## Consultative Meeting

# Planning for the Global Patient Safety Challenge - Medication Safety

**19-20 April 2016, WHO Headquarters**
**Geneva, Switzerland**

## Meeting Report

World Health Organization

WHO/HIS/SDS/2016.20

## Acknowledgements

This report summarizes the proceedings, presentations and discussions related to, or those that took place during the WHO Global Patient Safety Challenge consultative meeting. The expert consultation was jointly hosted by the WHO Department of Service Delivery and Safety (SDS) and the Essential Medicines and Health Products (EMP), under the guidance of the WHO Envoy for Patient Safety Sir Liam Donaldson (Chair) and unit coordinator Dr Neelam Dhingra-Kumar.

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## Executive summary

Medication errors are a leading cause of injury in both developed and developing countries and can occur at different stages of the medication use process. Multiple interventions addressing the reduction of medication errors have already been developed. For these to be effective, a wide mobilization of stakeholders supporting sustained actions is required in the context of modern medicine. In response to Member States' concerns, the World Health Organization (WHO) has identified Medication Safety as the theme for the next Global Patient Safety Challenge.

A consultative meeting, held 19-20 April 2016 and hosted at WHO headquarters in Geneva, Switzerland, brought together 57 experts and leaders in patient safety and medication safety from 23 countries, and the nongovernmental (NGO) sector, as well as the pharmaceutical industry. Participants reviewed, discussed and agreed on the Challenge scope and framework. A Steering Group and five working groups will be established to support the development and implementation of the Challenge, under the strategic leadership of the WHO Envoy for Patient Safety, Sir Liam Donaldson.

The process of review and consensus building of the strategic framework and plan for launching and implementing the WHO Global Patient Safety Challenge - Medication Safety provided specific recommendations for framework finalization, and for the formal establishment of the Steering Group and the Working Groups.

The global target of a 50% reduction in medication-related harm was provisionally agreed during this consultation, with a proposed option for nationally adaptable targets, in particular for low- and middle-income countries. Difficulties of measurement and lack of baseline data for reaching the target were equally acknowledged. Further agreement on specific methods for progress quantification will be agreed following three expert reports on polypharmacy, high-risk medications/dangerous drugs and transitions of care that will also define the flagship elements of the Challenge. Encouraging and increasing reporting of medication-related patient safety incidents will also be part of this Challenge's scope.

The WHO Global Patient Safety Challenge - Medication Safety is led and coordinated by the Patient Safety and Quality Improvement Unit in the Service Delivery and Safety Department (SDS), in collaboration with the Essential Medicines and Health Products (EMP) Department. The Global Patient Safety Challenge on Medication Safety is planned to be launched in the first quarter of 2017.

## Introduction

The exploding array of medication use in modern medicine comes with the heavy cost of unsafe medication practices and medication errors, in addition to medication-related interactions (drug-drug, drug-disease and drug-food) and adverse events. A global issue, medication safety affects close to 78% of patients who have a history of medication use, and sometimes leads to significant harm or death. The cost of medication errors is estimated at 42 billion USD annually worldwide[1]. The multiple causality of medication errors, the costs in quality of life days and additional health expenditure have drawn the attention of governments. Actions at various levels, including policy intervention, training and medication management have been developed to address this problem, but their use is often random and limited. The occurrence of medication errors requires a system approach that would create the premise that would prevent the error from occurring in the first place and improve medication safety.

The Global Patient Safety Challenge - Medication Safety will propose solutions to address many of the obstacles the world faces today to ensure the safety of medication practices. The Challenge is being taken forward under the strategic leadership of the WHO Envoy for Patient Safety, Sir Liam Donaldson. It is led and coordinated by the Patient Safety and Quality Improvement unit of the Service Delivery and Safety Department, in collaboration with the Essential Medicines and Health Products department.

The Service Delivery and Safety department has had previous experience in coordinating two Global Patient Safety Challenges. The first, Clean Care is Safer Care, addressed hand washing as a means to prevent the spread of infection. The second, Safe Surgery Saves Lives, focused on improving the safety of surgical care. Key lessons learned can be extracted from this experience, such as the importance of simplicity, wide-applicability and measurability as guiding principles of Global Patient Safety Challenges. Patient Safety and Quality Improvement unit has developed a number of tools, checklists and guides in the area of patient safety, which have brought significant benefits to patients worldwide. The EMP department already has an existing body of work on access, policy, pharmacovigilance, regulation and use of medicines. Their existing efforts and established networks in the area of medicines will serve to enrich the development and implementation of the Challenge.

The consultative meeting convened is one of the main components in the planning phase of the Challenge and provided the foundation for the framework development and implementation phases, as well as resource mobilization required.
It was attended by 57 international experts in patient safety and medication safety from 23 countries, as well as representatives from the nongovernmental sector, as well as the pharmaceutical industry (see Annex 3, List of participants).

[1] IMS Institute for Healthcare Informatics. Advancing the responsible use of medicines: applying levers for change. 2012. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2222541.

## Opening session

The event was opened by Sir Liam Donaldson, WHO Envoy for Patient Safety, who welcomed the participants and acknowledged that unsafe medication practices were one of the main causes of health care-related harm. After a brief history on the establishment of the World Alliance for Patient Safety and the WHO Patient Safety Programme in 2005, Sir Liam Donaldson explained the concept of the Challenge, as a patient safety priority area of activity, affecting all countries at different degrees and with a single flagship element, while promoting all successful interventions.

Two global patient safety challenges have already been launched and successfully conducted over the past decade. The first Global Patient Safety Challenge 'Clean care is safer care' had hand hygiene as its flagship element, promoted a system approach, and has taken forward the issue of combating health care-associated infections. The second Global Patient Safety Challenge, 'Safe surgery saves lives', had the WHO Surgical Safety Checklist as its flagship element, and contributed to reducing the rates of harm during surgery.

The third Global Patient Safety Challenge is focused on medication safety is expected to draw on the experience accumulated during the previous challenges and to promote a facilitative and developmental process of change to reduce patient harm generated by unsafe medication practices.

The objectives of the consultative meeting, introduced by Dr Neelam Dhingra-Kumar, underlined the important role of harnessing political commitment, sustaining momentum and enhancing dialogue between partners, in order to develop the content of the Challenge. The specific objectives of the event included a review of the scope of the problem of medication safety and medication errors in particular; already undertaken work and initiatives developed by WHO and other partners on this topic and how remaining gaps could be addressed within the Challenge's scope; identification of key partners and stakeholders in the development and implementation of the Challenge; review of methods of work and the draft action plan for the implementation, monitoring and evaluation of Challenge impact and outcomes.

## Session 1: Scope of the problem of medication safety and proposal of the strategic action

The session provided an overview of the scope of the problem and WHO activities and progress achieved in addressing patient safety, medication safety and medication-related harm (see Annex 2 – Programme of work).

### 1.1. Scope of the problem of medication safety (Dr Edward Kelley)

Addressing the problem of medication safety includes all activities to avoid, prevent or correct accidental injury related to drug therapy that can occur at all levels of care, including ambulatory, in various degrees of severity (from harmless to life-threating incidents). This lies at the core of the WHO Global Patient Safety Challenge - Medication Safety.

An estimation of worldwide medication error-associated costs mounts to 1% of total global health expenditure[2], and even if available data is incomplete, adverse drug events appear to be a leading cause of injury in high-, middle- and low-income countries. Hence, the global need for systematic changes and process improvements in medication safety management, as well as patient provider partnerships to reduce patient harm in a visible way.

