Spanish*	3,959		25,115	3,588	29,074
Chinese*	874		5,250	750	6,124
German*	870		4,923	703	5,793
Arabic*	N/A	N/A	8,079	1,154	8,079
Total	256,790	32,099	215,188	30,741	471,978

* These documents contain a single PDF with the Preamble and the nine solutions. The Spanish, Chinese and German translations were posted in December 2007. The Arabic translation was posted in March 2008; Arabic total hits were for 5 months.

Source: WHO Collaborating Centre, Report on the Response to the 2007 Patient Safety Solutions

Survey Results on the Dissemination Process

The stakeholders in the field, as reported in the stakeholder survey, were aware of several methods used to disseminate the Patient Safety Solutions in their countries. As reported in Table 4.3, the distribution methods they identified most frequently were distribution by ministries or departments of health (33.1%), web site posting and downloads (30.2%), and distributions or discussions at conferences and meetings (28.1). Less frequently identified methods were distribution by WHO regional offices (13.4%) or WHO country offices (11.8%).

The relatively small percentages that identified any of these dissemination methods, as well as the relatively large percentage who did not know what methods were used, suggests there may have been some weaknesses in the dissemination processes. As shown in Figure 4.1, this issue is reinforced by the respondents' assessments of the effectiveness of the dissemination process and the WHO technical support for it, for both of which most respondents identified as only slightly or moderately effective (and many could not judge the effectiveness).

Table 4.3 Methods of Dissemination of the Patient Safety Solutions, As Reported by Survey Respondents for Their Countries

Dissemination Method	Percentage (N=441)
Distributed by ministry or department of health	33.1
Distributed by WHO Regional Office	13.4
Distributed by WHO Country Office	11.8
Web site postings and downloads	30.2
Distributed by national hospital associate or similar	20.2
Distributed or discussed at conferences, meetings	28.1
Other methods	5.9
Don't know	25.6

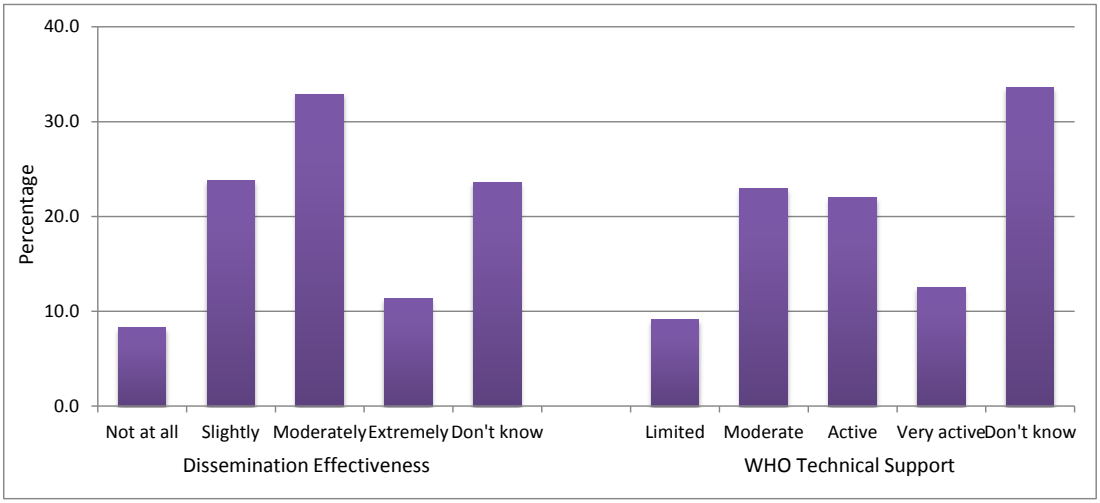

Figure 4.1 Assessments by Survey Respondents About Dissemination Effectiveness and WHO Office Support for Dissemination (N=441)

Interview Results on the Dissemination Process

The interview respondents raised a substantial number of issues regarding the effectiveness of the dissemination process for the Patient Safety Solutions. They emphasized the importance of disseminating information about the Solutions, highlighting that the Solutions cannot have any impacts on practices if people are not aware of them. And many of them felt that dissemination had not happened effectively. Some suggestions were offered for improving the process.

Issues Identified About Dissemination. Those who were involved in the Solutions development process stated that the emphasis of the work tended to be on development of the products, with less attention paid to how to disseminate or implement them. Dissemination was discussed at the Steering Committee meetings, at which some Committee members expressed a desire for a more coherent strategy. It seemed to them that the focus was limited to creating the Solutions and posting them on the JCI website, with less attention given to pushing them into the field through active marketing. Further, the dissemination strategy that was implemented tended to focus on the governments of the member states as the main audiences, rather than reaching out more broadly to health care communities.

As described above, the dissemination plan developed by the Collaborating Centre did include a broad range of actions that indeed were carried out. Respondents noted that the strategy initially targeted Ministries of Health, regional and local WHO offices. It also included a website where the Solutions and related information were posted for users' access; publication in journals; presentations at meetings; and dissemination to WHO's broad network of constituents, the World Medical association, other international professional associations, national accrediting bodies, and international hospital association. The Patient Safety Solutions website at JCI received a large volume of hits. There also were plans to increase attention to professional societies and patient groups in later dissemination work.

Several respondents stated that they would like to see WHO place more emphasis on proactive dissemination, as the first step toward encouraging countries to take actions for patient safety improvements. They did not think that WHO had provided explicit direction on dissemination strategy during meetings of the Steering Committee or Advisory Councils.

