Afghanistan Medicine Use Study: A Survey of 28 Health Facilities in 5 Provinces

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About SPS

The Strengthening Pharmaceutical Systems (SPS) Program strives to build capacity within developing countries to effectively manage all aspects of pharmaceutical systems and services. SPS focuses on improving governance in the pharmaceutical sector, strengthening pharmaceutical management systems and financing mechanisms, containing antimicrobial resistance, and enhancing access to and appropriate use of medicines.

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Key Words

Rational Medicine Use, Medicine Use Study, Antimicrobial Resistance, Drug and Therapeutics Committee, Antimicrobial Use Indicators, WHO Health Facility Indicators, Training, Standard Treatment Guidelines

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CONTENTS

ACRONYMS AND ABBREVIATIONS

ADR	adverse drug reaction
AMR	antimicrobial resistance
API	Avicenna Pharmaceutical Institute
BASICS	Basic Support for Institutionalizing Child Survival
BHC	Basic Health Center
CHC	Comprehensive Health Center
DH	District Hospitals
DTC	Drug and Therapeutics Committee
DUS	Drug Use Study
EC	European Commission
EDL	Essential Drugs List
EPHS	Essential Package of Hospital Services
GDPA	General Directorate of Pharmaceutical Affairs
IEC	information, education, communication
IMCI	Integrated Management of Childhood Illness
INRUD	International Network for Rational Use of Drugs
LDL	Licensed Drug List
MoPH	Ministry of Public Health
MSH	Management Sciences for Health
NDTC	National Drug and Therapeutics Committee
NGO	Nongovernmental organization
PHD	Provincial Health Department
RMU	rational medicine use
RPM Plus	Rational Pharmaceutical Management Plus Program
SCA	Swedish Committee for Afghanistan
SPS	Strengthening Pharmaceutical Services
STG	standard treatment guidelines
Tech-Serve	Technical Support to the Central and Provincial Ministry of Public Health
TB	tuberculosis
USAID	U. S. Agency for International Development
WHO	World Health Organization

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EXECUTIVE SUMMARY

This medicine use study was planned, conducted, and analyzed by the Strengthening Pharmaceutical Systems (SPS) Program of Management Sciences for Health (MSH) in collaboration with Ministry of Public Health (MoPH). Data collection for the study was conducted in March and April, 2009. Preliminary results were presented at the Afghanistan Drug and Therapeutics Committee (DTC) Training Course in July 2009, and final analysis and reporting was completed in December 2009.

Afghanistan possesses strong support for rational medicine use (RMU) through the development of the Basic Package of Health Services for Afghanistan (BPHS), the Essential Package of Hospital Services for Afghanistan (EPHS), essential drug list (EDL), licensed drug list (LDL), National Drug and Therapeutics Committee, and numerous policies procedures that address the RMU. USAID and other donors have provided support for implementing interventions to address rational medicine use in Afghanistan.

The results of this study show a number of concerns and problems in the use of medicines in Afghanistan. It also shows that there are some very positive results and activities currently going on throughout Afghanistan that contribute to RMU.

Primary Health Facilities

Key Findings

- Physicians are prescribing medicines in limited amounts as the average number of medicines prescribed per encounter was 1.72. The practice of polypharmacy, although present in some cases, is not a significant concern in the primary health facilities studied. The study is contingent on medicines being prescribed in the health facilities and recorded in standard registers. It is noted that some medicines may be prescribed outside of public health system (and not recorded in official registers); these are not captured in this study.

- The use of generic names in prescribing is very high and our study shows it averaged over 96 percent of medicines prescribed.

- The national EDL is followed almost exclusively in primary health care facilities. The average for the 5 provinces is 98 percent compliance. This high percentage is a good indicator of appropriate medicine use.

- Study results show that there is a significant amount of overuse and abuse of antimicrobials in primary health care clinics. In numerous primary health centers, prescribing antimicrobials is pervasive and appears to be a routine procedure for many patients seen at the clinic. The average percentage of patients receiving antimicrobials was 58 percent and ranged from 39 to 80 percent. Considering that two health facilities utilized antibiotics below the 40 percent level, there are indications that antibiotics can be prescribed at a much lower level for many institutions.

- The use of injections is relatively modest. Primary health facilities averaged 7.9 percent of patients studied with one or more injections prescribed, but some primary health facilities were as high as 18 percent. Certainly, the use of injections for these facilities need to be evaluated carefully and actions taken to decrease the use of unnecessary injections.

- Consultation times and dispensing times are very low and averaged 3.3 minutes and 13.3 seconds respectively. This indicates that prescribers are not spending adequate time with patients, and pharmacists (dispensers) are not spending enough time to counsel and educate patients on their medicine treatments. The lack of prescribers and dispensers involvement in counseling patients leads to less understanding of the appropriate dose and follow-up for patients, and may lead to poor patient outcomes. These are important issues that need to be addressed by the health care system.

- Patient knowledge of medicines dosage was studied through patient exit interviews. Results show that only 29 percent of patients had adequate knowledge about their medications. This indicator has far reaching implications and provides evidence that many of the Afghan patients will not benefit fully from the medicines prescribed as they have little knowledge on how to take them correctly. Interventions are necessary to improve education and counseling activities to patients. At least some of this poor knowledge can be linked to the lack of consultation time and dispensing times spent by prescribers and pharmacists (dispensers) at these health facilities. Proper pharmacy labels can contribute to better compliance and improved patient understanding of their medications. In our study, there were no labels found that provide complete instructions for patients.

- Medicine availability and stock-outs were studied and showed that there was a significant variation for primary health facilities. The average stock-out for all 14 health care facilities was 6.6 days per month for 15 key medicines. Stock-outs per month had a range of 0 to 21.8 days for the 15 key medicines. The lack of availability of key medicines has a significant impact on the way medicines are prescribed. Alternate drugs may not be as effective, may have more adverse drug reactions (ADRs), and may be more costly. When patients have to buy their own drugs, they may not actually get the full amount because they do not have enough money for a full prescription. All of this has implications for irrational medicine use.

