

# Improving Health Outcomes through Delivery of Patient-Centered Pharmaceutical Care by Pharmacists in Low- and Middle-Income Countries



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## INTRODUCTION

Health systems in low- and middle-income countries have focused on managing acute infectious conditions, and pharmacy practices have typically focused on product-centered services rather than patient-centered care. However, these countries are experiencing an increasing burden of chronic communicable and non-communicable diseases, such as HIV and AIDS and cardiovascular diseases.<sup>i</sup> Providing effective long-term care for chronic diseases requires pharmacy practices to strengthen patient counseling and adherence, and bolster linkages among clinical, laboratory, pharmacy, and other services.<sup>ii</sup>

To respond to this need in pharmacy services, many countries are expanding their pharmacy practice from a model that centers on supplying and dispensing medicines to one that emphasizes the provision of patient-centered pharmaceutical care—and in collaboration with other health care providers—to support the achievement of better health outcomes.

Pharmaceutical care is the responsible provision of medication-related care designed to achieve health outcomes aimed at improving and/or maintaining a patient's quality of life.<sup>iii</sup> An outcome-oriented approach to the delivery of medication-related patient care, pharmaceutical care calls for collaboration between the health care team and patients themselves. Elements of pharmaceutical care can be provided by appropriately trained staff at health facilities, pharmacies, drug shops, and in communities.

In resource-limited settings, the practice of pharmaceutical care services has usually been limited to small-scale initiatives implemented in higher-level health facilities within a defined public health program, such as in an antiretroviral treatment program.<sup>iv</sup>

In some settings, pharmacists with clinical or specialized training provide clinical pharmacy services (CPS) to patients. Clinical pharmacy is a health science discipline in which pharmacists provide patient care that optimizes medication therapy and promotes health, wellness, and disease prevention.<sup>v</sup>



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Clinical pharmacy is a critical component in the delivery of pharmaceutical care, and operates within a larger, overall pharmaceutical care system to help achieve pharmaco-therapeutic objectives.<sup>vi</sup>

Several countries have demonstrated the positive impact of pharmaceutical care interventions on clinical and economic outcomes.<sup>vii</sup> The expected outcomes of pharmaceutical care include: the achievement of therapeutic goals; the prevention or reduction of medicine-related problems; reduced morbidity and mortality; and improved quality of life for the patient. Potential pharmaceutical care interventions can be broadly grouped into those that:<sup>viii</sup>

- Help verify that pharmacotherapy is effective and appropriate, and that untreated conditions are addressed.
- Improve safe medicine use by preventing, detecting, and mitigating drug interactions, adverse drug reactions, and medication errors.
- Enhance patient knowledge by providing medicine-related information, counseling, and education to patients and caregivers.
- Encourage adherence to medication and continuation of pharmacotherapy.

The interventions are implemented through the process illustrated in figure 1.

## ENHANCING PHARMACEUTICAL CARE PRACTICE: THE SIAPS APPROACH

The operational approach to strengthening the practice of pharmaceutical care in resource-constrained settings implemented by the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program begins with the assessment of the existing situation and capacity to provide pharmaceutical care. It then focuses on building the capacity of institutions and individuals in pharmaceutical systems through interventions such as training, strengthening information systems, improving infrastructure, and identifying appropriate roles for staff members who provide medicines or medication-related services at each level of the health system. SIAPS also works to build and expand partnerships among various stakeholders so that all groups involved approve of and support the interventions, and can effectively coordinate their work to achieve the best outcomes without duplicating efforts.<sup>ix</sup>

SIAPS uses the capacity-building framework shown in figure 2 to strengthen both institutional and individual capacities to effectively provide patient-centered pharmaceutical care. This approach involves building institutional capacity by strengthening structures, systems, and roles, which provide an enabling environment to fortify