One of the more ambiguous aspects of the dissemination process was the engagement of the WHO Regional Offices. According to those interviewed, the Regional Offices became involved later in the process of development and dissemination for the Solutions. It was reported that messages about the Solutions did not reach some of these offices, or many of the country offices. It also was indicated that some of the Regional Offices did not have clear information about the purpose of the Solutions or how they were to work with them. Therefore, not all of the Regional Offices distributed the Solutions within their regions.

Suggested Dissemination Strategies. Respondents made several suggestions for strengthening the Solutions dissemination strategy, some of which involved an assertive set of actions and tiered approaches. As some respondents stated, WHO has a great deal of influence in many countries, especially developing countries, where it has given people hope. It can leverage that credibility to encourage countries to take actions for patient safety. It was suggested that the marketing of the Solutions be tied to the larger issue of patient safety, by communicating the importance of patient safety as a large international issue and offering the Solutions as one set of tools to help address it.

One suggested strategy involves four dissemination steps to be carried out within each country. First WHO would communicate with senior policy makers and engage the country's ministry commitment, then it would generate wider awareness by holding technical and informational workshops, which would also include advocacy for change. This would be followed by engagement of a technical expert/champion to locally test the solution and adapt to country situation. In addition, WHO would work closely with the country ministry and experts to build capacity and to guarantee sustainability. This process should be designed to integrate the Solutions products within the country's larger patient safety efforts or campaigns, on the premise that the solutions would work only if they are part of a more general patient safety initiative.

Suggestions also were offered regarding specific actions required for communications about the Solutions and getting them distributed within countries. The WHO Regional and Country Offices could play valuable roles in this process, after they are provided guidance and training by WHO Headquarters. Working within an overall strategy, these offices could perform outreach in the countries, sensitize them to patient safety issues, inform them about the Solutions and how to use them. Some of the regional office staff expressed a desire for further guidance on how to work with the Solutions. Budget limitations were recognized, even as they sought to identify low-cost actions that could enhance dissemination, such as regular teleconferences with the offices, sharing information and ideas, and providing electronic versions of the Solutions for distribution. Regular calls among leads, and occasional meetings, would help to share information and ideas, including the Solutions.

Respondents offered the following specific suggestions for strengthening the dissemination process for the Patient Safety Solutions:

- Broaden dissemination to include health care organizations, educators at all levels of health education.
- Actively involve the WHO Regional Offices and Country Offices in dissemination activities, drawing upon their knowledge of the people and environment in their areas. In particular, people in the Country Offices are nationals of the country, who know the senior providers and policy makers, and can connect with them readily.
- Provide guidance for users on how to duplicate and use the Solutions in a way that is consistent with the product copyrights.
- Encourage accreditation bodies to use the Solutions.
- Send the Solutions directly to providers, to reduce the time required to get this information into their hands—and into practice.
- Conduct international forums with country and professional decision makers.
- Develop tools that countries or providers can use or adapt to implement actions identified in the Solutions, such as model legislation that countries could adapt for passage.
- Conduct sessions on the Solutions as part of other conferences.
- Use community engagement strategies to work with local or national civic and advocacy groups and harness their energy. Many of them already have champions identified.

- Explore opportunities to conduct pilot projects for selected solutions in settings with different needs, which could both validate the Solutions and help evaluate their usability and effectiveness.
- Recognize that countries or health organizations will be able to implement actions on only some of the issues addressed by the Solutions, and be prepared to help them assess options and set their priorities and strategies based on their needs.

Awareness of the Patient Safety Solutions

If the dissemination of products is effective, then stakeholders in the field will become aware of those products. In essence, awareness is a key test of dissemination effectiveness, and only the stakeholders in the field can give us that information. Thus, the sources for assessing this aspect of the Solutions dissemination process are the stakeholder survey and interviews.

Survey Results on Awareness of the Solutions

As shown in Table 4.4, of the 809 stakeholders who responded to the questions regarding awareness, 50.1% reported that they were aware of the Patient Safety Solutions before participating in the survey, and another 13.8% said that maybe they were aware of them. Levels of awareness varied somewhat by region, with the highest levels of awareness in the African and Eastern Mediterranean regions, and the lowest levels in the Western Pacific and South East Asia regions. These differences should be interpreted with caution, however, because they could be the result of biased samples of respondents in the individual regions, some of which had small number of respondents. Thus, it is not possible to use these survey results to develop any estimates of awareness overall or by region.

Table 4.4 Awareness of the Patient Safety Solutions Reported by Survey Respondents, by Region

Region	Number Responding	Percentage Aware Before Survey		
		Yes	Maybe	No
Total	809	50.1	13.8	36.1
By region:				
African	25	52.0	24.0	24.0
Eastern Mediterranean	74	71.6	5.4	23.0
European	234	53.9	12.8	33.3
Pan American	304	42.8	14.8	42.4
South East Asian	46	54.4	21.7	23.9
Western Pacific	126	46.0	13.5	40.5

The responses to this question about awareness of the Solutions were used to identify the respondents who would be asked to complete subsequent survey items about the features of the Solutions and other topics that required some knowledge of the Solutions. Those who responded "yes" or "maybe" to the question were continued to the subsequent questions.

One of the subsequent questions asked about how the survey respondents first became aware of the Solutions, and their responses are summarized in Table 4.5. It is clear from these responses that the WHO or WHO Collaborating Centre web sites were critically important sources of information, with 57.6% of the respondents identifying them as their initial sources of

information. Other important sources were patient safety solutions workshops, which were identified by 9.5% of the respondents, and other (not listed) sources, which were identified by 12.9% of the respondents.