WHO Patient Safety has launched a global project "The High 5s" to address continuing major concerns standardization of care and patient safety around the world. This project strengthened the medication accuracy at transitions in care by providing standard operating protocol and implementation guides for medication reconciliation. In addition, "Multi-professional Patient Safety Curriculum Guide" has been developed to help individuals and organizations improve their understanding and knowledge of patient safety, including medication safety. The comprehensive guide assists universities and schools in the fields of dentistry, medicine, midwifery, nursing and pharmacy to teach patient safety.

The broad context to be addressed will require a set of actions universally applicable and a high visibility simple and targeted flagship element(s) to provide measurable impact and inspiration for change. The WHO Global Patient Safety Challenge - Medication Safety is expected to bring significant improvements in health care outcomes. Its development and implementation will involve multiple stakeholders, including the pharmaceutical industry, and foster sustained partnerships.

### 1.2. WHO work on medicines safety and safe use (Dr Shanthi Pal & Dr Nicola Magrini)

Work on medicines safety has been ongoing in the Medicines Safety and Vigilance team in WHO Department of Essential Medicines and Health Products through the pharmacovigilance programme. Pharmacovigilance is defined by WHO as the science and activities related to the detection, assessment, understanding and prevention of adverse effects or any other medication-related problem (WHO, 2002)[3]. Part of a complex portfolio of interventions deployed by the pharmacovigilance programme and it's WHO Collaborating Centres, the WHO Programme for International Drug Monitoring and the WHO Global Medicines Safety Database – VigiBase are at the forefront.

The WHO Programme for International Drug Monitoring was established in 1968 after the thalidomide tragedy in 1961 and subsequent WHA resolutions including WHA 16.36[4]. It enrols 122 official members and 29 associate members (as of 20 April 2016). The WHO Global Medicines Safety Database works as a global signal detection mechanism, managed and maintained by the Uppsala Monitoring Centre in Sweden. VigiBase counts currently 12 million reports, including 380 000 reports on medication errors (as of 20 April 2016). In collaboration with Centre Anti Poison et Pharmacovigilance du Maroc (WHO Collaborating Centre for Pharmacovigilance) in Morocco, WHO has been developing useful tools to detect medication error and building capacity to analyse reports of medication errors[4].

The Policy, Access and Use team within EMP is involved in activities to support the rational use of medicines by health professionals and consumers through the strengthening of

[2] IMS Institute for Healthcare Informatics, Advancing the responsible use of medicines: applying levers for change, 2012
[3] World Health Organization. The importance of pharmacovigilance, safety monitoring of medicinal products. Geneva. 2002.
[4] World Health Organization. Reporting and Learning Systems for Medication Errors: The Role of Pharmacovigilance Centres. Geneva. 2014

health systems and promotion of rational medicine use strategies. The Essential Medicines List Secretariat maintains and updates the WHO Model List Essential Medicines and Model List of Essential Medicines for Children, which guide countries in developing and updating national essential medicines lists. The careful selection of essential medicines on the Model Lists results in better care for patients, better management and use of medicines and more cost-effective use of health resources. Together with clinical treatment guidelines, essential medicine lists serve to improve availability and the responsible and rational use of medicines within health care systems.

**1.3. Draft strategic plan overview (Dr Paul Rutter)**

The lessons for success drawn from previous Global Patient Safety Challenges include high visibility, political and professional commitment, multileveled 'spearheading' interventions, and WHO's ability to lead and mobilize the global community to reach the proposed goals. The strategic framework for this Challenge should galvanize commitment to reduce medication errors and strengthen measurement and safety monitoring systems.

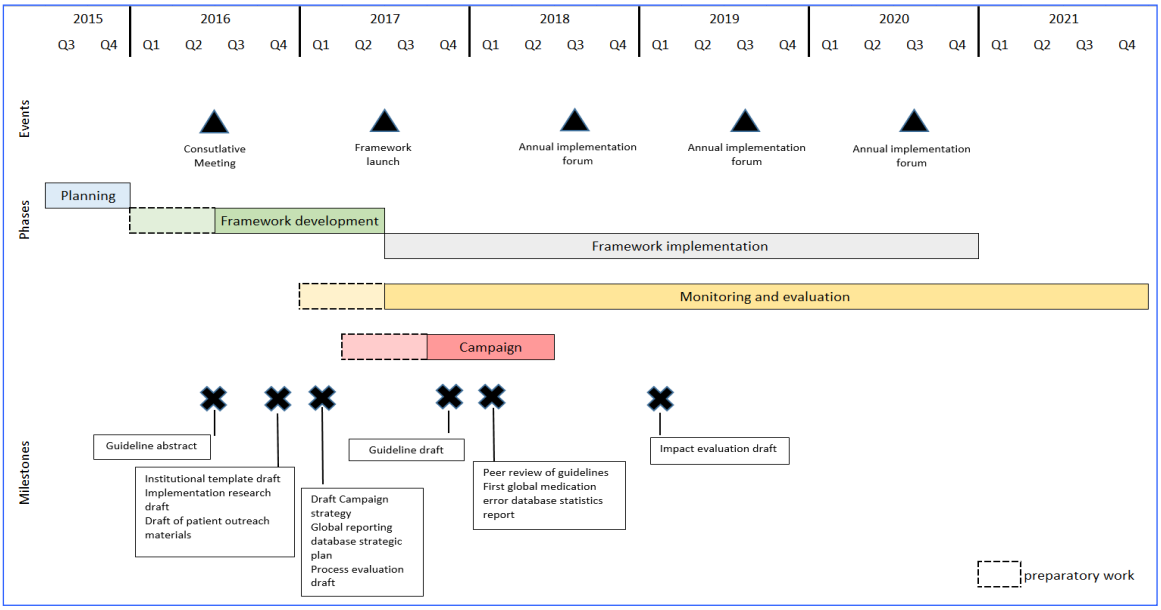
The proposed primary goal of the Global Challenge was proposed to reduce the rate of medication errors (used as a proxy indicator for medication safety) by 50% in the next five years, with a secondary goal of increase medication error reporting through a global medication error database.

Four fundamental problems lay the ground for the strategic framework:

- **Patients** are not always medication-wise. They are too often passive recipients of medicines, and often unable to accurately identify and communicate issues of medication safety to the relevant authorities.
- **Medicines** are sometimes complex and can be confusing – in their names, in their appearance, and with lack of proper information.
- **Health professionals** prescribe and administer medicines that they are sometimes not wholly familiar with, and are not sufficiently familiar with the field of medication safety.
- **The systems and practices of medication** are complex and often disorderly, depending too much on the memory, preferences and performance of individual practitioners.

Four strands of work, one for each fundamental problem identified, are proposed: patients, health professionals, medicines, systems and practices. Sub-strands addressing specific issues will be further developed as required.

The Challenge development and implementation plan timeline is presented below.




Implementation of the Challenge will be monitored and rates of progress evaluated periodically for its duration, according to specific metrics agreed in advance. A global campaign to mobilize stakeholders, inform countries and partners, and raise awareness of the public on medication safety will be launched with the Challenge, and repeated annually, for its duration, five years from the start of the Challenge. All Member States will have access to the Challenge materials and the global monitoring system.

## Session 2: Review of the draft strategic plan

### 2.1 Discussion for review of the draft strategic plan of the Global Patient Safety Challenge - Medication Safety

#### 2.1.1 Group work session

The draft strategic plan for the Global Patient Safety Challenge - Medication Safety (submitted for review prior to the event) was discussed in a group work session. Participants were introduced to the scope of work and divided into working groups. Each working group focused on the three questions: a) adequacy to purpose of the four work strands proposed (patients, medicines, health professionals, systems and practices of medication); b) the most appropriate measure of medication safety and goal; and c) the potential barriers in implementation and risks to Challenge success. The conclusions of the working groups are summarized below.