- Key health care documents, guidelines, and drug information resources are not generally available in primary health care facilities. The national EDL and important treatment guidelines (including Integrated Management of Childhood Illness [IMCI]) are not available in all health facilities. Drug information resources are not available in most of these primary health facilities. These important documents and drug information resources need to be available for use in every health facility to facilitate appropriate prescribing of medicines.

Hospital Key Findings

- The use of generic names in prescribing is relatively high; our study shows that it averaged over 88 percent of medicines prescribed. Private hospitals used generic names at a much lower percentage than public facilities.

- Antimicrobial prescribing in hospitals follow the national EDL for 96.2 percent of prescriptions. Of all drugs, 99.8 percent were listed on the LDL. There is excellent compliance with regulations that medicines used are from the EDL/LDL.

- In this study, 90 percent of patients admitted to a hospital received an antimicrobial. For these inpatients who received antimicrobials, the average number of antimicrobials per admission was 1.7, a reasonable number of antimicrobials for hospitalized patients. The percentage of patients who receive antimicrobials is very high but is also reflective of the high number of infectious cases in Afghanistan

- Patients hospitalized with infectious diseases are treated and discharged on average within four days. This is indicates that patients are not subjected unnecessarily to long stays.

- There are no standards for treating pneumonia and other infectious diseases in the hospitals. Antimicrobial surgical prophylaxis is not well defined and standards do not exist for these surgical procedures. Almost all hospitals use multiple doses, multiple antimicrobials and, in many cases, ceftriaxone for surgical prophylaxis. The lack of standards contributes to irrational medicine use. The development, dissemination, and appropriate use of guidelines are necessary for improving the use of medicines in hospitals and primary health care facilities.

- The use of third-generation cephalosporins in Afghanistan hospitals varies widely with an average of 49.7 percent and a range of 3 to100 percent. One private hospital administered antimicrobials to 100 percent of the patients reviewed. Certainly, the overuse of this important class of medicines leads to higher health care costs, increased ADRs, and antimicrobial resistance in a important class of medicines

- Medicine availability in hospitals varied widely. The average number of days out of stock for 15 key antimicrobials was 8.7 days per month. The range for our 14 hospitals was 2.1 days to 16.4 days. Many facilities had adequate supplies of antimicrobials while others had very low stocks of antimicrobials. As for primary health facilities, these stock-outs contribute to irrational medicine use as physicians prescribe alternate drugs (sometimes less effective and more expensive) and patients are frequently required to purchase medicines at local pharmacies, incurring the costs of these expensive medicines.

- Key health care documents and guidelines are not generally available. The national EDL, licensed drug list (LDL) important treatment guidelines, and infection control guidelines are not available in all health facilities. Reliable and updated medicine information resources are not available. These important documents need to be available for use to promote appropriate prescribing and use of medicines.

BACKGROUND

The U.S. Agency for International Development (USAID)-supported Strengthening Pharmaceutical Systems (SPS) Afghanistan Program, started in 2008, focuses on four key technical areas. These include quality assurance of pharmaceutical products, establishment of a coordinated pharmaceutical procurement and distribution system within the Ministry of Public Health (MoPH), and design of a system for procurement of pharmaceuticals using USAID funds which will succeed the system currently managed by Tech-Serv. The fourth key technical area is rational medicine use (RMU). SPS's approach to improving the use of medicines is through establishment of a Drug and Therapeutics Committee (DTC), initially at the central MoPH level, with the goal to develop a plan for eventual rollout to the provincial level when appropriate. The development and dissemination of standard treatment guidelines (STGs) for primary health care is also a high priority activity for RMU.

Mohan Joshi and Terry Green made an initial visit to Kabul December 9 to 20, 2008, to carry out startup activities for this RMU project. During that visit, SPS technical staff from Arlington oriented SPS and MoPH staff on RMU and DTCs, reviewed and cataloged documents relating to RMU in Afghanistan, conducted an initial RMU rapid assessment, met with key MoPH personnel and other stakeholders on potential RMU activities, and developed a one-year and three-year plan for RMU-related activities.

From this initial visit to Afghanistan, MoPH agreed to establish a national level DTC that would lead to hospital DTCs later in the year. The development of STGs was also discussed and there was a great deal of enthusiasm and energy about developing these guidelines in Afghanistan. A STG Working Group has been formed within the national DTC and initial work has started on this activity. Agreement was also reached for conducting a RMU study to help describe and understand medicine use in hospitals and primary health care facilities and to estimate the extent of irrational medicine use in Afghanistan. This report presents the results and analysis of this study on the use of medicines in Afghanistan.

General Objectives of the Medicine Use Study

- Evaluate the status of medicine use, revealing its strengths and weaknesses in Afghanistan.
- Design and plan interventions for promoting RMU in Afghanistan.
- Provide information for budget or resource planning.

Specific Objectives

- Analyze drug use at primary health care level facilities covered by different streams of drug supply using World Health Organization (WHO)/International Network for Rational Use of Drugs (INRUD) drug use indicators and make comparisons (1) among different facilities

included in this study, (2) with findings of studies done at similar levels in the past in Afghanistan, and (3) with findings of other international studies that were done on the same indicators.

- Generate hospital-level in-patient, out-patient, and pharmacy data on drug use to fill the current gap in availability of such hospital-level data in Afghanistan, and to make comparisons in the practices of the studied hospitals.

- Use the study findings to carry out evidence-based advocacy to establish DTCs in health facilities

- Identify specific problem areas in medicine use that will either help design suitable interventions or indicate the need for further focused probing.

- Generate a set of standard baseline data to enable longitudinal comparison after educational and remedial interventions are introduced in the facilities in future.