Table 4.5 How Survey Respondents First Became Aware of the Patient Safety Solutions

Source of Awareness	Percentage (N=441)
WHO or WHO Collaborating Centre web sites	57.6
Web-based field testing of the Solutions	1.8
Obtaining Solutions in conferences or meetings	7.3
A Patient Safety Solutions workshop	9.5
Participation in development of Solutions	3.2
An acquaintance who was involved in development	4.1
Other communication with an acquaintance	3.6
Other source	12.9
Total	100.0

Interview Results on Awareness of the Solutions

Mixed feedback was given by interview respondents regarding the level of awareness of the Patient Safety Solutions in the WHO member states. According to the respondents, there was little or no awareness in many countries and moderate awareness in others. Several of them indicated that stakeholders in their countries did not have the Solutions documents, indicating that the dissemination activities may have failed to reach them. Countries cited include Senegal, South Africa, Tunisia, countries in Eastern Europe, India, and other countries in Asia. One of the reasons given for this problem was poor internet connectivity in many countries, especially in Africa, which prevented people from accessing the WHO or Collaborating Centre websites to learn about the Solutions. Some respondents said they had received many of the other WHO patient safety tools and resources over time, but they had not received the Solutions.

Several respondents reported that, when presented with information about the Solutions, people highly appreciated having it and recognized the importance of the Solutions. The WHO brand helped to get people's attention to the Solutions as a WHO product. Patient safety conferences have been a common avenue for disseminating the Solutions and elevating awareness. In countries where the Solutions have been picked up (such as Canada and Ireland), links to the Solutions are found on various websites, and people appear to be aware and using them.

Respondents indicated, however, that it was not clear which stakeholder groups were aware of the Solutions. They expected that the provider community would be less aware of them than policy makers. It also was suggested that corporate hospitals might be more aware because they are accredited and work on patient safety, but awareness would be lower at the provincial or community levels. Within Ministries of Health, it is possible that people in the more technical functions would be more aware of the Solutions that the Ministers at the top.

The element of time was identified as an issue related to the limited awareness of the Solutions. Immediately after the Solutions were released in May 2007, the Collaborating Centre website had a large amount of traffic from many countries, as people sought to obtain the Solutions materials, which also stirred up interest in patient safety. However, as dissemination activities

slowed down, awareness of the Solutions also faded. One respondent noted that with limited attention spans, people are aware of what is most active at any given time.

Another factor that may have influenced the level of awareness of the Solutions was readiness for use of the Solutions in patient safety activities. For example, developing countries with limited implementation capability would be less likely to be aware of the Solutions because their attention was on other priorities. Further, awareness of the Solutions could be limited to those that coincide with safety issues that are priorities in particular countries. Examples cited by respondents included hand hygiene and infection control.

By contrast, respondents reported that there was a high level of awareness of other WHO patient safety initiatives, such as the Challenges and the High 5s, which have engaged many stakeholder groups more directly in implementation activities on specific patient safety issues. Because the High 5s are derived from issues in the Solutions, the Solutions have influenced awareness and actions for safety issues, but people tend not to be aware of that connection.

Use of the Patient Safety Solutions

Documenting the use of the Patient Safety Solutions is perhaps the most difficult evaluation task, because of the sheer number of countries involved. Information developed by the Collaborating Centre regarding use of the Solutions, which is presented here, offers insights into the diversity of applications of the Solutions in the field. However, results of the stakeholder survey is a more comprehensive source of information on usage because the survey was fielded worldwide with the goal of gaining gathering broad-based information on the impacts of the Solutions.

Usage Reported by the Collaborative Network

The Collaborating Centre used the field review of the 2008 Solutions as an opportunity to gather information on the first set of nine Solutions, by including several questions about them in the survey. Feedback received indicated that users viewed the Solutions as excellent resources and were using them in a variety of ways. The following examples of use were reported:

- Incorporated the Solutions into national patient safety goals
- Incorporated into health care organization goals and priorities
- used as tools for in-service training
- Incorporated into the curriculum for education programs for health care professionals.

In its July 2008 report to the Steering Committee on dissemination, the Collaborating Centre provided some specific examples of uses of the Patient Safety Solutions in the field, which had been reported by members of the International Steering Committee and Regional Advisory Councils. The Centre also received feedback from end users on its website about how they were implementing the Solutions. These examples, which are presented in Table 4.6, document 30 countries in which the Solutions were put to work in a variety of ways.