The four strands of work proposed for the Challenge strategic framework were endorsed by all working groups, with the recommendations to expand their scope: the patients work strand should include the general public, the health professionals work strand should be renamed as health care providers (to overcome local regulatory gaps), and medicines should be expanded to include traditional medicine, vaccines and blood. The four work strands must operate in a coordinated way and include regulatory bodies and industry representation.

There is no all-inclusive measure for medication safety right now (reporting of adverse events provides some qualitative information, and could be extended to certain medication practices). The proposed Challenge goal of a 50% reduction in medication errors is difficult to reach without a clear baseline, and difficult to explain to the public. A goal difficult to define will be difficult to implement, and the choice between measuring everything including near misses and a more targeted 50% reduction of medication-related (serious) harm were discussed. A proposal was suggested to identify a list of medicines more likely to harm, and that countries identify their own 50% reduction goal in medication safety. This flexible target goal for countries will be coupled with a global overarching goal.

The main barriers and risks to this Challenge's implementation and success were seen to be costs, lack of information baseline, and weak reporting mechanisms. The proposed period was seen as short and challenging for an effort that will encompass multiple stakeholders, partners and entities. Pulling together so many actors and practices in a common effort towards reaching the goal, and creating a sense of ownership and sustainable adherence to the Challenge scope will not be easy. Getting the right people for the Steering Board and the Working Groups will be another challenge to overcome.

### 2.1.2 Plenary discussion

During the plenary discussion that followed, several issues were debated, such as the wisdom of having a numerical target for the Challenge goal, and the content of the flagship element: intervention or process (i.e. focus on medication associated with severe harm or on improving prescribing safety in general). A suggestion was made to map successful interventions and filter what could be scalable within the context of this Challenge's goal.

Participants identified several interventions as listed below, as a proof that the 50% reduction target proposed is achievable if focused on the right aspect:

- Following an extensive review performed by the United Kingdom's National Health Service (NHS), ten errors that matter and 80 serious medication issues (United Kingdom-specific) for action were identified.
- The change of vincristine packaging to a mini-bag led to an elimination of administration incidents associated with this drug.
- Canada performed a trend analysis to identify weaknesses in medication safety.
- The United States launched a programme on adverse event prevention in 2014 with precise measurement criteria and targets.
- Australia included medication safety as part of its quality of care programme, with strong patient participation (make all patients active).
- Japan has established a national reporting system, allowing the sharing of many medication issues.
- Sri Lanka performed research to explore what the most likely occurring medication errors are.

The Challenge is expected to build momentum in countries and help redirect attention to human resources and infrastructure issues in limited-resource settings. In low- and middle-

income countries, it will be difficult to set a baseline and a context-based approach will be required. Challenge materials will be made available to all countries, irrespective of resources.

Content issues were raised, such as self-medication and self-prescription, each being associated with a level of risk. It is not clear yet if self-medication will be included in the Challenge's scope. The power of the patient who needs to be health literate to become fully engaged in medication safety was underlined.

The possibility of targeting vulnerable age groups (e.g. polypharmacy in elderly patients) was mentioned for the purpose of the Challenge.

Monitoring progress to reach the Challenge goal will combine active surveillance, reporting and pharmacovigilance. It was suggested to include poison control centres in the process of data collection and progress monitoring as these very likely record drug poisoning caused by medication errors. The development of a monitoring toolbox for high-risk medication, polypharmacy and transitions in care was also proposed. The importance of developing technology solutions, and a health technology assessment were mentioned.

A proposed five-year period of action is being considered for building sustainability.

The ten key issues emerging from the debate were summarized by WHO's Envoy for Patient Safety, Sir Liam Donaldson.

1. Mainstreaming the Challenge: the message should be made appealing and relevant, so that it raises interest in places where this had no previous significance.

2. Adaptation of the overall numerical target: considering differing-resourced settings and baselines, the 50% reduction target could be country-specific.

3. Measurement (surveillance and reporting): aggregation of medication safety data should make use of both pharmacovigilance and patient safety reporting systems with detailed investigation of causality (delineating local and generic components).

4. The flagship element(s): to be defined as intervention/s or tool/s, could include self-medication and complementary medicine.

5. Epidemiology: must consider the level of understanding of the issues (in low- and sometimes middle-income countries, understanding of the issue might be limited).

6. Scaling up solutions that have worked: interventions that underwent a filter of feasibility, should consider the difficulties of spreading good practice in context.

7. The involvement of industry: pharmaceutical companies as producers of medicines have a direct input.

8. The voice of the patient: as the recipient of medicines, reporter and adviser contributes through own experience.

9. The technology: introducing electronic medical records, artificial intelligence, electronic decision support systems for clinicians, as system barriers to failure.

10. Access to medicines: review under-use due to limited access to care versus over-use due to resource-setting context.

### 2.2 Scope of work of the Steering Board and Working Groups

Moving forward, the Global Patient Safety Challenge - Medication Safety will require an organized internal structure to be established: Steering Board and five proposed Working Groups.

The scope of the Steering Board will be to oversee the development, implementation and progress of the Challenge's work, agree on methodological framework and timescales, and act as a bridge between partners – maintain cohesion and unity of direction for the Working Groups. The Steering Board includes representatives of relevant professional groups, key statutory agencies, patients and local community, nominated by the WHO Director-General and the WHO Envoy for Patient Safety[5].

The Working Groups will follow six strands: patients, medicines, health professionals, systems and practices of medication, monitoring and evaluation, and global campaign. These Working Groups will be convened for the purpose of guiding and producing a set of deliverables, adjusting outcomes to the evolving environment and according to an agreed timeline. People with broad expertise in the field of work can be part of the Working Groups, and membership is based on expression of interest.

Following the short introduction of the Steering Board and Working Groups scope of work, participants signed up to one of the thematic Working Groups. These groups provided input for the draft implementation plan of the Challenge during Session 4.

## Session 3: Experiences and challenges with reducing avoidable harm due to unsafe medication practices and medication errors

This session included case studies related to the six strands of the working groups: patients, medicines, health professionals, medication systems and practices, monitoring and evaluation, and global campaign.

### 3.1 The patients' perspective (Ms Helen Haskell)

Flagship examples on the role that patients and families can play in medication safety were provided. The case of Lewis Blackman, a 15-year-old boy who died due to a postoperative drug overdose was reported by the parents, investigated by the drug producer, and led to reduced dose packaging of the drug involved. The Cystic Fibrosis Foundation's ongoing work with researchers and industry, helped to develop treatments and drugs for the condition. The WHO Patients for Patient Safety network with over 400 champions across the world helps bring the patient's voice to health care.

[5] WHO Glossary of terms, Barnes and MacArthur, 2000

The contribution patients can make to medication safety is tremendous and could help bridge the existing gap in knowledge. Patients need tools and information, which is easy to understand, simple to use, and the motivation to do so, to become able to bring their input to medication safety. Health literacy levels vary and the information provided to patients must be differentiated. This should include how to identify and communicate an adverse event having taken place. The medication passport could be a useful source of information for both patients and health care providers.

A common goal to reduce medication error-related harm could generate a social movement bringing together patients and providers, and lay the foundation of this Challenge's work.