Methodology

The study was conducted during March and April, 2009, in five province of Afghanistan (Kabul, Balkh, Herat, Nangarhar, and Badakhshan). Fourteen primary health care facilities and 14 hospitals in five provinces were randomly selected for the survey. Standardized World Health Organization (WHO)/International Network for Rational Use of Drugs (INRUD) medicine use indicators for health facilities[1] and MSH)/SPS hospital antimicrobial indicators[2] were utilized for this study. Hospital indicators were calculated by randomly selecting 100 admissions over the previous 12 months. WHO/INRUD health facility indicators were calculated by randomly selecting 100 patient encounters over the previous 12 months. For indicators requiring prospective data collection, 100 patient exit interviews were conducted on the day of the study. For facility indicators, observations and questionnaires were utilized and stock control records reviewed.

Component 1. Primary Health Care Level

- WHO/INRUD indicators (prescribing, patient care, and facility indicators) for this level (annex 1).

    - Prescribing indicators
        - Retrospective review of outpatient treatment cards maintained at the facility
        - Prescription analysis

[1] World Health Organization (WHO). 1993. *How to Investigate Drug Use in Health Facilities: Selected Drugs Use Indicators*. Geneva: WHO.

[2] Strengthening Pharmaceutical Systems. 2008. *How to Investigate Antimicrobial Use in Hospitals: Selected Indicators.* Published for the U.S. Agency for International Development by the Strengthening Pharmaceutical Systems Program. Arlington, VA: Management Sciences for Health.

- Patient care indicators
  - Prospective review of consultation times, dispensing times, and patient knowledge of dosage
  - Observation checklist, exit interview

- Facility indicators
  - Observation checklist
  - Review of stock control records

Component 2. Hospital antimicrobial medicine use study (inpatient and pharmacy)

- MSH/SPS hospital antimicrobial prescribing indicators (annex 1).

  - Patient care and prescribing indicators
    - Retrospective review of hospital admission records

  - Facility Indicators
    - Observation checklist
    - Review of stock control records

Sampling of Sites

Health facilities for the medicine use study were randomly selected from five provinces representing different geographical areas of Afghanistan including North, East, West, North East, and the capital of the country. The provinces selected are Badakhshan, Balkh, Nangarhar, Kabul, and Herat. Each study province randomly selected health facilities to be studied to include sites from each of the major donors—USAID, European Commission (EC), World Bank (WB), and MoPH. Even though there was a random selection, security issues were taken into consideration and therefore many rural area health facilities were not included in the selection process. The total number of primary health care facilities included 14 primary health facilities and 14 hospitals (annex 2).

Selection and Training of Data Collectors

A team of field assistants were selected based on experience and qualifications to ensure the quality of data collection. Each team contained at least five people, except for Kabul, which has nine people for data collection, interviews, recording, and reporting information. Field assistants were selected from the staff at Avicenna Pharmaceutical Institute (API).

Training was provided at the MSH office on the purpose and techniques of data collection for the study. The training focused on a detailed explanation of the purpose of the study, the rationale for the indicators, and data collection methodology and calculations. The training program provided an opportunity to familiarize data collectors with the questionnaires and data collection forms that would be used in the study. It also provided a medium for learning and practicing data collection techniques.

Working with the Afghanistan SPS team, medicine use study policies and procedures were developed and finalized. Data collectors were provided a study briefing package that describes the medicine study design, methodology, and procedures. A four-day training program was conducted for the 26 data collectors and included—

- March 16—Health facility indicators and data collection techniques
- March 17—Hospital indicators and data collection techniques
- March 18—Field test of data collection instruments and procedures
- March 19—Review of field test, reliability testing, and study logistics

The March eighteenth field pilot test of the data collection procedures and instruments was conducted at a primary health care facility and hospital in Kabul. Data collectors and supervisors were separated into hospital and health facility teams, and each of the data collection activities were conducted at the health facilities.

For the medicine use study, data collectors were divided into five groups, with one individual chosen to be team leader in each group. The team leaders were responsible for collecting, tabulating, and recording data into the Excel database. Team leaders were given an introductory letter signed by MoPH that explained the medicine use study to each health facility.

Staff members from SPS and the General Directorate of Pharmaceutical Affairs (GDPA)/API were assigned to each team to act as supervisors for all aspects of the data collection in the field. These supervisors were responsible to ensure the random selection of medical records, quality of information collected, and accurate tabulation of data into the Excel database (annex 3).

RESULTS AND ANALYSIS: PRIMARY HEALTH CARE FACILITIES

The following results of the study indicators are presented as overall average and range for all the health facilities studied. Many of the indicators also have a provincial average and some will provide comparison by health facilities. Comparisons are also provided with two other medicine use studies for key prescribing and patient care indicators—

- World Health Organization (WHO). *Medicines use in Primary Care in Developing and Transitional Countries*. This 2009 publication provides a compilation of results for prescribing, patient care, and facility medicine use indicators in developing countries of African and Asia in 2004-2006.[3]

- Swedish Committee for Afghanistan (SCA). *Baseline Drug Indicator Study*. This medicine use study in 2002-2003 provides results of WHO prescribing, patient care and health facility indicators for SCA clinics.[4]

Average Number of Medicines per Encounter

The average number of drugs per encounter for all primary health care facilities is 1.72. For the 5 provinces these ranged between 1.2 and 2.2. These results indicate that prescribers use a limited number of medicines in their day to day treatments and the common problem of polypharmacy (in many countries) is not a significant issue in this study. Comparing to international studies, the WHO studies of 2004-2006 averaged 2.5 medicines per patient and 1.93 in the SCA Afghanistan study of April 2003.

The relatively low prescribing levels of medicines can be attributed to the judicious prescribing, limiting the medicines to only those that are truly needed. Some other factors that may contribute to the result include—

- Low availability of medicines at the health facility level may limit how many medicines can be prescribed

- Physicians prescribe medicines but may not record them in the health facility registers, and give prescriptions to patients to be filled at a private pharmacy.