Table 4.6 Reported Use of the Patient Safety Solutions by Countries and Regions

Country/Region	Use of the Patient Safety Solutions
Argentina	Programs relating to patient identification and hand hygiene were under development by the Buenos Aires government.
Bahrain	All of the solutions were being used
Denmark	The Danish Board of Health is considering a project to identify how hospitals in Denmark are performing with respect to the solutions and to share the results among the hospitals.
Eurasian Network of 18 countries:	Solutions were discussed with 18 countries of the Eurasian network, including presentation of an action plan for these countries at a meeting in Kiev (Ukraine) in December 2008. (Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Slovenia, Moldova, Ukraine, Poland, Lithuania, Republic Belarus, Russia, Kazakhstan, Kyrgyzstan, Uzbekistan, Mongolia, Georgia, Armenia, and Azerbaijan)
Georgia	Three solutions—look-alike, sound-alike (LASA) medications, concentrated electrolytes, and hand hygiene—were pilot tested.
Iraq	Launched the Solutions through a global patient safety alliance, including a patient safety friendly hospital initiative and a community-based initiative to involve patients in the program.
Israel	A project that builds on the Collaborating Centre's High 5s project and the Institute for Healthcare Improvement's 5 Million Lives campaign, including a network of 6 Israeli hospitals, hopefully 3 Palestinian hospitals, and a number of American hospitals.
Kuwait	Implemented the LASA, patient identification and improved hand hygiene Solutions starting in January 2008 in a 600-bed general hospital.
Netherlands	Three of the Solutions were being used
Oman	Developed short, operational forms of the Solutions as short guidelines for release to end users.
South Africa	Negotiations were conducted between a provincial government and the medical association to conduct a joint program to disseminate the Solutions and establish a patient safety foundation.
Sudan	Multi-faceted sets of interventions were undertaken to implement the Solutions in hospitals, including establishment of a national patient safety committee by Ministerial decree.
Sweden	The solutions have provided inspiration for other activity: used to support implementation of a national campaign to reduce hospital acquired infections. The LASA solution was useful in successfully negotiating with a domestic pharmaceutical company to use less confusing names and better packaging for its anesthesia medications as of May 2008, highlighting lookalike, sound-alike medications as an international problem

Sources: WHO Collaborating Centre, Report on the Response to the 2007 Patient Safety Solutions; Feedback left on Collaborating Centre website, provided by the Collaborating Center, February 2011.

Survey Results

Of the 441 survey respondents who said they had been aware of the Patient Safety Solutions before they completed the survey, 334 respondents (75.7%) reported that they had used the Solutions. Those respondents were asked how they had used the Solutions and how they had either adapted or applied them to work with the specific needs of their local area or countries.

The survey responses regarding the use of the Solutions, shown in the top portion of Table 4.7, reveals that the Solutions were put to a variety of uses by stakeholders in the field. Although the most frequently reported use was distribution of the Solutions within their own organizations (58.7%), each of the other listed uses was also identified by more than 25% of the respondents.

Respondents also implemented three specific applications or adaptations of the Solutions, which are listed in the bottom portion of Table 4.7. An estimated 70.7% of them adapted the Solutions to the needs and culture in their local areas, 57.1% of them translated the Solutions to another language for use in their organizations, and 33.4% of them evaluated the impact of using the Solutions in their organization. This information highlights the importance of local adaptations to enhance the applicability of the Solutions to local circumstances.

Table 4.7 Uses and Adaptations of the Patient Safety Solutions by Survey Respondents That Used Them

Uses of the Patient Safety Solutions	Percentage (N=317)
How the Solutions were used	
Distributed them to other organizations	30.9
Distributed them within own organization	58.7
Guide development of national patient safety policy	32.8
Guide development of accreditation standards	38.8
Included in toolkits for providers for improvement	38.8
Developed implementation materials	37.2
Raise awareness of WHO patient safety issues	32.2
Used only those that related directly to own priorities	27.8
Other uses	3.2
Specific applications or adaptations	
Adapted Solutions to local needs and cultures	70.7
Translated to another language for use in organization	57.1
Evaluated impact of using Solutions in organization	33.4

The users of the Solutions were asked how useful the Patient Safety Solutions were in helping them implement strategies and tactics for improving patient safety. As shown in Figure 4.2, large percentages of them reported that the Solutions were either moderately or extremely useful to their improvement strategies. Notably, only 7% of them said they did not know how useful the Solutions were, which is substantially smaller than the percentages giving similar responses to other survey items.

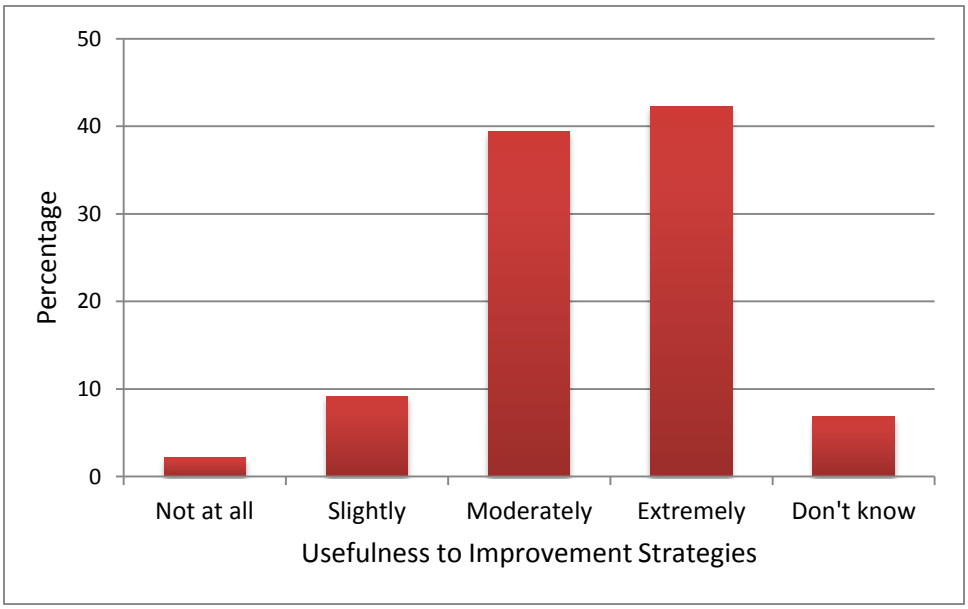

Figure 4.2 Assessments by Survey Respondents About the Usefulness of the Patient Safety Solutions to Organizations' Improvement Strategies (N=317)

Both users of the Patient Safety Solutions and others who were aware of the Solutions, but had not used them, were asked which issues they faced that prevented them from using the Solutions. As shown in Table 4.8, limited financial resources was the issue reported by the largest percentage of respondents (38.3%). Other important issues were inadequate skills needed to use the Solutions (need for training) and inadequate organizational infrastructure capacity, followed by lack of support from organization leadership and absence of their local patient safety issues from the Solutions.

