Executive summary

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Background on the conference

The Hospital Pharmacy Section (HPS) of the International Pharmaceutical Federation (FIP) conducted the Global Conference (GC) on the Future of Hospital Pharmacy, August 30–31, 2008, in Basel, Switzerland, immediately preceding the 68th International Congress of FIP. The GC was designed to build a shared vision among hospital pharmacy leaders around the world about the preferred future of hospital pharmacy practice.

Every country in the world was invited to select an official representative to the GC. These individuals were the only people empowered to vote at the GC on consensus statements about the use of medicines in hospitals, the role of hospital pharmacists, and the practice of hospital pharmacy. Other interested people were encouraged to participate in the GC but could not vote on the consensus statements. The participation of 22 official representatives from developing countries was supported by scholarships funded by the GC budget. There were 348 participants from 98 countries, making the GC truly an international event.

The HPS commissioned six review articles on aspects of hospital pharmacy, each written by an expert recruited by the GC planning committee. Five papers dealt with steps in the hospital medicine-use process—procurement, prescribing, preparation and distribution, administration, and monitoring. The sixth paper was on human resources and training in hospital pharmacy. Each GC registrant was assigned to a working group for one of these topics and was asked to review the related manuscript and to discuss, via e-mail, potential consensus statements before arriving in Basel. At the GC, the working groups, led by the authors of the review articles, developed final statements that were presented to official representatives for consensus scoring.

Conference opening

The conference opened with welcoming remarks by Andrew Gray, President of the FIP Hospital Pharmacy Section; the two honorary cochairs of the conference, Jacqueline Surugue, President of the European Association of Hospital Pharmacists, and Henri R. Manasse, Jr., Chief Executive Officer and Executive Vice President of the American Society of Health-System Pharmacists; and David Schlotterbeck, an executive of Cardinal Health, the platinum-level sponsor of the conference.

World Health Organization (WHO) perspective

Malebona Precious Matsoso, who was educated as a pharmacist in South Africa and currently serves as Director of Public Health, Innovation and Intellectual Property for WHO, gave an opening address on hospital pharmacy issues in the context of global initiatives to advance public health.

Although it is the third largest health profession, pharmacy does not benefit from a work force standard for the ratio of pharmacists (or pharmacy technicians) to population. On the continent of Africa, a proliferation of pharmacy occupational groups makes it difficult to estimate, in understandable terms, how many pharmacists exist.

Although the public health community focuses on primary care, the status and advancement of hospital pharmacy is important globally because of the need to improve and integrate health systems that produce improved health status. The advancement of hospital pharmacy may enhance the health system as a whole and promote an integrated approach to health care services.

There is evidence in several highly developed countries that patient-oriented services by pharmacists contribute to improved outcomes and reduced costs. It has been shown that pharmacists can have a significant effect on reducing preventable adverse drug events, including medication errors. Public health officials must give serious attention to this evidence because of the size of the
profession of pharmacy and the potential impact that could be achieved if pharmacists more widely focused on clinical activities.

It is important to study how national health policies affect the ability of pharmacists to improve patient outcomes and lower costs. There is a need for policy guidance on how hospital pharmacy innovations (such as patient-oriented services) in one country can be applied effectively in another country. There should be a harmonized approach toward the development of practice standards that are appropriate for a specific country.

Potential problems in attempts to advance hospital pharmacy may include a lack of a coherent approach that leads to interprofessional conflicts. Fragmentation of projects may cause challenges in scaling up and implementing recommendations. Practice-improvement efforts would benefit from expert facilitation and exchange of information among stakeholders.

It is important to package the evidence in support of changes in hospital pharmacy in a compelling way that will get the attention of policymakers and induce them to act. Proposed changes must be financially sound, scientifically valid, and ethical justifiable.

Global survey

Lee Vermeulen, Director of the Center for Drug Policy, Department of Pharmacy, University of Wisconsin (UW) Hospital and Clinics, and Clinical Associate Professor at the UW-Madison School of Pharmacy, United States of America, presented the results of a global survey of hospital pharmacy practice. The survey respondent for each country was asked to reflect hospital pharmacy experience in the country as a whole. Both the scope and breadth of hospital pharmacy activities were assessed. Responses were received from 85 of 192 countries, representing 83% of the world’s population.