[3] World Health Organization (WHO). 2009. *Medicines use in primary care in developing and transitional countries*. Geneva: WHO. http://www.who.int/bulletin/volumes/87/10/09-070417/en/index.html.
[4] Swedish Committee for Afghanistan. 2003. Baseline Drug Indicator Study, A Comparative Cross Sectional Study in SCA Health Facilities in Afghanistan, Part II: Results and Next Steps. Final draft photocopy. Kabul: Swedish Committee.

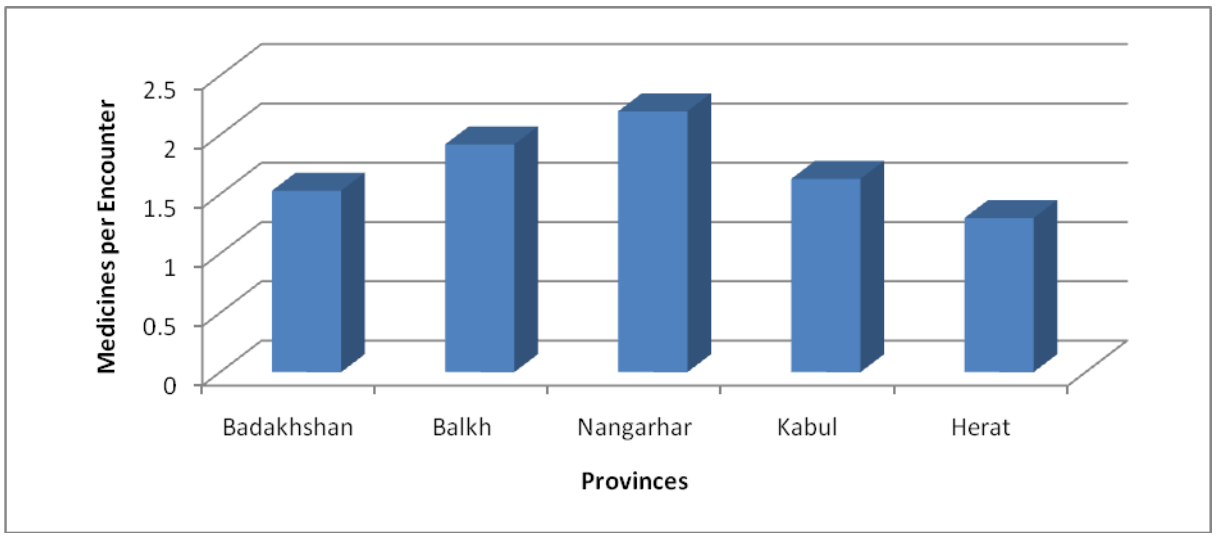

Figure 1. Average number of medicines per encounter (by province)

Percentage of Medicines Prescribed by Generic Name

The percentage of drugs prescribed by generic name is 96 percent. This is very high and is indicative that prescribers are not influenced by specific trade name products. The Afghanistan EDL list all medicines by generic name and prescribers consistently prescribe in the same manner. There was occasional use of a trade name product at some of the primary health facilities. WHO studies averaged 70 percent prescribed by generic name and the SCA study averaged 83.3 percent generic medicines.

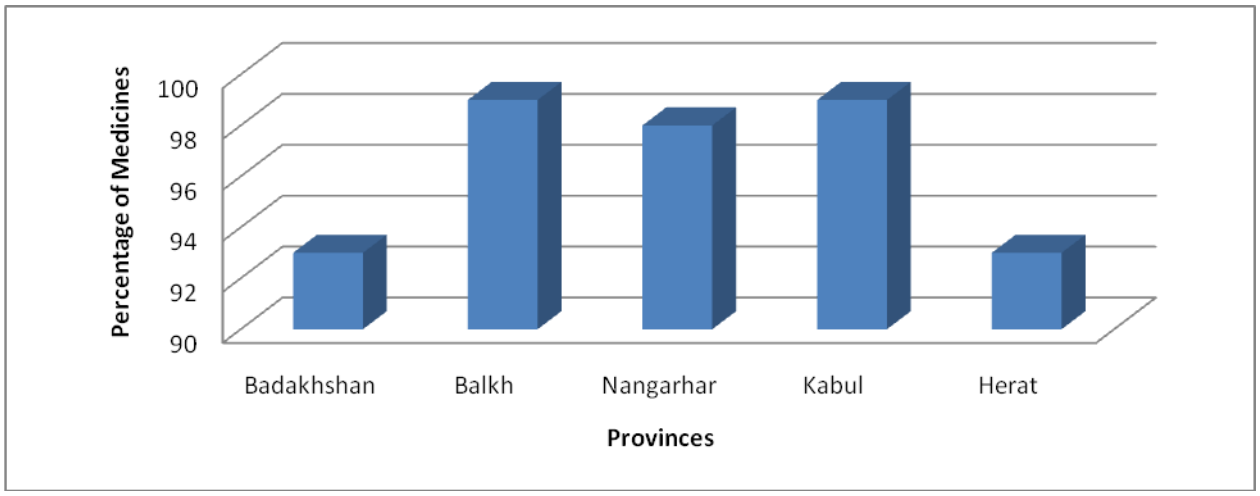

Figure 2. Percentage of medicines prescribed by generic name (by province)

Percentage of Encounters with an Antibiotic Prescribed

Prescribing antibiotics at the primary health care facility level averaged 58 percent for the 14 primary health facilities studied. This level of antimicrobial prescribing varied widely among health facilities with a range of 38 to 80 percent. Health facilities in Badakhshan have the lowest level of antibiotic prescribing including the facility with lowest prescribing level—38 percent. Kabul and Balkh provinces had the highest level of prescribing, including 80 percent in one Kabul health facility and 77 percent in a single Balkh health facility. Results from WHO studies showed an average of 46 percent of patients who were prescribed antimicrobials. The SCA study from 2003 averaged 50.5 percent. These results show that many primary health care facilities prescribe medicines to the majority of patients attending the clinic; further review and evaluation is needed to determine if this is overprescribing/misuse or simply a very high case load of infectious diseases that need treatment.