Table 4.8 Issues that Prevented Survey Respondents from Using the Patient Safety Solutions

Use of the Patient Safety Solutions	Percentage (N=394)
Limited financial resources for patient safety work	38.3
Lack of support from organization leadership	18.8
Local issues were not those in the Solutions	11.2
Inadequate skills needed to use the Solutions	32.2
Inadequate organizational infrastructure capacity	20.1

When asked to estimate how many organizations in their areas had used the Patient Safety Solutions, the respondents provided generally low estimates. As shown in Figure 4.2, 13.2% of respondents estimated that the Solutions had not been used at all, and others estimated that a few (43.1%) or some (29.2%) organizations had used them. Only 14.5% of them estimated that many organizations had used them. These differences probably reflect local differences in commitments to patient safety improvements and in familiarity with the Solutions. It was not possible to explore such geographical differences, however, due to the small sample size.

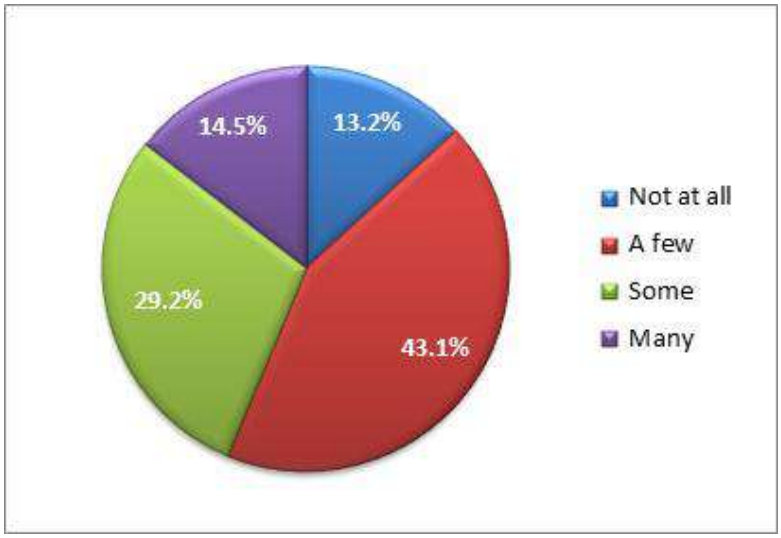

Figure 4.2 Estimates by Survey Respondents About How Many Other Organizations Have Used the Solutions (N=394)

Survey respondents were asked to estimate the extent to which each individual Patient Safety Solution helped other organization achieve improvements in patient safety. Their responses, presented in Table 3.9, are quite consistent across the nine Solutions, with 50% to 67% of them estimating moderate or strong impact of the Solutions on organizations' improvement efforts. Further, these estimates are much lower than the 80% of users who reported that the Solutions had similar impacts on their own improvement efforts. These differences could reflect varying impacts for the individual Solutions, versus an aggregate effect of using multiple Solutions. In addition, respondents might have given less positive estimates when considering effects on other organizations, versus their own experiences.

Table 4.9 Estimates by Survey Respondents of How Much Each Patient Safety Solution Helped Other Organizations Achieve Safety Improvements

Patient Safety Solutions (N = 394)	:Percentage by Amount of Impact		
	None or Weak	Moderate or Strong	Don't Know
Look/Sound-Alike Medication Names	17.3	52.0	30.7
Patient Identification	10.4	61.4	28.2
Communication in Patient Handovers	18.0	52.0	30.0
Correct Procedure at Correct Body Site	12.4	60.0	27.6
Control Concentrated Electrol Solutions	16.3	50.5	33.3
Medication Accuracy at Care Transitions	17.0	52.0	31.0
Avoiding Catheter and Tubing Misconnect	15.3	52.0	32.7
Single Use of Injection Devices	13.7	55.6	30.7
Improved Hand Hygiene for Infection	7.6	66.5	25.9

Interview Results on Use of the Solutions

Given that respondents reported only limited levels of awareness of the Solutions, it is not surprising that many of them also noted the Solutions were not put to use in many countries. One respondent went so far as to say the Solutions were "almost invisible." When the Solutions were introduced as a part of a workshop, it usually was in the context of broader patient safety issues and strategies, in which participants might or might not apply the Solutions to their work. In many cases, respondents indicated that the Solutions served mostly to build awareness and advocacy for pursuit of safety improvements. Even when respondents had observed some awareness of the Solutions, they could not offer much information about what people were doing with them, or who was doing it.

These largely negative responses were related in part to the previously discussed issues regarding the dissemination process. Some respondents cited a lack of training and awareness by providers as a reason for lack of action on patient safety and use of the Solutions. They felt that more dissemination would increase awareness, which in turn should lead to more use of the Solutions by governments and providers. For this to happen, however, the issues addressed by the Solutions needed to be among the priorities of any given country or provider—that is, use of the any of the Solutions will be driven by local patient safety needs and priorities.

Both the negative and positive responses regarding the impact of the Solutions highlight that their impact will depend on how governments choose to implement them. Several respondents reported that the Solutions did play a role in activities undertaken in their countries. For example, the African Partnership resource map is a compendium of resources structured around 12 priority areas for action for African countries, one of which is infection control. The Solutions were included as a resource in this compendium.