The Millennium Development Goals, adopted by most nations in 2000, include a number of health-related targets, such as combating HIV and AIDS, malaria, and other diseases. Similarly, the World Health Assembly’s Global Strategy and Plan of Action for Public Health Innovation and Intellectual Property identifies specific health gaps and calls for assertive efforts to close those gaps. Hospital pharmacists can contribute to these global initiatives by linking their practices to primary care. In the joint development of good hospital pharmacy practice guidelines by FIP and WHO, specific areas that should be addressed are the procurement and supply of medicines and cross-country cooperation in fighting antimicrobial resistance.

Support for the Global Conference on the Future of Hospital Pharmacy

The Global Conference, which was organized by the Hospital Pharmacy Section of the International Pharmaceutical Federation, was funded by conference registration fees and by grants from the following professional organizations and health care corporations:

**Professional Organizations**

- American Society of Health-System Pharmacists
- Canadian Society of Hospital Pharmacists
- European Association of Hospital Pharmacists

**Health Care Corporations**

- **Platinum-Level Sponsor**
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Eva Ombaka, Ph.D., Ecumenical Pharmaceutical Network, Nairobi, Kenya, reviewed issues related to hospital pharmacy procurement of medicines.
An effective procurement process encompasses a complex range of systems that identify an institution’s needs for specific drug products; determine, accredit, and monitor supply sources; evaluate suppliers’ performance; choose a buying strategy; monitor product delivery and outcomes from use of the products; and evaluate new products on the market.

Procurement activities must be performed by qualified staff with high professional and ethical standards and using sound procedures anchored in appropriate policies and regulations. The procurement process must be transparent and corruption free. Cost containment should be pursued through regular review of procurement methods, monitoring prices, and using a variety of information sources to inform decisions.

Prescribing of medicines
Lisa Nissen, Ph.D., Senior Lecturer in the University of Queensland School of Pharmacy, Australia, reviewed the ways in which hospital pharmacists may influence the prescribing of medicines.

At its core, clinical pharmacy practice is designed to influence prescribing. However, not all countries have the resources to educate pharmacists for this level of practice or to employ them in this manner.

Most hospitals in developed countries have a committee of the medical staff that is responsible for fostering high-quality and cost-effective medicine therapy. This committee is responsible for the formulary system. Pharmacists generally have a significant role in helping the committee formulate medicine-use policy and in implementing such policy. Hospital pharmacists have a role in prescriber education, including the provision of balanced drug information.

Hospital pharmacists have a role in prescriber education, especially when prescribing restrictions are part of the formulary system. This role encompasses formal educational sessions on new therapies. Prescribers should be educated on the ability of clinically-oriented pharmacists to improve clinical and economic outcomes in medication therapy. Providing balanced drug information to prescribers is a component of the education role.

Optimally, all medicine orders should be reviewed by a pharmacist, but many countries do not have adequate resources to support this practice. Hospital pharmacists should assess which patients or patient care areas are in the greatest need of this service and then focus their order-review efforts on those patients or patient care areas.

Some pharmacists have developed a high level of collaboration with physicians that gives pharmacists expanded responsibility in managing medicine therapy, including patient assessment, ordering and interpreting laboratory tests, and modifying therapy based on patient response. Independent prescribing authority for pharmacists is a logical extension of this responsibility. Although authority for pharmacist prescribing in some jurisdictions has been obtained because of a physician shortage, there is also a shortage of pharmacists, so this rationale may not have universal appeal.

Preparation and distribution of medicines
Ryozo Oishi, Ph.D., Professor and Director, Department of Pharmacy, Kyushu University Hospital, and Professor of Graduate School of Pharmaceutical Sciences, Kyushu University, Japan, reviewed the preparation and distribution of medicines in hospitals.

Dispensing and preparation are core hospital pharmacy functions needed to ensure the safety and effectiveness of drug therapy. Improving the efficiency of dispensing and preparation of medicines through the use of computer technology can reduce the amount of time consumed by product-oriented activities and enable pharmacists to devote more time to clinical services.

The primary tasks in dispensing and preparing medicines in hospitals are communication of the medicine order to the pharmacy department, review of the medicine order for appropriateness by a pharmacist, verification of proper medicine stor-
Dispensing and preparation of medicines may take place in the pharmacy or patient care area, depending on the urgency of patient care, availability of human resources, and other factors. Preparation of sterile products that are not available commercially is best performed in the pharmacy. Some medicines are kept in the patient care area, although this practice is associated with safety risks and is limited in hospitals with unit-dose drug-distribution systems. Some patients may bring their own medicines to the hospital, although many hospitals limit this practice for safety reasons.