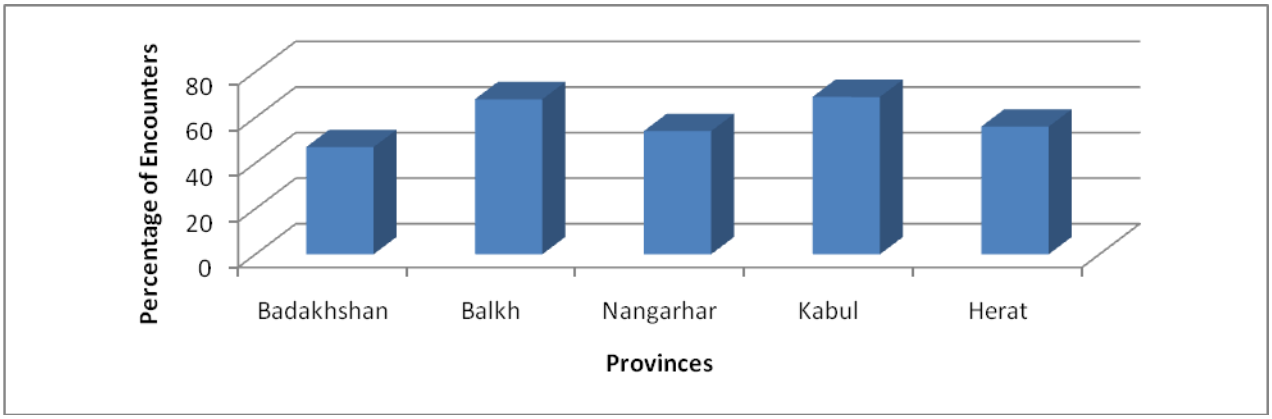

Figure 3. Percentage of encounters in which antibiotic was prescribed (by province)

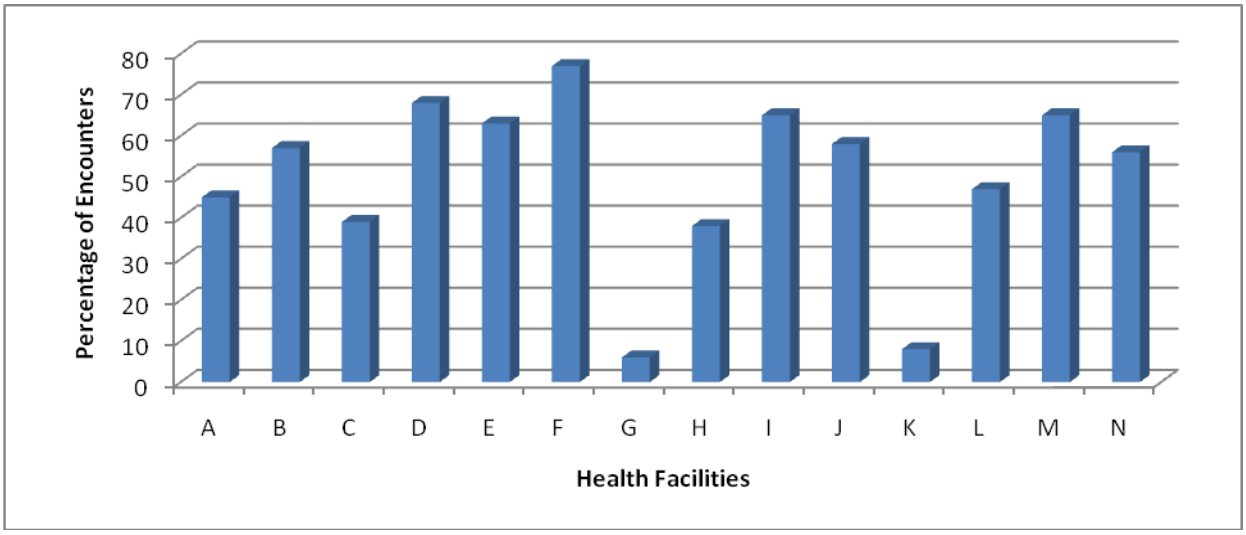

Figure 4. Percentage of encounters with an antibiotic prescribed (by health facility)

Average Duration of Antibiotic Treatment

Duration of treatment for patients treated with antibiotics was calculated for seven primary health facilities. In the other seven facilities, this information was not readily available. Duration of treatment for antimicrobials averaged 5.0 days and ranged from 4.3 to 5.7 for the health facilities. This represents an average duration of treatment for many infectious diseases.

Percentage of Encounters with an Injection Prescribed

Percentage of patient encounters that had an injection prescribed averaged 7.9. Health facilities had a range of 1 to18 percent. WHO studies averaged 19 percent for study period 2004-2006. The SCA study had an average of 5.5 percent of patients prescribed an injection. Except in one province, use of injections was relatively modest. For health facilities in Balkh where the average was 12.7 percent (1 health facility was 18 percent), further review and evaluation is necessary to ensure health facilities are not overusing injections.