### 3.2 Medicines – packaging, labelling and look-alike, sound-alike medicines (Mr David U)

Medication errors due to confusing drug names and/or packaging are fully preventable, but these do frequently occur due to existing variations in standards of practice, globally. Numerous institutional, national and international initiatives are addressing these issues.

The Institute for Safe Medication Practices (ISMP) Canada and ISMP USA are independent, national, not-for-profit organizations that collaborate with regulators, industry and the health care profession to enhance medication safety.

The International Medication Safety Network (IMSN), established in 2006, promotes safer medication practices for safer patients in its position statement, addressing both product and practice issues.

Numerous guidance documents for industry have been issued, for example reviewing brand names, safety considerations for container labels and graphic design (Canada, USA), consultation paper medication regarding labelling and packaging review (Australia). The inconsistency in the application of existing standards of practice gives background to some necessary Challenge work.

### 3.3 The role of health professionals (Dr Gurumurthy Parthasarathi)

The concept of a clinical pharmacy service was introduced at Jagadguru Sri Shivarathreeswara (JSS) University in Mysore, India in 1997. The medication order started being overviewed by clinical pharmacists, while health professionals received more medication-related information and a Patient Medication Counselling Service was established. A monitoring programme was initiated.

The concept of medication error reporting was introduced in the JSS University in 2011, with education work and research for baseline safety data. Calculated incidence of medication errors was found to be 20.4% in general medicine practice with leading causes: monitoring and compliance, and 27.8% in general surgery patients with omissions as the leading cause.

The Medication Error Reporting Programme was established in 2013, coordinated by the Clinical Pharmacy Department. Reported data is recorded and analysed, and a plan of future prevention has been developed. Data is presented to various committees at the hospital level, to promote learning. The main challenge to implementing the reporting of medication

errors was fear of retaliation. Changes in process include electronic medical records and electronic prescribing, a counselling centre and training of staff.

### 3.4 The systems and practices of medication (Mr Herbert Down)

The Australian experience was then presented by Mr Herbert Down. The National Health Reform Act in 2011 placed on the frontline the implementation of health care safety and quality, promoting patient safety in a systematic manner.

A literature review of medication safety in Australia showed an estimated hospital admission rate of 230 000 patients annually due to unsafe medication practices, with related costs mounting to 1.2 billion USD. The continuous improvement of the medicine management cycle became a common goal for governments and health care providers.

Several initiatives were undertaken, aimed both at prescribers and patients, such as the National Tall Man Lettering project (an Australian-centric list aimed at reducing the risk of medicine selection errors, currently under review), the National Inpatient Medication Chart, Commission's Recommendations for Terminology, Abbreviations and Symbols used in the Prescribing and Administration of Medicines, myHealth Record Safety Programme, Commission's Clinical Safety Programme (which includes incident management and investigation).

### 3.5 Monitoring and Evaluation (Dr Hisham Aljadhey)

Multiple factors contribute to improving medication safety and need to be observed to improve overall care. Establishing a monitoring system for medication errors will be expected to scrutinize Challenge success toward goals, evaluate impact of interventions and perform as a tool for improving medication safety. The ideal system should be simple, affordable, reliable, and operational at various levels (country/institution/setting). It will also require training for high internal quality.

Several operational approaches were presented, including medication safety committees, developing list of long-acting and short-acting medications, evaluation of practices, hospital surveys, reporting of safety incidents, retrospective review of adverse events, adverse drug events incidence in hospitals, after hospital discharge, medication discrepancies after hospital admission.

The choice of monitoring and evaluation tools will have to be based on the Challenge goals, and comprise baseline and concluding assessments.

### 3.6 Running a campaign on medication safety (Ms Sandi Kossey)

The experience of the Canadian Patient Safety Institute (CPSI) was presented. Initiated in 2003, following a recommendation of the National Steering Committee on Patient Safety report 'Building a safer system', CPSI works with government, organizations, health care providers, patients and families for patient safety and quality of care improvement. Awareness-raising interventions have been developed, to make health care safer for

Canadians, such as the six 'Safer Health Care Now' (SHCN). Representatives from 450 different organizations share resources to create a learning network for SHCN.

Work on medication reconciliation is the most subscribed since its launch in 2005, being also in focus for Accreditation Canada. The 2011 Medication reconciliation summit was a milestone in the development of the National Reconciliation Strategy. A national consensus statement to improve communication on medication reconciliation was issued and several tools (e.g. MedRec Check-up Map and Leading Practices, MyMedRec App, MedRed Getting Started kits) were developed. Canada also led the medication reconciliation for the WHO High 5s project.

Advancing a Canadian patient safety blueprint and the National Patient Safety Consortium are part of the 2013-2018 business plan of CPSI. Four focus areas of work are identified, including medication safety (medication errors are the second most common cause of adverse events). Patient safety education is foundational. Thirteen actions under the four themes will be implemented over the next four years, with a strong focus on communication. Campaigns that stimulate change and increase awareness are not sufficient on their own, though. Collaboration, leadership, engagement, culture and behaviour change, open communication and persistence, are key elements for system level transformation.

## Session 4: Development of draft implementation plan for the Challenge

The presentations and extensive discussions helped to provide direction to the Medication Safety Challenge, and laid the ground for a tailored approach to reach planned objectives and goals.

### 4.1 Group work on the Global Challenge implementation plan

The Global Challenge implementation plan was explored from the perspective of the six thematic working groups, previously established. All Working Groups had to address the same questions: scope of this Working Group, key partners, key deliverables and outcomes, and expected timeline. Distribution of participants into the six thematic working groups was based on the participant's expressions of interest. Reports from the groups are summarized below.

#### *4.1.1 Patients Working Group*

| Scope of work | Key partners | Key deliverables | Timeline |
|---|---|---|---|
| 1. Charter – name, slogan<br>2. Baseline survey & measurement of impact<br>3. Empowering patients<br>- The right to know<br>- Basic information | Other working groups<br>Patient support groups<br>Health care professionals<br>Civil society organizations<br>Community-industry | 1. Charter – the right to know<br>2. Baseline measurement on most widely prescribed drugs, common over-the-counter medication, common errors and harm, patient knowledge and difficulties<br>3. Medication wise | Short term<br>- Charter<br>- Baseline data<br>- Deliverables<br>- Fundraising<br><br>Long term |

| | | | |
|---|---|---|---|
| about medicines and managing medication<br>- Patient-friendly reporting systems<br>4. Dissemination | networking<br>Regulatory bodies<br>Human factors groups<br>Media groups<br>Industry | programme for patients and public<br>4. Patient materials: e.g. focus on high alert drugs, simple guide to patient reporting, complementary toolkit for patients and providers, develop app | - Deliverables<br>- Dissemination<br>- Impact assessment |

Dissemination to countries (through workshops, patient networks, professional groups, health ministries and social media) and on-going assessment of needs and quality of work are part of the Working Group's agenda. The risks identified by this group relate to the vast differences between patients and countries globally, which will require a tailored approach of planned work.