In north Africa, the issues of hand hygiene and surgery had been priorities, which offered a shared focus among countries. It was reported that they also had been considering use or adaptation of other Solutions topics, but they expressed concern about the amount of work required to adapt them to the specific circumstances of their countries.

It was reported that the Solutions were helpful in Canada, where they have been part of the knowledge base that stimulated its patient safety work and have helped to guide their decisions on safety priorities. The recommended practices of Accreditation Canada refers to the Solutions (on its international standards website). As in other countries, the Solutions have been used in Canada as part of a larger action package, serving as an information resource on the evidence at the time and ideas for improvement actions. One of their priorities has been medication reconciliation, for which a national campaign was established with 400 teams in Canada working on the issue.

Another respondent reported that the surgical safety checklist had the greatest impact within his country. This topic hit home because it is clearly about damage to people and it can be measured.

Although the West Pacific was reported to still be in the gestational stages of working with the Solutions, the information they provided has been included in a hand-washing initiative and a surgical checklist developed there. However, countries in this regions are still trying to grasp the concept of the WHO Patient Safety Alliance and the Solutions, and how they fit together. Thus, it is not possible yet to say how much value the Solutions have provided users in this area.

Follow-up Reinforcement by WHO. The interview respondents gave consistent feedback that users viewed – and used – the Solutions as one tool that is woven in with other WHO products, to achieve synergy in implementation. As one respondent stated, the Solutions represent priorities that will be addressed in other initiatives, yet many users do not know how they all fit together. This highlights the need for guidance by WHO on how the various WHO patient safety products can work together.

Several respondents sought more assertive action by WHO to encourage countries to train people and take actions for improvement, and to provide guidance on implementation approaches (what to do and how to do it). They indicated that the Ministries in their countries had not been asked by WHO to implement the Solutions; and that with such encouragement, at least some countries might have pursued safety more actively. In China, for example, the government has been pursuing safety and quality improvement, and it introduced a surgery checklist in 200 hospitals. It sought information and support from WHO during this process. It was suggested that a focal person on safety and quality in China office could help reinforce these efforts.

Barriers to Impacts by the Solutions. Because there is a long sequence of actions between transmission of the Solutions products and adoption of safety practices, it will always be difficult to attribute adoption success to the Solutions products. Several respondents highlighted this long pathway, which starts with raising awareness and then moves to building leadership commitment, getting data from local implementation and testing, and developing a local adaptations. Only after these steps are completed can action on a Solution topic be taken up in hospitals or at the national level, and many factors can contribute to (or hamper) success.

Feedback from respondents in several countries also highlighted several barriers that have been slowing the uptake of patient safety practices (and the Solutions). A key barrier identified is limitations in countries' systems, either at the policy level or in their health care systems, which have prevented progress. This issue often goes together with lack of recognition of patient safety issues, and therefore, of motivation to take action. Several respondents noted that a wave of recognition was still moving around the world. On a positive note, this information suggested that the Solutions still could make a contribution to increasing awareness in the future.

The following barriers were identified during the interviews for consideration by WHO:

- Many stakeholders have shown resistance to the existence of a patient safety problem, and only when provided with hard data on the incidence and impacts of adverse events, have they begun to recognize that the issue is real.
- Although many have found the Solutions to be useful, they were not yet ready to work with them because they were addressing on other priorities or were still building the infrastructure needed for action.
- In many countries, governments do not have in place the planning and management systems needed to carry out corrective actions. As a result, their patient safety efforts have tended to be inconsistent and limited in impact.
- At the hospital level, providers in some countries are not in a position to influence actions that are above their authority, such as drug labeling. In other cases, the ministry does not have the authority to take actions needed by providers. For success, consistency is needed between national policy and patient safety priorities at the hospital level.

- Many providers in some countries do not have the institutional mechanisms or structures of control needed to make a new set of actions work. For example, although some hospitals have a pharmacy committee, this committee does not have the span of control to enforce actions for drug safety.
- In many countries, the minister of health might not be knowledgeable due to high rates of turnover in the position. It therefore is important to seek out those who have longevity and are knowledgeable for dissemination and education activities.
- Variations in provider knowledge and commitment leads to variation in implementation success and development of a patient safety culture.

Highlights of Findings Regarding Dissemination and Impact

For the Patient Safety Solutions to influence patient safety practices in countries and local areas, potential users must be made aware of them and understand how best to use them. The first step in this continuum is the dissemination of the Solutions product to the target audiences. Although substantial dissemination activities were undertaken, as reflected in Collaborating Centre reports to the Steering Committee and Regional Advisory Councils, feedback from the stakeholder interviews and survey indicates that these efforts fell somewhat short of achieving broad-spread awareness of the Solutions in many parts of the world.

Several issues appeared to be barriers to the availability of the Solutions products, some of which were identified in the survey results and others were raised during the interviews. The Collaborating Centre website received large numbers of hits for the Solutions following their release. However, stakeholders reported that it was difficult to find the documents on the websites, in particular the WHO website, and they could not find links between the sites. This is an important issue, given the large percentage of survey respondents who identified the web sites as the source where they first became aware of the Solutions,.

Interview respondents also expressed concerns that good translations for other languages were not available. They saw a need for WHO to provide more guidance regarding acceptable translations methods, so others could translate the Solutions into their languages. This perception was reinforced by the survey results, which revealed that a substantial percentage of users of the Solutions translated them into other languages to use them in their organizations.