Among the strategies and technologies used by hospitals to improve the accuracy and efficiency of the preparation and distribution of medicines are pharmacy-based i.v. admixture services, unit-dose drug distribution, automated medicine storage and dispensing devices in patient care areas, automated dispensing systems in the central pharmacy, bar-coding applications in dispensing and administration, and computerized prescriber order entry.

There is a wide continuum of medicine dispensing and preparation practices in hospital pharmacy around the world, depending on the availability of human and financial resources, safety considerations, local regulations, and priorities.

Administration of medicines

Rita R. Shane, Pharm.D., Director of Pharmacy Services, Cedars-Sinai Medical Center, Los Angeles, California, United States of America, reviewed medicine administration in hospitals.

A medicine order can be thought of as a sentence in which an error or lack of precision in any element of the sentence (e.g., drug name, dose, route, frequency) can result in unintended consequences. The five rights of medicine administration—right patient, right medicine, right dose, right route, and right time—are taught to nurses, but nurses may not always adhere to these principles or may lack knowledge about the medicine or the patient, which results in an error.

The pharmacy department’s method of dispensing medicines and the presence of pharmacists in patient care areas may affect medicine administration safety. Verifying the absence of medicine allergies before administration is essential. Many administration errors result from calculation mistakes. Special safety considerations must be applied to injectable medicines, infusion devices, chemotherapy, prevention of wrong-route errors, pediatrics, intensive care, and bedside bar-code-assisted administration.

The international literature provides a sound basis for developing a hospital plan to improve the safety of medicine administration. Such plans will vary from hospital to hospital, depending on the availability of pharmacy services.

Monitoring of medication therapy


As with other aspects of health care, medicine use in a hospital can be monitored in terms of structures, processes, and outcomes. Outcome measures are the hardest to develop and use. Voluntary medication error reporting systems provide qualitative information about negative or unsafe outcomes; the quantitative use of medication-error reports should be considered with great caution because only a small percentage of incidents generally are reported.

External quality assessment, such as accreditation, and self-assessment tools are commonly used types of structural measures that relate to medicine use. Benchmarking practices against those of competitors is a common type of process measure.

Measures of unsafe use and negative outcomes of medicine use are usually employed before measures of safe and effective use. Drug-product defect and adverse drug reaction reporting systems are the basic elements of pharmacovigilance worldwide. Hospital pharmacies should monitor for incidents of this type, manage the risks locally, and share data with national and regional reporting systems.

Measures for hospital pharmacy services are usually developed in the following order: costs, workload, and quality. Clinical pharmacy practice provides opportunities to measure more definitive outcomes data such as mortality, morbidity, and disease-specific clinical effectiveness.

Human resources and training


Work force planning is influenced by evidence that clinical pharmacist services reduce adverse drug events and mortality in hospitals. There is an immense inequality among countries in the distribution of pharmacists. Less is known about the supply of pharmacy technicians and other pharmacy supportive personnel than about the supply of pharmacists, and there is large variation among countries in the training and regulation of technicians.

Each country is responsible for ensuring that it has a sustainable supply of competent pharmacy personnel. Work force planning must take into account factors that are outside of pharmacy’s influence, such as countrywide resource constraints. The global pharmacy work
force is becoming increasingly feminized, demanding that work force planning be gender-sensitive.

The lack of a human-resources information system and the lack of research on the pharmacy work force contribute to the reluctance of health authorities to create national pharmacy work-force plans.

In formulating a country-specific work force plan for hospital pharmacy, it is useful to consider three interrelated dimensions: (1) the level of practice, which is determined by education and training of the work force; (2) the volume of service provided, which is determined by the work force size; and (3) the scope of services, which is determined by the skill mix of the work force. An explicit framework for competency can guide self-development and career-development of practitioners. In about one-third of countries, education and training of pharmacists is accomplished in one to two years; length of education and training is greater than two years in 36% of countries. An important component of hospital pharmacy work force development is retention vis-à-vis other career opportunities for pharmacists.