#### *4.1.2 Medicines Working Group*

| Scope of work | Key partners | Key deliverables | Timeline |
|---|---|---|---|
| 1. Baseline analysis & compilation of best practice to avoid medication errors (e.g. brand name, labelling)<br>2. Develop recommendations for intervention<br>3. Pilot test in countries for high-risk medicines with potential of catastrophic error<br>** Over-the-counter drugs should be also considered under the scope of this group* | Industry representative bodies<br>Regulatory bodies<br>Patients<br>Health care professionals<br>Ministries of health<br>Medication safety organizations<br>Investors<br>Procurement groups | 1. Summary of condensed best practices<br>2. Recommendation for intervention with selected high-risk medicines (e.g. focus on packaging)<br>3. Study design to test whether implementing the intervention delivers desired improvements | WHO patient safety and essential medicines coordinators identified: May 2016<br>Coordinators establish working group and first meeting: August 2016<br>Analysis of first draft: December 2016<br>Analysis of final version: March 2017<br>Intervention recommendations: June 2017<br>Test site implementation: starts July 2017 |

The risks identified for the work of this group are related to market pressure (health versus marketing), the ethics of collaborating with pharmaceutical industry and the ability of WHO group to influence pharmaceutical stakeholders and regulatory practice.

#### *4.1.3 Health Professionals Working Group*

| Scope of work | Key partners | Key deliverables | Timeline |
|---|---|---|---|
| 1. Collaborative approach to inter-professional working and learning<br>2. Research to review status of patient safety education in under-/post-graduate curriculum<br>3. Work with professional bodies and regulators to ensure education and training on patient safety is mandatory | Regulatory bodies/EU on mandating reporting<br>Professional bodies<br>Policy-makers<br>Medicine safety organizations<br>Pharmaceutical industry | 1. Guidelines and policy for medicine safety-and medication error and appropriate polypharmacy<br>2. Access to information and data relevant to decision-making<br>3. Competency-based assessment for the prescribing and management of medicine | Initial planning<br>- 3rd quarter 2016<br>- Teams undertake proposals, define dedicated resource, draft and peer review<br>Long-term planning<br>- 2017 onwards<br>- Will be defined from initial scoping of work |

Barriers identified include communication between health professionals and hierarchy, professional autonomy, information technologies and, of course, culture – collaboration should be the norm.

#### *4.1.4 Systems and practices of medication Working Group*

| Scope of work | Key partners | Key deliverables | Timeline |
|---|---|---|---|
| 1. Review available data and current systems<br>2. Develop tools for countries to improve system deficits that they identify<br>3. Facilitate communication and information exchange | Regional WHO offices<br>Patients and Providers<br>Organizations with previous assessment experience<br>Policy-makers<br>Regulatory bodies<br>Medication safety organizations | 1. Analytic framework for situational analysis<br>2. Assessment reports<br>3. Medication safety guidelines or roadmap to guide countries on creating a more effective medication safety system | Final working group will decide based on feasibility, resources and collaboration with other strands |

The group aims to bring awareness and provide a vision of what a system to improve medication safety/patient safety should be in high-, middle- or low-income countries.

#### *4.1.5 Global campaign Working Group*

| Scope of work | Key partners | Key deliverables | Timeline |
|---|---|---|---|
| Develop a global campaign strategy: identify a team and target audience | Regulators, Ministries of health<br>Patient groups and | Global repository of products and tools from previous medication | To be defined in collaboration with other working |

| | | | |
|---|---|---|---|
| Develop the communication strategy for the campaign: visual identity, slogan, key messages<br>**Proposed slogans:*<br>*Medication with less harm*<br>*Medication with no errors*<br>*Safe medicines for all*<br>*No medication risk for all*<br>*Medicate safely*<br>*Adopt safe medication, adopt safe life* | organizations<br>Patient safety and quality bodies<br>Health care professional associations<br>Pharmacovigilance centres<br>Toxicology centres<br>Hospital associations<br>Industry representation<br>Universities<br>Other | campaigns done globally<br>Annual campaign:<br>- Slogan<br>- Educational and promotion materials<br>- Communication and media toolkits (products for different audiences)<br>- Fact sheets, medication cards<br>- Timing and length of the campaign | groups' planned work |

The proposed membership of the group will be 17 members: 2 from WHO (co-chair and Secretariat), 5 from the other working groups, 2 experts on patient safety and quality, 2 experts on medication safety, 2 communication specialists (marketing and campaigning), 1 social scientist, 1 patient champion and 1 representative from a patient organization, plus 1 ad hoc member. Emphasis is placed on active partnership and collaboration.

#### *4.1.6 Monitoring and evaluation Working Group*

| Scope of work | Key partners | Key deliverables | Timeline |
|---|---|---|---|
| 1. Identify terms of reference and composition of group<br>2. Develop detailed manual for monitoring medication harm (definitions, baseline, outcomes)<br>3.Develop evaluative approach to assess the Challenge across a variety of settings<br>4. Ensure that monitoring activities and Challenge evaluation are performed and reported | Institutional data access experts<br>Pharmacoepidemiology, epidemiology, surveillance and statistics experts<br>Evaluation researchers<br>Governments, ministries of health representing a wide range of countries (low-, middle- and high-income) | 1. Group and mode of working<br>2. Detailed manual for monitoring medication harm (definitions, protocols, options for measurement, awareness)<br>3. Evaluative approach to assess the Challenge<br>(quantitative and qualitative longitudinal evaluations, indicators)<br>4. Technical support for evaluation | Terms of reference: 1 week<br>Leadership/group composition: 3 months<br>Detailed manual: 6 months to 1 year<br>Baseline identified: year 2 |

A presentation of the Global Challenge key points opened the floor for further debate.

### 4.2 Summary of Global Patient Safety Challenge key points

*'Global Patient Safety Challenges are essentially programmes of change aimed at improvement and risk-reduction. They blend evidence-based interventions with multi-modal implementation strategies. They seek to achieve widespread engagement and commitment. They span the needs of all countries. They are most impressive when they develop the features of a social movement'. Sir Liam Donaldson*

In a simplified view, this Global Patient Safety Challenge will contain two main elements: advocating for medication safety and the flagship element to ignite interest and help fundraise. Implementation requires a multimodal strategy to raise awareness, move forward medication safety, reduce risks, get patients and governments engaged and implement in collaboration.

The feasibility of the overall numerical goal proposed for the Global Patient Safety Challenge - Medication Safety was substantially debated, and several options proposed: a) a 50% reduction global goal based on all medication errors producing severe harm; b) a flexible approach based on a 50% reduction concept but country-specific/issue-specific; c) no numerical goal.

Dramatic statistics, patient stories and economic implications of medication errors can be used to describe the importance of the problem, and further help refine the scope and terminology of the Challenge.

The flagship element is the visible marker of the Challenge, essential in raising awareness, increasing adherence and fundraising. It could address high-risk medicines, polypharmacy or patient engagement and public roles.

For the Challenge to be successfully implemented, evidence-based advocacy should convince that medication safety is a high priority, a forward message will generate concern for the problem and passion to act, translating into mainstream activities, producing long-term commitment and visibility, so that targeted actions can be sustained and supported through good coordination.

Debate continued over the choice of a numerical target that could be globally applicable (difficult task due to lack of baseline, and variety of aspects included).

A global quantitative goal must show relevance (to the country, patient, professional, funding source, other), rally forces and generate urgency for action, hence the importance of finding the right fraction element and its metrics. It should be simple and inspirational.

The goal could be generic, or numerical, spilt between countries with one or two goals for outstanding achievements. Flexibility is required, for evaluations to happen on a smaller scale (such as the possibility of a research target goal of 10% reduction in harm levels) and in a specific setting (i.e. across a whole country or number of states).

Measurement systems in place at national and facility level need to be reviewed in determining the metrics for polypharmacy, specific drugs, transitions of care and medication errors. Establishing a repository of current practice could assist in developing and validating goals and indicators for the Challenge.

Developing guidance for countries on how to measure, and for countries to define their own targets were proposed. As such, the Global Challenge will become embedded into countries' health-related programmes of work.