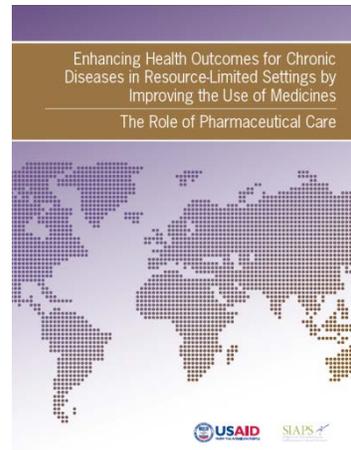
**Figure 1.**  
**The pharmaceutical care process**

Source: Adapted from the World Health Organization (WHO) and the International Pharmaceutical Federation (FIP). Developing Pharmacy Practice: A Focus on Patient Care. Geneva: WHO and The Hague: FIP; 2006.

infrastructure and staffing levels to support an expanded role in providing patients care. The institutional capacity provides a foundation to build the capacity of individuals by providing them with the skills and tools that they need to implement pharmaceutical care activities that are appropriate to their scope of practice.

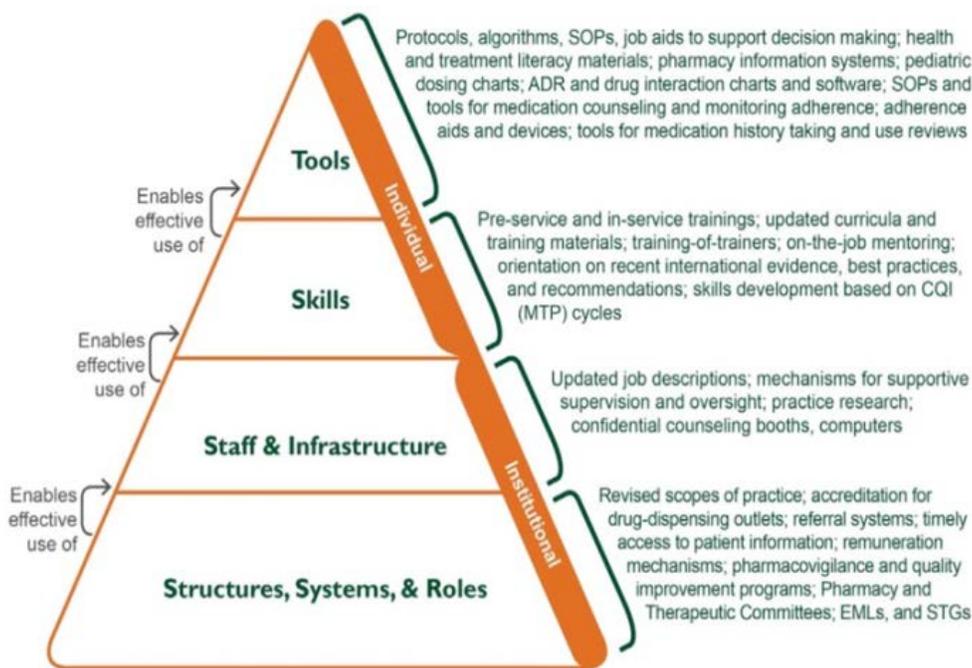
## IMPROVING PHARMACEUTICAL CARE THROUGH CLINICAL PHARMACY SERVICES IN ETHIOPIA

In Ethiopia, the increasing prevalence of chronic non-communicable diseases, combined with the high burden of infectious diseases, has increased the need for providing patient-centered care in pharmaceutical services. In addition, several studies have identified issues related to medicine use problems (e.g., widespread misuse of antibiotics and injectables, patients receiving little or no information about their medications), and deficiencies in service delivery (e.g., inadequate competencies and lack of a system to enable pharmacists to deliver patient-centered pharmaceutical services).<sup>x,xi,xii</sup>



Pharmaceutical care technical publication produced by SIAPS program

In response, SIAPS has worked with local stakeholders and applied the SIAPS capacity-building framework to customize interventions to address priority gaps. Collaborating with the Federal Ministry of Health (FMOH) and stakeholders, SIAPS’s predecessor program, Strengthening Pharmaceutical Systems (SPS), implemented priority interventions, including strengthening pre-service training capacity in universities (e.g., curriculum revision and training of trainers), and supporting the development and implementation of the Pharmacy Chapter of the



**Figure 2.** SIAPS capacity-building approach<sup>iv</sup>



Pharmacy morning session, Lalibela Hospital.  
Photo by Yosef Walwoya, SIAPS

Ethiopian Hospital Reform Implementation Guidelines (EHRIG), which describe the roles of hospital pharmacists and other health care professionals and managers in patient care, and emphasize the need for working together to deliver effective medication-related services.