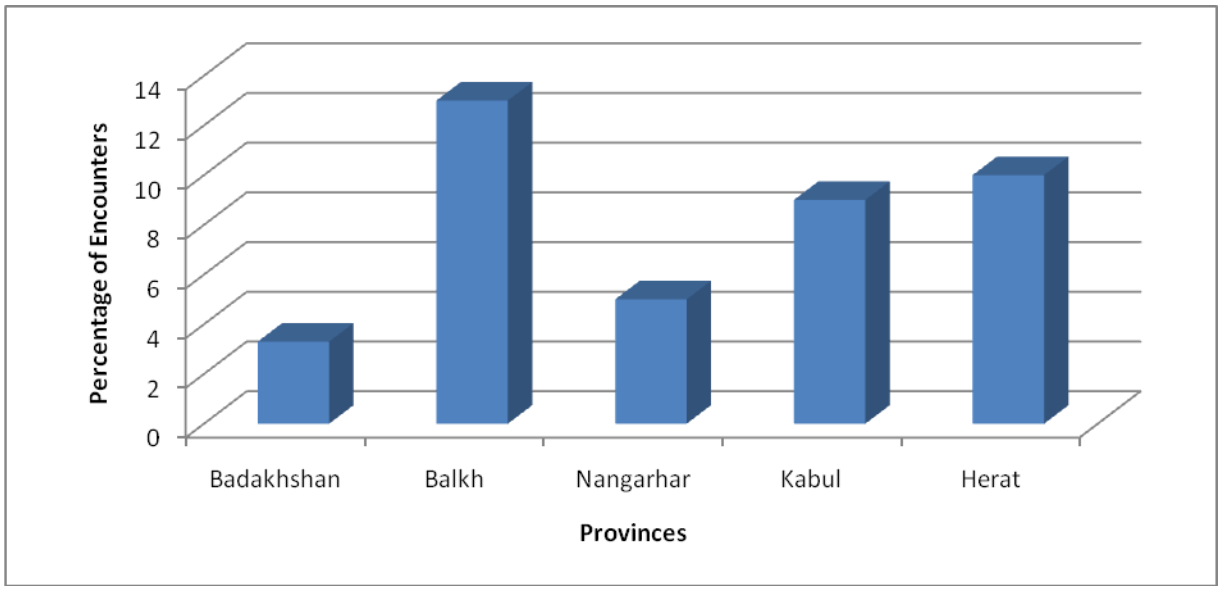

Figure 5. Percentage of encounters with an injection prescribed (by province)

Percentage of Medicines Prescribed from the EDL

Of the medicines listed on the EDL, 98 percent were prescribed. Only occasionally were medicines prescribed that were not on the EDL. These findings are consistent with recent WHO studies that show 90 percent compliance with an EDL and the SCA study averaging 89.2 percent. These is an excellent indicator of rational use as almost all patients are receiving medicines approved for the EDL and therefore receiving medicines considered to be effective and safe.

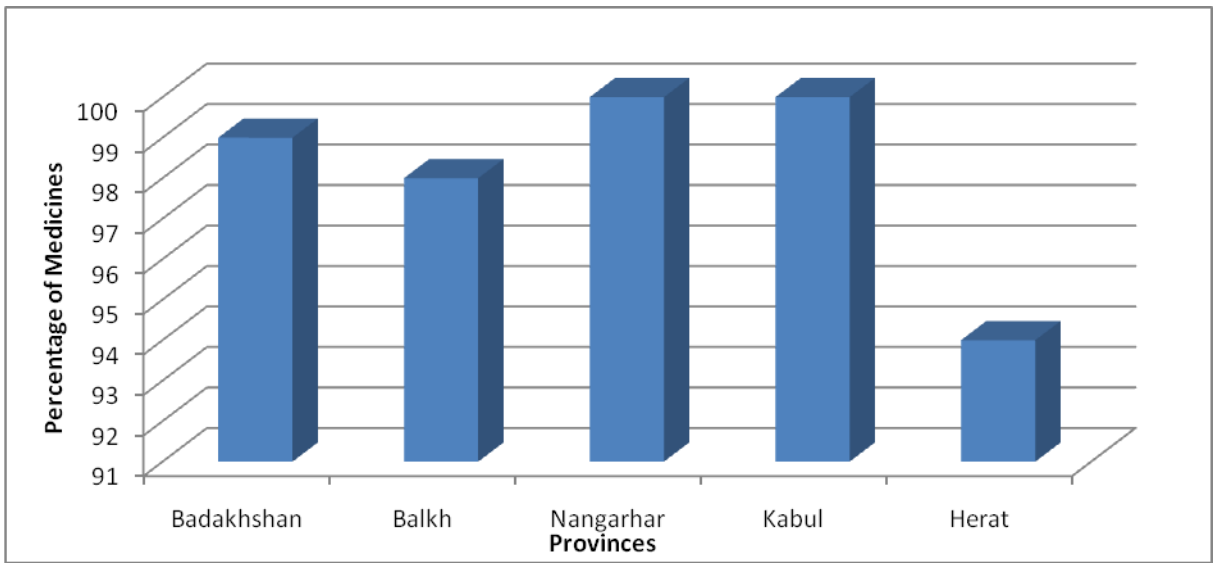

Figure 6. Percentage of medicines prescribed from the EDL (by province)

Average Consultation Time

Consultation times were studied at all 14 primary health care facilities. Average time that a physician spent with a patient across all health facilities is 3.3 minutes. There was a range of 1.3 to 7.1 minutes. Comparison with WHO data showed that there was an average of 5.5 minutes per consultation and 4.8 minutes in the SCA study. Consultation time is very short for most patients and is predictive of less than optimal medicine use and outcomes. Patients require more time and attention to receive explanations of their treatment regimens and to be educated on their disease or medical condition. In the Nangarhar province, consultation times are shorter (average 2.2 minutes) than other provinces and other similar health facilities. This indicates that further action is necessary to address the amount of time that is spent with patients.