The medication safety director/office(r) was examined, as part of medication surveillance and leadership. Medication officers already exist in several countries, and hospital leaders are requesting such staff. Most major hospitals already have quality and safety committees, including the pharmacist. In Japan, a full-time pharmacist and a full-time doctor are filling in for the medication safety officer. In the United States, a Medication Safety Officers Association has been created and counts a 1000 members' blog and network. In the Middle East and other regions, hospitals have Medication Safety Officers. Different training approaches are included in residency programmes or specific 3-5 day courses. Developing a white paper stating the role of the Medication Safety Officer is underway at ISMP and was proposed as part of the Challenge.

## Session 5: Financing the Global Patient Safety Challenge

### 5.1 Experience from previous Global Patient Safety Challenges (Dr Edward Kelley)

The first Global Patient Safety Challenge proved successful without needing a measurable numerical target. Monitoring actual patient outcomes was considered not feasible and as a result, there was no prioritized indicator. There was a lot of information received from countries and the system of measurement developed targeting health care-associated infections and the sometimes-deadly aspect of harm. The leadership component was built before the launch, by gathering world experts as cohesive group elevated to higher status.

Medication safety target should be supported by a lot of guidance and applied with flexibility. A campaign with a serious intervention rigorously monitored and evaluated could be the way forward.

Differentiating between indicators monitored by WHO and indicators that the Challenge recommends countries to collect should be also considered when choosing the recommended monitoring and evaluation mechanisms of Challenge implementation. A global report on the burden of the problem, including an inventory of what countries are doing was suggested, as a baseline and helping identify most common indicators applied.

### 5.2 WHO mechanisms for resource mobilization (Mr Christopher Maddock)

The resource mobilization mechanisms were briefly introduced and discussed. Many competing priorities are targeting the flexible funds that can be allocated subject to needs. Patient safety now works within the programme budget of WHO and the Challenge will be implemented in collaboration with the Essential Medicines Programme.

Funding from industry is subject to specific restrictions, to avoid insidious influence and giving comparative advantage. In some countries, patient organizations are heavily influenced by industry, and this should be remembered.

With this goal in mind, a platform with private manufacturers (of alcohol hand rub and syringes) was established as part of the First Challenge as one of the mechanisms of working with the private sector. A group will have to review this aspect and make general recommendations to WHO.

Showing something that works and scaling this up is the strategy for fundraising (e.g. the example of the health technologies project funded by the Gates Foundation). Establishing a Challenge fund could further support this work.

## Session 6: Thinking about the way forward

### 6.1 Key points and recommended directions

It was concluded that establishing a quantitative goal for the Challenge would be vital for generating a social movement. The difficulties in framing a numerical target (given the total absence of information in some parts of the world, difficulties in separating disease effect from medication lethal effect) were recognized.

The global target of a 50% reduction in medication-related harm was provisionally agreed, with a proposed option for country-adaptable targets, in particular for low- and middle-income countries. Difficulties of measurement and lack of baseline data for reaching the target were equally acknowledged.

The Challenge will define the scope and terminology of medication safety and provide a global consensus definition and understanding of the problems that lead to and arise from insufficient medication safety practices. The Challenge will also describe the importance of medication safety by illustrating harm from unsafe medication practices, present case studies and patient stories, provide evidence to advocate for change, reduce blaming culture and stigmas that have the potential to occur as a result of poor medication safety practices.

A baseline inventory of what exists will support the decision over the target and specific intervention areas. Further agreement on specific methods for progress quantification will be agreed following three expert reports to be commissioned: polypharmacy, high-risk medications and transitions of care, which will also define the flagship element of the challenge. Leadership focus will be on Medication Safety Officers.

WHO will be responsible for providing advocacy and leadership regarding Challenge outcomes and objectives, generating interest and buy-in from global health leaders and create momentum to move the Challenge forward. In addition to these critical functions, WHO will organize Challenge events including a global Challenge launch, direct overall Challenge coordination, provide expert advice, instigate resource mobilization, commission targeted research, review solutions and assess progress of the Challenge.

Encouraging and increasing adherence to the reporting of medication-related patient safety incidents will also be part of the Challenge's scope and should be kept in focus.

Success is contingent on five key factors:

1. The Challenge must convince and persuade that medication safety should be a high priority within health systems.

2. The Challenge must achieve widespread buy-in by stakeholders and a shift to the mainstream of care provision activities.

3. The Challenge must propose highly specific and concrete problem areas that ignite concern to act, and passion to prevent harm.

4. The Challenge must sustain enthusiasm, commitment, interest, and visibility for more than two years.

5. The Challenge must be well-coordinated

**6.2 Conclusions and next steps**

The topic of medication safety for the next Global Patient Safety Challenge has been discussed for many years. The related difficulties acknowledged also during this event, and in particular the lack of specific data in some part of the world, have required crystallization of the strategic approach along the way.

Clear next steps have been defined now with the establishment of the Steering Board and the five thematic working groups, with concrete and aggressive timelines for Challenge strategic framework finalization and an implementation plan. Once formalized, the groups are expected to have their first meetings in the third quarter 2016.

As part of the preliminary preparations in laying the ground for the Challenge launch, a side-event on medication safety will be hosted by Poland and cosponsored by Malaysia, Oman and Sri Lanka during the upcoming World Health Assembly (May 2016).

Launching this Global Challenge will require substantial effort and concerted action, working on regulation, accreditation and quality of care. Implementation will only be successful if done in partnership and it will support the global agenda by contributing to greater access to services and reducing harm.

## Annex 1: Concept Note

### Background

Unsafe medication practices and medication errors are a leading cause of injury in developed and developing countries. In the United States alone, it is estimated that as many as 1.5 million patients are harmed and thousands are killed every year because of a medication safety issue[1]. Statistics in low- and middle-income countries are limited and vary widely, indicating that the true burden of unsafe medication practices is grossly underestimated. Moreover, the costs of medication errors could be as high as $3.5 billion each year, not including lost wages, decreases in productivity or additional health care costs[1]. Data from other countries indicates that as many as 78% of patients' medication histories contain errors[2], which have the potential to significantly harm the patient if medications are duplicated or omitted. Worldwide, the cost associated with medication errors has been estimated as $42 billion annually[1]. This is almost 1% of total global health expenditure.

Medication errors can occur at any stage of the medication use process—prescription, transcription, preparation, administration and/or monitoring. A study in Switzerland found that only 25.8% of errors were detected before they advanced to the subsequent stage[3]. There are stopgaps at each stage in the process, so any error that reaches the patient is not due to the inappropriate actions of one person, but rather a combination of factors that result in a system failure. As a result, systematic changes and process improvement as a whole should be the focus of the WHO Global Patient Safety Challenge - Medication Safety.

Advances in prescribing and medication management, tools to empower patients to safely manage their own medications, capacity-building of health professionals for safer medication practices, increasing the role of pharmacists in medication practices, continued provider and patient education, improvements in data systems and personal health histories; and approaches to better teamwork across care-givers and hospital units, could together allow the world to improve medication practices in today's health care systems. The Global Patient Safety Challenge - Medication Safety will propose solutions to the obstacles the world faces today to ensure the safety of medication practices.

### Overall goal and aims of the WHO Global Patient Safety Challenge - Medication Safety

To address the global problems of unsafe medication practices and medication errors, WHO plans to launch the Global Patient Safety Challenge - Medication Safety, with the overall goal "to reduce medication errors by 50% in the next five years". As it is difficult to measure avoidable harm from unsafe medication practices and impractical to detect absolute changes regarding preventative outcomes, medication error reduction will therefore serve as a quantitative surrogate benchmark to measure the success of the Challenge and overall reduction of harm.