Since the launch of the EHRIG by the FMOH, the SPS Program and its follow-on SIAPS Program also supported the development and implementation of minimum health facility standards, drug and therapeutics committees, and standard treatment guidelines and formularies that are required to effectively support pharmaceutical care services. These interventions laid the foundation for SIAPS' ongoing efforts to address infrastructure and staffing needs, helping pharmacists build clinical pharmacy skills and competencies.

Beginning in 2012, SIAPS collaborated with Jimma University and the Pharmaceuticals Fund and Supply Agency (PFSA) to develop a short-term in-service training program to improve the knowledge and skills of practicing pharmacists and build their competencies to provide patient-centered care in hospitals. The training package included a one-week lecture session followed by three weeks of ward attachment under the supervision of senior medical doctors and clinical pharmacists and emphasizing practice-based learning (e.g., case presentations). To encourage ownership and enhance management support, consultative meetings were held after each round of the training program to discuss follow-up

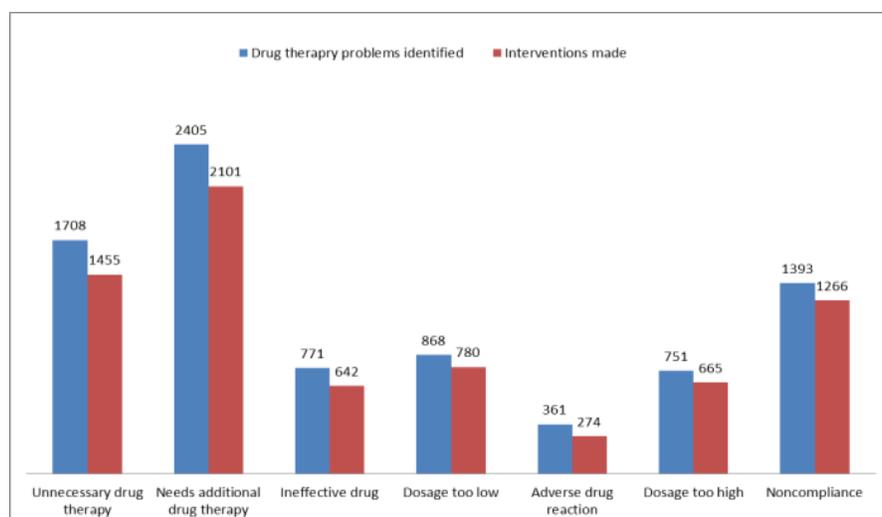
activities for implementing CPS back in the trainees' workplaces. SIAPS also supported the development of tools (e.g., service guides, standard operating procedures [SOP], and data collection and reporting forms) and strengthened drug information services by providing necessary supplies (furniture and computers) and reference materials.

At the central and regional levels, SIAPS assisted the PFSA and regional health bureaus to revise job descriptions for pharmacists to include CPS, and to conduct supportive supervision and mentoring in support of the implementation of CPS.

As a result of these capacity-building interventions, 65 hospitals participated in the clinical pharmacy in-service training between 2012 and 2014, of which 43 were sampled for an assessment in 2015 conducted by the PFSA and SIAPS.<sup>xiii</sup> The results showed that 41 hospitals (95.3%) had started providing ward-based CPS, whereby the pharmacists worked with their multidisciplinary teams. Twenty-nine pharmacy departments (67.4%) had an annual action plan on CPS. Clinical pharmacy interventions were being documented in 36 hospitals (87.8%). Document reviews from 31 hospitals showed that a total of 8,257 drug therapy problems (DTPs) had been identified by pharmacists since the initiation of the service in August 2012. Pharmacists were able to intervene in 87% of the 8,257 DTPs (figure 3), with an 88% acceptance rate of their recommendations by the multidisciplinary teams.