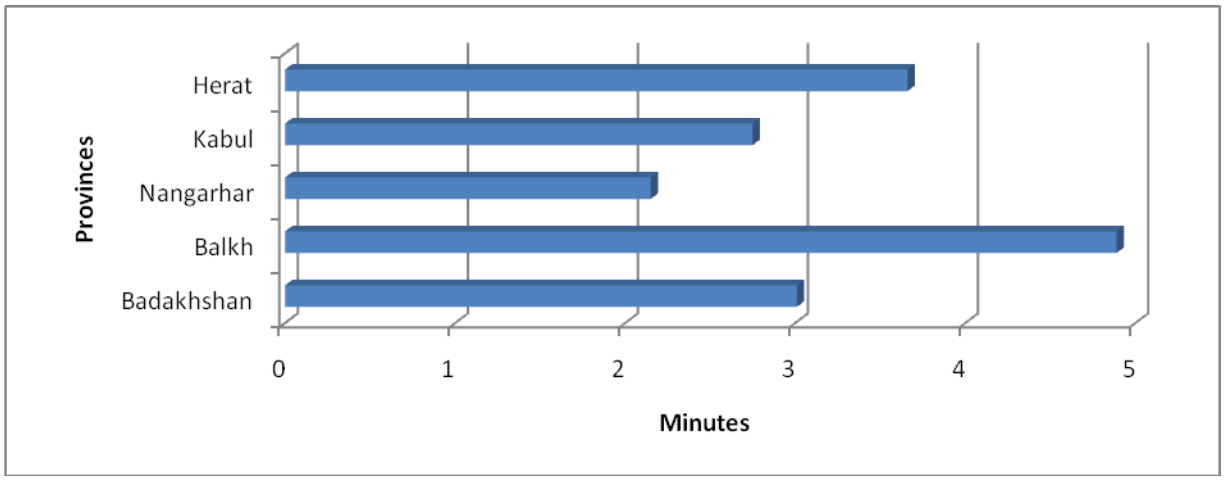

Figure 7. Average consultation times in minutes (by province)

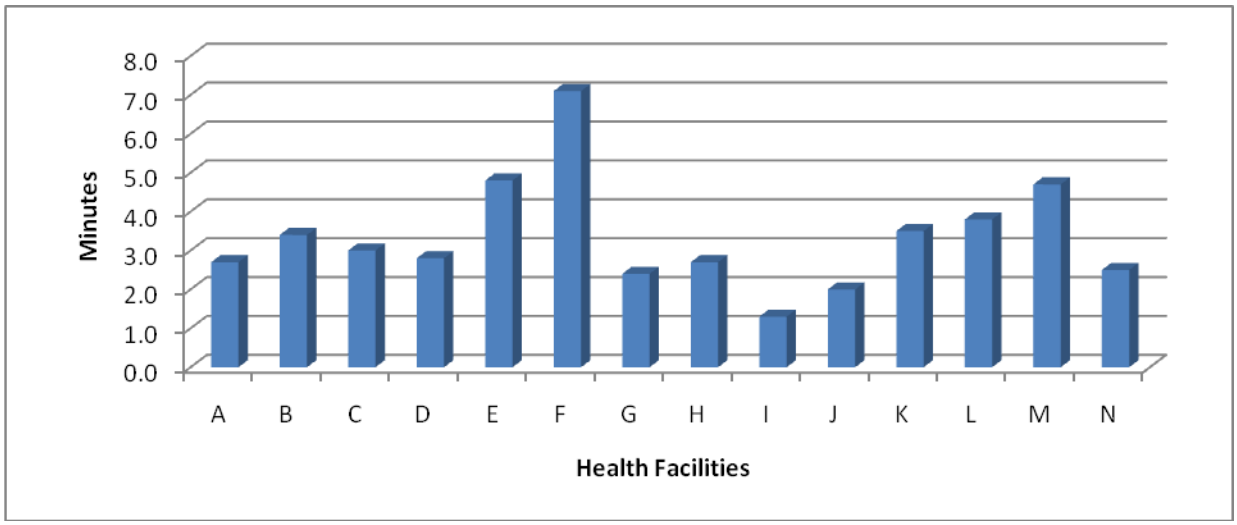

Figure 8. Average consultation times in minutes (by health facility)

Dispensing Times and Adequate Labeling

Average dispensing times for primary health care pharmacists and dispensers is 13.3 seconds. Dispensing time is the amount of time spent in counseling a patient about their medicines. There is a range of 4.3 to 27.8 seconds across all of the primary health facilities studied. WHO studies show an average of 70 seconds (approximate) for dispensing times and for the SCA study, 149 seconds. These averages are exceeding low and provide evidence that dispensers spend minimal time counseling and educating patients about treatment regimens, which makes it unlikely that dispensers can contribute to educating patients. Patient knowledge of dosage in the Badakhshan and Nangarhar provinces is limited and this correlates with the short dispensing times.

During this dispensing times study, data collectors also reviewed labels to check to see if they were adequate for the needs of patients (name of drug, directions including number of tablets, and the number of times a day). None of the observed labels had all this information available on it. Patients do not have enough information on the medicine container label to help guide them in taking the medicine correctly.

Lack of time spent with patients on education and inadequate labeling contributes to misunderstandings on how to use medicines correctly.

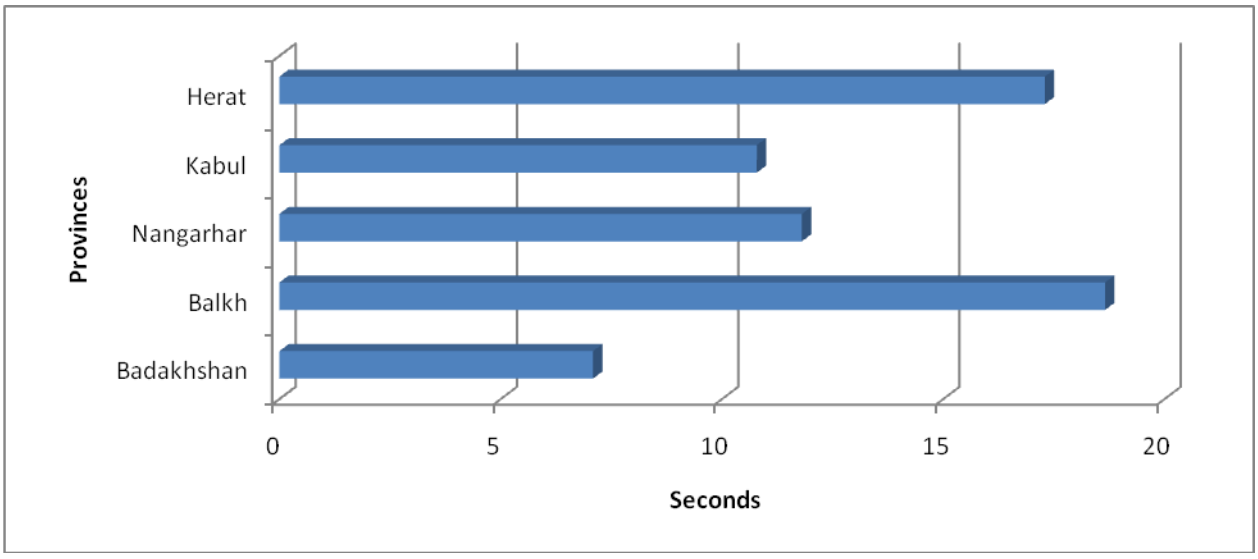

Figure 9. Average dispensing times (by province)