Many of the interview respondents felt that the dissemination process was not effective. Those involved in developing the Solutions perceived that more emphasis had been on the products themselves, with less attention paid to implementing a proactive dissemination strategy. They were concerned that the target audience was countries' governments, rather than reaching out more broadly to health care communities. Implementation issues also arose, especially with the limited involvement of the WHO regional and country offices in the process. They felt that WHO should strengthen emphasis on proactive dissemination in the future, as an important first step toward encouraging patient safety improvement actions by countries.

According to both survey results and interview respondents, there were mixed levels of awareness of the Patient Safety Solutions in the field, with little or no awareness in many countries and moderate awareness in others. Limitations of the dissemination process contributed to this issue, but the interview respondents identified a variety of other barriers that

also contributed. As a natural outgrowth of limited awareness, there appeared to be limited use of the Solutions, although some creative work by many countries was reported.

Consistent feedback was given that users that worked with the Solutions used it as one tool among the set of WHO patient safety products, which together could help them achieve synergy in implementation. With the Solutions identifying priorities that can be addressed in other initiatives, the stakeholders encouraged WHO to provide more guidance on how the various WHO patient safety products can be applied together in local improvement efforts.

5. Summary and Suggestions for Action

Drawing upon the rich and diverse information obtained in this evaluation, this section presents a high-level summary of findings for each research question established for the evaluation.

1. How effective is the concept of patient safety solutions Aide memoirs?

WHO envisioned that the Patient Safety Solutions products were to generate awareness of patient safety problems and available solutions, and to inform and aid governments as a policy development tool. According to feedback gained through the stakeholder survey and interviews, there was substantial consensus that this was an appropriate role for the Solutions. In particular, responses to the survey suggested that stakeholders in the field perceived it that way. However, there also were sentiments that the Solutions should reach not only governmental agencies but also providers delivering care in local areas, to serve as a tool that supports their patient safety improvement efforts.

Consistent with this feedback, the target audiences identified in both the survey and interviews encompassed a broader group than what had been envisioned originally, which had been focused on ministries or departments of health. Instead, the stakeholders consistently identified front-line providers, as well as patients and families, as important audiences for these products.

2. What is the quality or scientific integrity of the developed Aide memoirs solutions?

Although views regarding scientific integrity were mixed among the stakeholders, there was a general sense that future work in this area should place greater emphasis on performing a more formal assessment of the published evidence. This may become more important as additional patient safety issues are pursued for which practices required are not obviously based on established science or clinical "common sense" regarding actions to be taken. It also should be more feasible now because the evidence base was relatively shallow at the time the nine Solutions were being developed; it has strengthened considerably since then.

Although there might not always be a strong evidence base for patient safety solutions, the collaborative network recognized that the Solutions provide value by synthesizing the current evidence on important patient safety topics. Therefore, they were comfortable issuing Solutions in the interest of improving patient safety, even if they had a weaker base of evidence.

The greatest concerns about the need for stronger evidence-based products were expressed by those who were directly involved in the development of the initial nine Solutions. Some of the WHO staff, in particular, were concerned because WHO has a core policy that all its products are to be strongly evidence-based.

Based on experience with the 2007 Solutions, the collaborative network made revisions to the process for developing new solutions to do the following:

- Improve the scientific soundness of solutions
- Limit the number of solutions developed during any one round to provide adequate time for the increased rigor of the development process
- Ensure the relevance of solutions to both developing and developed countries
- Clarify the audiences for the solutions

- Establish a formal evaluation component for measuring the effectiveness and impact of disseminated solutions

The Collaborating Centre also developed a new methodology for evaluating and scoring the quality of evidence. As part of this process, full-text materials for all relevant titles and abstracts are obtained and subjected to a structured review. In evaluating the quality of evidence, the attributes considered are the quantity of studies obtained from search strategy, dates of publication, study design, study methodological quality, consistency in findings across studies, directness to the issue, and sources of published studies. Studies that are deemed low quality or not relevant based on these attributes are excluded from further consideration and are not scored.

3. How valuable are the Aide memoirs in terms of the product?

Despite the diversity of patient safety issues being faced by countries around the world, the results of this evaluation documented that some of these issues are shared by many countries. Those who were interviewed felt that a set of issues could be identified that were shared by developing, emerging, and developed countries, and the survey results supported this sentiment. In the top five issues identified by the survey respondents, health-care associated infections and medication errors stood out by being mentioned by greater than 80% of the respondents.

The question, then, is how responsive were the topics selected for the first nine Patient Safety Solutions to the needs of a large number of countries. Again, both interview and survey results suggest that this was accomplished. Although some interview respondents felt important issues had been omitted, or disagreed with some that were included, most felt that the nine topics selected were appropriate for an initial set of Solutions. The survey respondents also indicated satisfaction with the topics, with 50% to 80% of them rating the individual Solution topics as extremely relevant to their countries' patient safety priorities. Not surprisingly, improved hand hygiene for infection received the highest rating, in which almost 80% of them rated it as extremely relevant.

Even with this apparent agreement, regional differences in the relevancy of the Solutions might be expected, and this expectation was expressed by some of the interviewed stakeholders. However, the survey results revealed relatively little regional variation in the ratings of the individual Solutions. Statistically significant regional differences were found only for look-alike, sound-alike medication names, communication in patient handovers, medication accuracy at care transitions, and single use injection devices.

Looking ahead, it probably will be more difficult to achieve such a high level of responsiveness to countries' patient safety priorities. These first nine Solutions may have captured the most widely important issues; additional issues remaining to be addressed may not be shared as broadly as this first set of issues was.