The aims of this initiative are to:

1. Establish the global baseline of medication errors and create a global monitoring system to facilitate the tracking of medication errors.

2. Develop a multimodal strategy to engage governments, organizations and frontline health care providers to improve medication safety by decreasing the incidence of medication errors by means of improving prescribing, transcription, preparation, dispensing and administration practices.
3. Develop guidelines, tools, materials, and technologies to promote and support medication safety and reduce the incidence of medication errors.
4. Engage key stakeholders, partners and industry to actively pursue efforts to improve medication safety.

**Consultative Meeting**

WHO will be engaging key international and national partners in substantive discussions at all stages of the development of the Global Patient Safety Challenge - Medication Safety. The Patient Safety and Quality Improvement Unit in the Service Delivery and Safety Department is organizing a consultative meeting to plan for the Global Patient Safety Challenge - Medication Safety, on 19-20 April, 2016 at WHO headquarters in Geneva, Switzerland. The consultative meeting will bring together approximately 40-50 experts and leaders in medication safety and patient safety. This consultative meeting is one of the main components of the planning phase of the Challenge and will provide the foundation for the framework development and implementation phases, as well as look at resource mobilization.

**Specific objectives of the Consultative Meeting**

1. Review the scope of the problem of medication safety.
2. Review the draft strategic plan to launch and implement the WHO Global Patient Safety Challenge - Medication Safety, and propose any amendments or changes.
3. Identify key partners and stakeholders that will be integral components in the Challenge.
4. Review the scope of work of the Steering Board and Working Groups for the Challenge, and obtain the expression of interest to join the multi-disciplinary Working Groups for Challenge implementation, monitoring and evaluation, and developing the Global Campaign.
5. Develop a draft action plan and timeline for implementation and monitoring and evaluation of the Challenge.

**Expected outcomes of the Consultative Meeting**

1. Broad consensus on the framework and strategic plan for launching and implementing the WHO Global Patient Safety Challenge - Medication Safety.
2. Consensus on the scope of work of the Working Groups and expression of interest to join the working groups.
3. Development of a draft action plan and timeline for implementation and monitoring and evaluation, with clarity on roles and responsibilities.

1. IMS Institute for Healthcare Informatics. Advancing the responsible use of medicines: applying levers for change. 2012. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2222541.

2. Salmasi S, et al. "Medication errors in the Southeast Asian countries: A systematic review." *PloS one.* 10.9 (2015): e0136545.

3. Huckels-Baumgart Saskia and Manser Tanja. "Identifying medication error chains from critical incident reports: A new analytic approach" *The Journal of Clinical Pharmacology* 54.10 (2014): 1188-1197.

## Annex 2: Programme of work

| **Day 1 - Tuesday 19 April 2016** | | |
|---|---|---|
| 8:30 – 09:00 | Registration | |
| 09:00 – 09:30 | Welcome and opening remarks<br>Introduction of the participants | Sir Liam Donaldson (Chairperson) |
| 09:30 – 09:40 | Objectives of the Consultative Meeting | Dr Neelam Dhingra |
| 09:40 – 09:45 | Adoption of the agenda and programme of work | Chairperson |
| **Session 1: Scope of the Problem of Medication Safety and Proposal for Strategic Action** | | |
| 09:45 – 10:30 | Scope of the problem of medication safety and proposal for strategic action | Dr Edward Kelley<br>Dr Paul Rutter |
| | WHO work on medicines safety and safe use | Dr Shanthi Pal &<br>Dr Nicola Magrini |
| | Draft strategic plan overview | Dr Paul Rutter |
| 10:30 – 11:00 | Group photo & break | |
| **Session 2: Review and Finalization of the Strategic Plan** | | |
| 11:00 – 13:00 | Group Work A (Five groups) Introduction – Dr Neelam Dhingra<br>• Moderated structured discussion for review of the draft strategic plan of Global Patient Safety Challenge on Medication Safety and propose amendments/changes | |
| 13:00 – 14:00 | Break | |
| 14:00 – 15:00 | Reporting from the Group Work | Group rapporteurs |
| 15:00 – 15:30 | Plenary discussion | All participants |
| 15:30 – 16:00 | Break | |
| 16:00 – 17:30 | Plenary discussion to finalize the Strategic Plan | All participants |
| 17:30 – 17:40 | Scope of work of the Steering Board and Working Groups | Dr Valentina Hafner |
| 17:40 – 18:00 | Expression of interest to join the Working Groups | All participants |
| 18:00 | Summary of day 1 | Chairperson |
| 18:30 – 19:30 | WHO Reception | |

| Day 2 - Wednesday, 20 April 2016 | | |
|---|---|---|
| 08:45 – 09:30 | Summary of Day 1 including reflections on the Strategic Plan | Rapporteur |
| **Session 3: Experiences and Challenges in Reducing Avoidable Harm due to Unsafe Medication Practices and Medication Errors** | | |
| 09:00 – 09:10 | The Patient's Perspective | Ms Helen Haskell |
| 09:10– 09:20 | Medicines – packaging, labelling and look-alike, sound-alike medicines | Mr David U |
| 09:20 – 09:30 | The Role of Health Professionals | Dr Gurumurthy Parthasarathi |
| 09:40 – 09:50 | The Systems and Practices of Medication | Mr Herbert Down |
| 09:50 – 10:00 | Monitoring and Evaluation | Dr Hisham Aljadhey |
| 10:00 – 10:10 | Running a Campaign for Medication Safety | Ms Sandi Kossey |
| 10:10 – 10:30 | Plenary discussion | |
| 10:30 – 11:00 | Break | |
| **Session 4: Development of Implementation Plan for the Challenge** | | |
| 11:00 – 13:00 | Group Work B: Six Working Groups Introduction – Dr Shelby Kemper<br>1. Patients; 2. Medicines; 3. Health Professionals; 4. The Systems and Practices of Medication; 5. Monitoring and Evaluation & 6. Global Campaign | |
| 13:00 – 14:00 | Break | |
| 14:00 – 15:00 | Reporting from the Group Work | Group rapporteurs |
| 15:00 – 15:30 | Plenary discussion and synthesis of the session | All participants |
| 15:30 – 16:00 | Break | |
| **Session 5: Financing of the Global Patient Safety Challenge** | | |
| 16:00 – 16:05 | Previous Global Patient Safety Challenges | Dr Edward Kelley |
| 16:05 – 16:15 | WHO mechanisms for resource mobilization | Mr Christopher Maddock |
| 16:15 – 16:45 | Plenary discussion of potential financing mechanisms | All participants |
| **Session 6: Thinking about the way forward** | | |
| 16:45 – 17:30 | Summarize final Strategic Plan and Implementation<br>Final remarks and next steps | Chairperson |
| 17:30 | Close of meeting | Sir Liam Donaldson<br>Dr Edward Kelley |

