

# Chapter 37

## Informatics for Medicines Management Systems in Resource-Limited Settings

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### ABSTRACT

*Improved access to information is necessary to ensure achievement of the potential benefits of medicines in resource-limited countries. The scaling up of treatment and prevention programs involving medicines in resource-limited regions with high disease burdens requires proper and urgent attention to the development and use of information technologies. Areas of need for medicines management systems informatics include prescribing, dispensing, pharmaceutical care, administration, patient monitoring, education and training, supply chain management, and monitoring and evaluation of program performance. Such information systems should strive to collect and manage data that are a standardized, compiled, and made easily accessible for use by key stakeholders, including ministries of health, medicines regulators, pharmaceutical industry, public health programs, academic researchers, donor organizations, the health care delivery sector, and ultimately the public and patients. A framework is described for medicines management systems informatics in resource-limited settings.*

### INTRODUCTION

Medicines are an essential component of health care systems in developing countries, accounting for one-third or more of a government's health care budget. It is common for 20-50% of the re-

current government health budget in developing countries to be used to procure drugs (Falkenberg & Tomson, 2000). The potential for medicines, including both drugs and vaccines, to improve the health of those in developing countries is widely acknowledged. For example, medicines are among the most important health interventions, their prominence illustrated by their rating

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by the Disease Control Priorities Project as some of the ‘best buys’ in health, e.g., used to vaccinate children; prevent and treat childhood pneumonia, diarrhea, and malaria; attack the spread of HIV, including providing antiretroviral medications; and treat tuberculosis patients (DCP2, 2011). With the proclamation of the Millennium Development goals and the implementation of multi-national programs such as the Global Fund to Fight AIDS, Tuberculosis and Malaria, both public and private donors to developing countries are making a new, concerted effort to improve access to medicines.

Yet, greater access alone will not necessarily assure achievement of the Millennium Development or other health-systems goals. Preventing and treating diseases with medicines in developing countries depends on many factors, beginning with drug discovery and development for market introduction. Following an extended period of limited interest in developing medicines for neglected diseases, drug developers are investing in scientific and technological advances and new tools for use in HIV/AIDS, tuberculosis, malaria, and other neglected diseases—often stimulated through new partnerships with donors. Today’s pipeline of life-saving medicines and other health products are increasingly reaching the market. However, even the introduction of new medicines alone does not guarantee their appropriate uptake, distribution, and appropriate use.

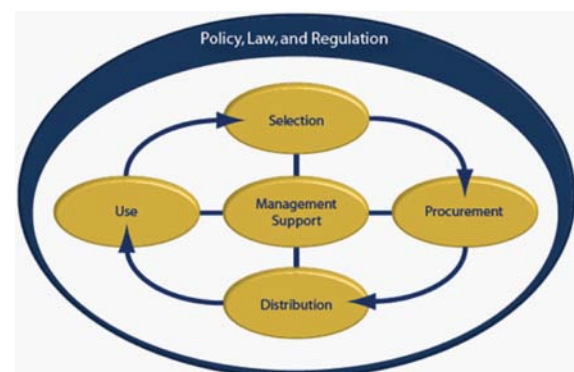
What we need is adequate data and information about medicines, their use, impact, and their management to achieve the goal of improved access to quality, efficacious medicines at affordable cost and ensure their safe and rational use. For purposes of this paper, the term Pharmaceutical Systems Informatics is used to encompass aspects of understanding and promoting the effective organization, analysis, management, and use of information in the pharmaceutical sector. This includes the basic functions of the pharmaceutical management framework, i.e., selection, procurement, distribution, and use (Figure 1). Pharmaceutical systems informatics represents an intersection of data, sci-

ence, and technology. Without efforts to assure that public health decision-makers have accurate and timely pharmaceutical management information, there is a risk that significant resources could be wasted, poor quality products could cause harm, and suboptimal use of medicines could adversely affect patient outcomes.

## **WHAT ARE THE NEEDS FOR PHARMACEUTICAL SYSTEMS INFORMATICS IN DEVELOPING COUNTRIES?**

Like other parts of the world, developing countries need continuous availability of essential drugs and the safe, timely distribution of quality-assured medications to persons who need them. Stakeholders at every level need information to make decisions that affect the overall functioning of medication systems. For example, a good pharmaceutical management information system should alert staff to problems and trigger critical actions from multiple levels—whether it is related to the supply chain or patient use of medications. Table 1 summarizes key information users and some of their most important information needs for each level of the system (Management Sciences for Health, 2011). Major areas of need for medication systems informatics are as follows:

*Figure 1. Elements of pharmaceutical management (CPM/MSH, 2011)*



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