Common factors worldwide affecting the hospital pharmacy work force are resource constraints, increased interest in improving patient safety, and greater demand for efficiency. Hospital pharmacy is challenged globally to develop an evidence-based, sustainable plan for a work force that will allow the field to achieve its aspirations for providing an appropriate level of service.

The Basel Statements

The GC consensus statements (the Basel Statements) crafted by the working groups were subjected to a vote of the official country representatives on the final day of the conference. Voters indicated their level of agreement or disagreement with each statement. All registrants were given forms on which to write comments and to suggest additional consensus statements that should be considered. The conference organizers submitted a few additional statements for voting via e-mail after the conference.

All of the statements (74 from the conference, 2 pairs of which were subsequently combined, 1 modified, and 3 added following the conference) were strongly endorsed by the official representatives. Key consensus statements included the following:

- The overarching goal of hospital pharmacists is to optimize patient outcomes through the judicious, safe, efficacious, appropriate, and cost-effective use of medicines.
- The chief pharmacist or director of pharmacy should be the senior professional responsible for coordinating the judicious, safe, efficacious, appropriate, and cost-effective use of medicines in the hospital.
- Hospitals should use a medicine formulary system (local, regional, and/or national) linked to standard treatment guidelines, protocols, and treatment pathways based on the best available evidence.
- Hospital pharmacists should serve as a resource regarding all aspects of medicines use and be accessible as a point of contact for health care providers.
- All prescriptions should be reviewed, interpreted, and validated by a hospital pharmacist before the medicine is dispensed and administered.
- The five rights (right patient, right medicine, right dose, right route, and right time) should be fulfilled in all medicine-related activities in the hospital.
- A reporting system for medication errors should be established and maintained, and the necessary action should be taken to minimize identified risks. Reports of medication errors should be sent to regional or national medication-error reporting programs where these are available.
- At a national level, health authorities should bring together stakeholders to collaboratively develop evidence-based, hospital pharmacy human resource plans aligned to meet health needs and priorities across public and private sectors that optimize patient outcomes.

Some parts of these Proceedings, particularly The Basel Statements, have been translated into other languages by volunteers and appear on the International Pharmaceutical Federation Global Conference Website (www.fip.org/globalhosp/)

Opportunities for Global Collaboration

Wen-Shyong Liou, Ph.D., a pharmacy faculty member at the National Defense Medical Center, Taipei, and at the China Medical University, Taichung, Taiwan, spoke at the final plenary session on “Opportunities for Global Collaboration.”

The following factors must be taken into account in any effort to foster global collaboration in the advancement of hospital pharmacy: whether or not hospitals employ their own pharmacists, the effect of the health system on the professional autonomy of pharmacists, the extent and nature of computer applications in the medicine-use process, and the extent to which pharmacists already provide patient-oriented care.

In addition, collaborative efforts must take into account a country’s culture in health care delivery (e.g., whether dispensing is separated legally from prescribing, whether hospitals have a significant role in primary care, the role of traditional medicines), the nature of pharmacy education (e.g., product versus patient orientation), the role of pharmacy technicians, and the public image of pharmacists.
Each country should develop its preferred practice model for hospital pharmacy, and that model should be focused on patient-centered care. Good pharmacy practice guidelines developed by FIP and WHO should be consulted in this effort.

Collaborative networks for advancing hospital pharmacy should be developed among national and international organizations and governmental health authorities and legislatures. The ultimate goal should be global patient safety in the use of medicines in hospitals.

Conference closing

In closing remarks, Andrew Gray, President of the FIP HPS, said, “Hospital pharmacy today has taken a stand. Hospital pharmacists have stated clearly that, as a profession, they are both ready and willing to accept responsibility for all medicines, everywhere in the hospital, and at all times.” Addressing the conference participants, he said, “The next steps will . . . depend on you . . . to make the Basel Statements a reality in each of your countries and for the benefit of the people we serve.”

Jacqueline Surugue, honorary conference Cochair, called the conference a “masterpiece of achievement—it gives us the vision for all world nations on the preferred future of hospital pharmacy.” She added that the conference “provides inspirational opportunities for collaboration.”

Henri R. Manasse, Jr., honorary conference Cochair, discussed the conference as moments of history, joy, challenge, reflection, and action. In his capacity as Professional Secretary of the FIP Board of Pharmaceutical Practice, he promised that FIP will make the Basel Statements a priority in planning. Finally, he asked that all conference participants work toward implementing the vision of the conference in their respective countries.