## Annex 3: List of Participants

| International Experts | |
|---|---|
| **Australia** | **Mr Herbert Down**<br>Pharmacist and Project Manager<br>Australian Commission on Safety and Quality in Health Care<br>Sydney |
| | **Dr Lisa Pont**<br>Senior Research Fellow in the Centre for Health Systems and Safety Research at the Australian Institute of Health Innovation<br>Macquarie University<br>Sydney |
| | **Dr Lynn Weekes**<br>Chief Executive Officer<br>NPS Medicinewise<br>Sydney |
| **Canada** | **Ms Sandi Kossey**<br>Senior Director<br>The Canadian Patient Safety Institute<br>Edmonton, Alberta |
| | **Dr David U**<br>President and Chief Executive Officer<br>Institute for Safe Medication Practices Canada (ISMP Canada)<br>Toronto, Ontario |
| **China** | **Dr Jia Liming**<br>Director<br>Department of Drug Policy and Essential Pharmaceutical System<br>Health and Family Planning Commission of Jiangxi Province |
| **Egypt** | **Ms Sandra Azab**<br>Patient Safety Expert<br>Cairo |
| **Fiji** | **Mr Apolosi Vosanibola**<br>Chief Pharmacist for the Fiji Ministry of Health and Medical Services<br>Vtwga |
| **Finland** | **Professor Marja Airaksinen**<br>Professor of Social Pharmacy<br>University of Helsinki<br>Helsinki |

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| **India** | **Dr Parthasaraith Gurumurthy**<br>Dean, Faculty of Pharmacy<br>Jagadguru Sri Shivaratreeshwara University<br>Head of Clinical Pharmacy Services<br>Jagadguru Sri Shivaratreeshwara College of Pharmacy<br>Mysore |
| **Iran** | **Dr Gloria Shalviri**<br>Director<br>Iranian Adverse Drug Reaction Monitoring Center (ADRMC)<br>Tehran |
| **Ireland** | **Ms Ciara Kirke**<br>Clinical Lead<br>Medication Safety<br>Health Service Executive, Quality Improvement Division<br>Irish National Health Service<br>Dublin |
| **Italy** | **Dr Monica Baroni**<br>Head of Patient Safety and Quality<br>Monasterio Foundation Public Hospital<br>Massa |
| **Japan** | **Dr Kenichiro Taneda**<br>National Institute of Public Health<br>Saitama-ken |
| **Malaysia** | **Dr Mohamed Azmi Ahmad Hassali**<br>Professor of Social and Administrative Pharmacy<br>School of Pharmaceutical Sciences<br>Universiti Sains Malaysia<br>Penang |
| **Morocco** | **Professor Rachida Soulaymani Bencheick**<br>Director<br>WHO Collaborating Centre for Pharmcovigilance<br>Rabat |
| **Poland** | **Dr Basia Kutryba**<br>National Centre for Quality Assessment in Health Care<br>WHO Collaborating Centre for Development of Quality and Safety in Health Systems<br>Krakow |
| **Saudi Arabia** | **Dr Hisham Aljadhey**<br>Dean and Director of Medication Safety Research Chair, King Saud University College of Pharmacy<br>Supervisor of Pharmacy Services, King Saud University Medical City<br>Riyadh |
| | **Dr Abdulah Mohammad Alhawasawi**<br>Assistant to Director General for Technical Affairs<br>Jeddah |
| **Sri Lanka** | **Dr Priyadarshani Galappatthy**<br>Head of the Department of Pharmacology and Pharmacy<br>University of Colombo<br>Colombo |

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| **Sweden** | **Dr Marie Lindquist**<br>Director<br>Uppsala Monitoring Centre<br>WHO Collaborating Centre for International Drug Monitoring<br>Uppsala |
| **Switzerland** | **Professor Thomas Zeltner**<br>Präsident des Verwaltungsrates<br>Bern |
| **United Kingdom** | **Professor Aziz Sheikh**<br>Chair of Primary Care Research and Development<br>The University of Edinburgh<br>World Organization of Family Doctors (WONCA)<br>Edinburgh, Scotland |
| | **Mrs Alpana Mair**<br>Deputy Chief Pharmaceutical Officer<br>Healthcare Quality and Strategy Directorate<br>Scottish Government Health Department<br>Edinburgh, Scotland |
| | **Professor Philip Routledge**<br>Pharmacology, Therapeutics & Toxicology<br>Cardiff University<br>Cardiff, Wales |
| **United States of America** | **Dr Mick Murray**<br>Professor of Pharmacy Practice and Endowed Chair of Medication Safety, Purdue University<br>Executive Director, Regenstrief Center for Healthcare Effectiveness Research (RCHER)<br>Director, Regenstrief Institute Data Core<br>Purdue, IN |
| | **Dr Nadine Shehab**<br>Senior Advisor<br>Medication Safety Programme<br>Centre for Disease Control and Prevention<br>Atlanta, GA |
| **International Professional Organizations - NGOs** | |
| **International Pharmaceutical Federation (FIP)** | **Dr Zuzana Kusynova**<br>Policy Advisor and Project Manager<br>The Hague<br>The Netherlands |
| **The Institute for Safe Medication Practices (ISMP) and The International Medication Safety Network (IMSN)** | **Dr Allen Vaida**<br>Executive Vice President<br>Safe Medication Practices (ISMP)<br>Horhsam, PA<br>USA |
| **Mothers Against Medical Error** | **Ms Helen Haskell**<br>Patients for Patient Safety Champion<br>Atlanta, GA<br>USA |

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| **The World Medical Association (WMA)** | **Dr Julia Tainijoki-Seyer**<br>Medical Advisor<br>Ferney Voltaire<br>France |
| | **Ms Chavia Zagita Trufani**<br>Ferney Voltaire<br>France |
| **Industry** | |
| **World Self-Medication Industry (WSMI)** | **Dr Gerald Dziekan**<br>Director-General<br>Nyon<br>Switzerland |
| **WHO Secretariat** | |
| **WHO headquarters** | |
| **Service Delivery and Safety** | **Sir Liam Donaldson (Chair)**<br>WHO Envoy for Patient Safety |
| | **Dr Edward Kelley**<br>Director<br>Service Delivery and Safety |
| | **Dr Neelam Dhingra (organizing secretary)**<br>Coordinator<br>Patient Safety and Quality Improvement |
| | **Dr Paul Rutter**<br>Chief Operations Officer<br>Polio Eradication |
| | **Ms Nittita Prasopa-Plaizier**<br>Programme Manager<br>Patient Safety and Quality Improvement |
| | **Dr Valentina Hafner**<br>Consultant<br>Patient Safety and Quality Improvement |
| | **Ms Katherine Hayes**<br>Consultant<br>Patient Safety and Quality Improvement |
| | **Dr Shelby Kemper**<br>Intern<br>Patient Safety and Quality Improvement |
| | **Dr Sukriti Sud**<br>Intern<br>Patient Safety and Quality Improvement |
| | **Ms Maki Kajiwara**<br>Technical Officer<br>Services Organization and Clinical Interventions |
| | **Professor Benedetta Allegranzi**<br>Coordinator<br>Infection Prevention and Control |

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|---|---|
| | **Dr Arshad Altaf**<br>Consultant<br>Infection Prevention and Control |
| **Essential Medicines and Health Products** | **Dr Giles Bernard Forte**<br>Coordinator<br>Policy, Access and Use |
| | **Dr Shanti Pal**<br>Group Lead, Medicines Safety<br>Safety and Vigilance |
| | **Dr Daisuke Tanaka**<br>Technical Officer<br>Safety and Vigilance |
| | **Dr Bernadette Cappello**<br>Technical Officer<br>Policy, Access and Use |
| | **Dr Nicola Magrini**<br>Scientist<br>Policy, Access and Use |
| **Coordinated Resource Mobilization** | **Mr Christopher Maddock**<br>Technical Officer<br>Coordinated Resource Mobilization |
| **WHO Regional Offices** | |
| **WHO-EMRO** | **Dr Mondher Letaief**<br>Technical Officer<br>Hospital Care and Management |

## Annex 4: Group photo