A multidisciplinary ward run at the Jimma University Hospital in 2012.  
Photo by Nezif Hussien



**Figure 3.**  
Number of DTPs identified and addressed by pharmacists between August 2012 and March 2015 in 31 hospitals<sup>xiii</sup>

Interviews with 36 physicians showed that most (89%) agreed that pharmacists contributed to the promotion of patient adherence to prescribed regimens and to a decrease in the occurrence of medication errors. Seventy-five percent of the physicians mentioned that pharmacists contributed to increases in the detection and management of adverse drug reactions (ADRs) and improvements in the availability of medicines in wards (table 1). These findings illustrate the potential of CPS in improving the quality of care through the prevention or mitigation of medication-related adverse events, thereby avoiding unnecessary patient harm, prolonged or repeat hospitalization, and cost escalations.

Demand from hospitals for support in implementing CPS has increased since the start of the training program. To address this demand, SIAPS helped build the capacity of three public universities to provide ongoing in-service training,

in addition to pre-service training. Six hospitals sponsored their pharmacists for postgraduate clinical pharmacy studies. This demand demonstrates the wide acceptance and local ownership of the program, which will contribute substantially to the sustainability of CPS.

## LESSONS LEARNED AND THE WAY FORWARD

CPS has started in a number of hospitals in Ethiopia and is yielding positive results in improving quality of care and treatment outcomes. It is also receiving wide recognition and acceptance by other health care providers. The government's policy support and strong commitment, coupled with collaboration among stakeholders (government, universities, and hospitals) and educational collaboration to build the local capacity of training institutions have enabled the

**Table 1. Key contributions of clinical pharmacy services in hospitals as reported by physicians<sup>xiii</sup>**

Key Contributions	n (%)
Improved adherence to treatment guidelines	21 (58.3%)
Increased adherence to prescribed regimens	32 (88.9%)
Improved availability of medicines in the ward	27 (75.0%)
Decreased occurrence of medication errors	32 (88.9%)
Increased detection and management of ADRs	27 (75.0%)
Increased reporting of ADRs	13 (36.1%)
Improved communication with physicians	28 (77.8%)

Note: N = 36 physicians (from 36 hospitals).

successful start-up of CPS in Ethiopia. Despite gaining traction, the practice lacks uniformity across hospitals. The adoption and enforcement of job descriptions, guidelines, and SOPs by hospitals would promote uniformity of service delivery and accountability. In addition, strengthening the documentation and reporting of clinical pharmacy interventions is necessary for the continued monitoring of outcomes, assessment of trends over time, and use of data for informed decision making.

The undergraduate curriculum needs to be reviewed to meet the evolving needs and competencies required for pharmacists, and strategies to motivate pharmacists to provide patient-centered pharmaceutical care should be further explored. Managerial, technical, and material support from the health authorities and hospital management will be critical to sustain such services. The clinical and economic outcomes of patient-centered pharmaceutical care interventions need to be further evaluated to inform continued scale up as well as to catalyze local investment, ownership, and sustainability.

### Further Reading

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**ABOUT SIAPS** | The Systems for Improved Access to Pharmaceuticals and Services (SIAPS) program works to assure access to quality pharmaceutical products and effective pharmaceutical services through systems-strengthening approaches to achieve positive and lasting health outcomes. SIAPS is funded by the US Agency for International Development (USAID) and is implemented by Management Sciences for Health.

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**SIAPS**  
Systems for Improved Access  
to Pharmaceuticals and Services

4301 N. Fairfax Drive, Suite 400 | Arlington, VA 22203 USA

Tel: +1 (703) 524-6575 | Fax: +1 (703) 524-7898 | E-mail: [siaps@msh.org](mailto:siaps@msh.org) | Web: [www.siapsprogram.org](http://www.siapsprogram.org)