4. How effective and usable are the following specific components of the Aide memoirs for users in each of the three groups of countries?

The written products that are the Patient Safety Solutions reflect the concept originally defined for them as informational and communication tools. They are brief documents written using the same format, to provide consistency for those who use them. Only a few interview respondents had comments about the usability of their format and content. Most seemed to be satisfied with the balance between brevity and information, and it was commented that the Solutions are

concise and easy to read and distribute. Similar feedback was obtained from the survey respondents, of whom more than 80% rated the products as moderately to very useful. Although the ratings varied somewhat for the individual sections of the Solutions, they reflected general satisfaction with the products.

Most of the individuals who were involved in the development process reported that they were comfortable with that experience and with the products generated by it. Some concerns were raised, however, which merit attention in any future work in this area. Issues raised included the need for broader representation of countries across the world in the development process, the importance of using a more structured and systematic method for assessing the evidence, and the need to include patients and families more actively in the process. All of these issues pose a risk of generating a biased product if they are not managed effectively.

5. What impact have the patient safety solutions Aide memoirs had in terms of aiding Member States achieve the objectives of improving patient safety:

What weaknesses existed in the development and dissemination process for the Patient Safety Solutions tended to be found in the dissemination process. It was learned from the stakeholder survey that the most important way that stakeholders became aware of the Solutions was through the WHO and the WHO Collaborating Centre web sites. However, testing of those web sites revealed some important difficulties in navigating the sites, finding the Solutions documents, and accessing translations of them. Paper versions of the Solutions were less available, and delays were experienced in getting copies to some of the WHO regional offices.

Although the Collaborating Centre prepared a written dissemination plan and generally implemented it, the actions in the plan tended to be relatively passive, with little provision for proactive follow-up with the various stakeholder groups. Interview respondents reported that they had the sense that the emphasis during the development process was more on getting the products completed and less on dissemination of them. There also were some mixed signals from some of the WHO staff who were managing the program at that time, including only limited commitment by WHO to engage in the dissemination work. Two important resources, the WHO regional and country offices, were not used to full advantage. In fact, several interview respondents mentioned that the regional office staff were engaged relatively late in the development process, and they were not participants in designing and carrying out the dissemination plan.

With limited dissemination, the awareness of the Solutions around the world tended to be spotty. Stakeholders in some countries were very aware and actively working with the Solutions, while those in other countries had not even heard about them. The information obtained from the interviews and survey largely reflected the first group of stakeholders who were aware of the Solutions. Even so, only half of the survey respondents reported they were aware of the Solutions before doing the survey.

Those who indeed used the Solutions have done some impressive work, which was documented by the Collaborating Centre in its reports to the International Steering Committee. This work also was reflected in the responses of Solutions users in the stakeholder survey. They used the Solutions as a tool in their patient safety improvement initiatives, and they reported that the Solutions made important contributions to improvements they achieved.

6. How can the concept, value, quality and impact of the product be improved?

When considering options for future actions or changes for the Solutions (or other WHO products), it is important to be aware that substantial changes have occurred in the patient safety environment in the five years since the initial Solutions were developed. Knowledge about patient safety has increased around the world, and many groups are mobilizing and lobbying governments to do something about it. Therefore, the international health care community may have passed beyond the stage of needing basic education on patient safety.

Perhaps the best way to summarize suggestions for improvement for the Patient Safety Solutions is to present the views of the survey respondents. Presented in Table 5.1 are their responses to a list of possible improvements that had been identified from the stakeholder interviews.

Table 5.1 Suggestions by the Survey Respondents for Improvements to the Patient Safety Solutions

Suggestion for Improvement	Percentage of Respondents (N=391)
Highest Rated Suggestions	
Include recommendations in each Aide memoir for action by different key audiences (e.g., policy makers, healthcare managers, healthcare workers, patient and consumer groups)	59.3
Expand dissemination of the Aide memoirs so they reach more stakeholders	58.8
Provide training on suggested actions and strategies presented in the Aide memoirs	55.0
Provide guidance and instructions on how to use the Aide memoirs in parallel with other WHO patient safety programme solutions/recommendations (e.g. Clean Care is Safer Care, Safe Surgery Saves Lives, Blood Stream Infections interventions etc)	50.4
Carry out effectiveness studies of the Aide memoirs at the local and national levels to support better use of the Solutions.	48.9
Other Suggestions	
Adapt each Solution to apply for organizations in poor-resource environments	43.5
Provide guidance in the field by WHO or health authorities on how to use the Aide Memoirs	41.7
Translate the Aide memoirs into more languages	38.9
Provide users with more readily-available supplies of paper versions of the Aide memoirs	35.3
Develop a more evidence-based Aide memoirs	33.0
Develop the Aide Memoir into a more detailed product that will includes more information and suggested actions on the safety issue they address	32.7
Do not have any suggestions for improving the Aide Memoirs.	4.6

In summary, the following key issues emerged from the evaluation, which can be considerations for future WHO patient safety product development work:

- Be clear on the concept and role of the product
- Clearly identify the intended audiences for the products
- Establish an effective and representative process for developing products
- Ensure the relevancy of the topics to as many countries as possible
- Design the written product(s) to be consistent with its role and audiences
- Conduct proactive and strategic dissemination activities, to include WHO regional and country offices

One interview respondent pointed out that WHO is owed much of the credit for the increased understanding about patient safety across the world, because they did a lot of the work. Now it will be important for WHO to assess the current market carefully, so that it can identify what new support tools will be most needed to help countries move beyond awareness to successful actions.