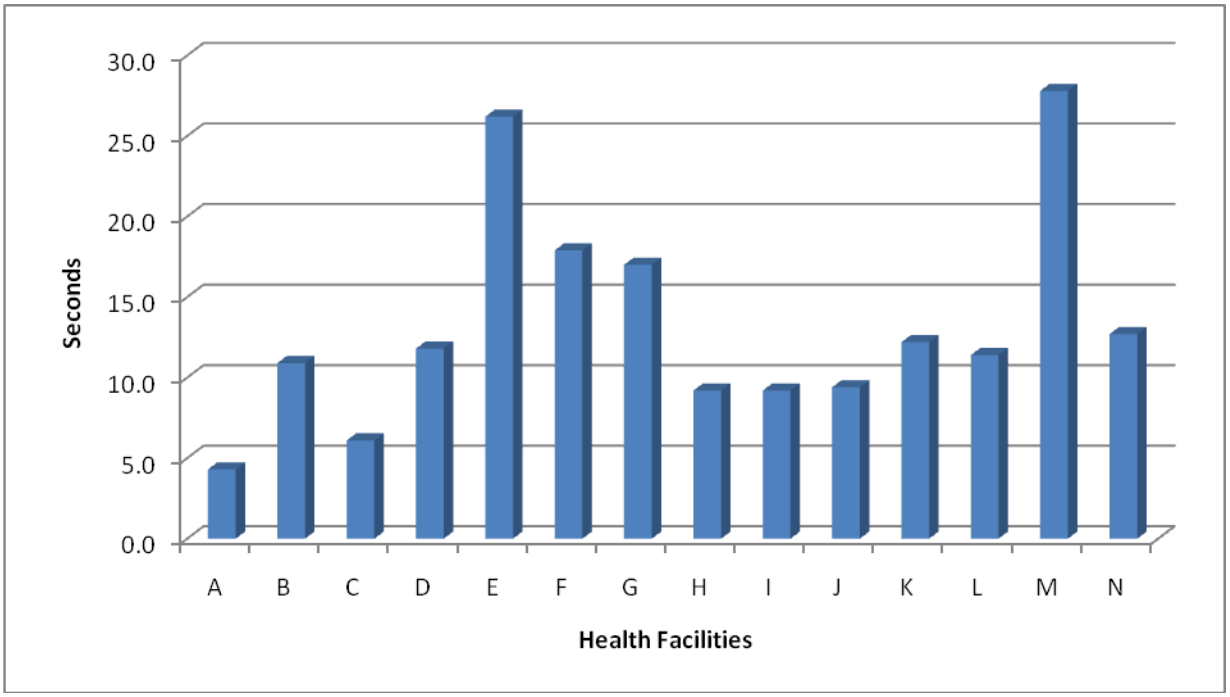

Figure 10. Average dispensing times in seconds (by facility)

Percentage of Patients with Knowledge of Medicine Dosage

Percentage of patients who have adequate knowledge of their medicine dosage (number or amount, number of times a day, and duration of treatment) is 29 percent. WHO studies show an average of 71 percent, and for the SCA study, an average of 63.4 percent. Some health

facilities—Kabul and Balkh provinces—have higher percentages, others are significantly lower. Health facilities with shorter consultation and dispensing times generally showed a decrease in percentage of patients that had adequate knowledge of their medicines. This indicator is significant in that it shows many health facilities have inadequate education for the patient and that knowledge of medicine dosage is quite poor.

In this study, knowledge of dosage included how much of the medicine to take (number of tablets, amount of cream, number of drops, etc.), number of times each day, duration of treatment, and route of administration. The duration of treatment is not frequently used in this type of study, but we felt that it was important to determine if patients have adequate knowledge of dosage. There were many patients that did not know their duration of treatment and consequently this brought down the percentage of patients that did have knowledge of their medicine dosage.

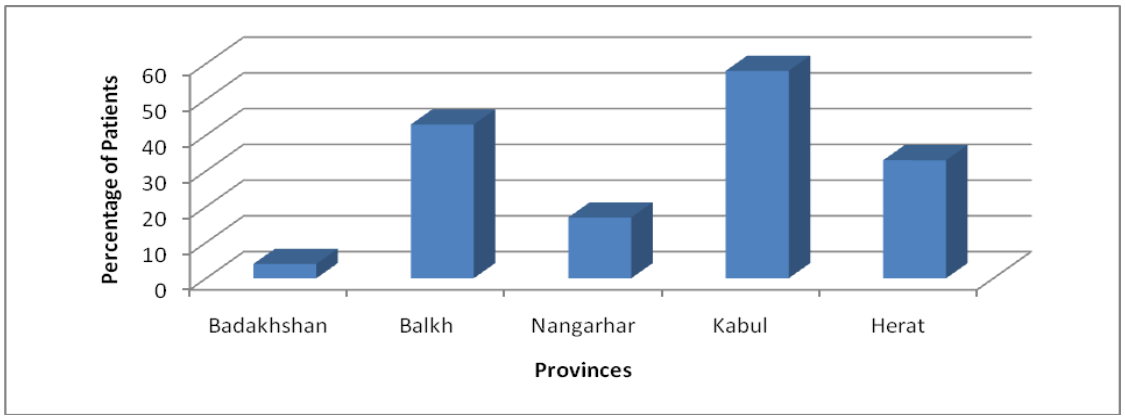

Figure 11. Percentage of patients with knowledge of their medicine dosage (by province)

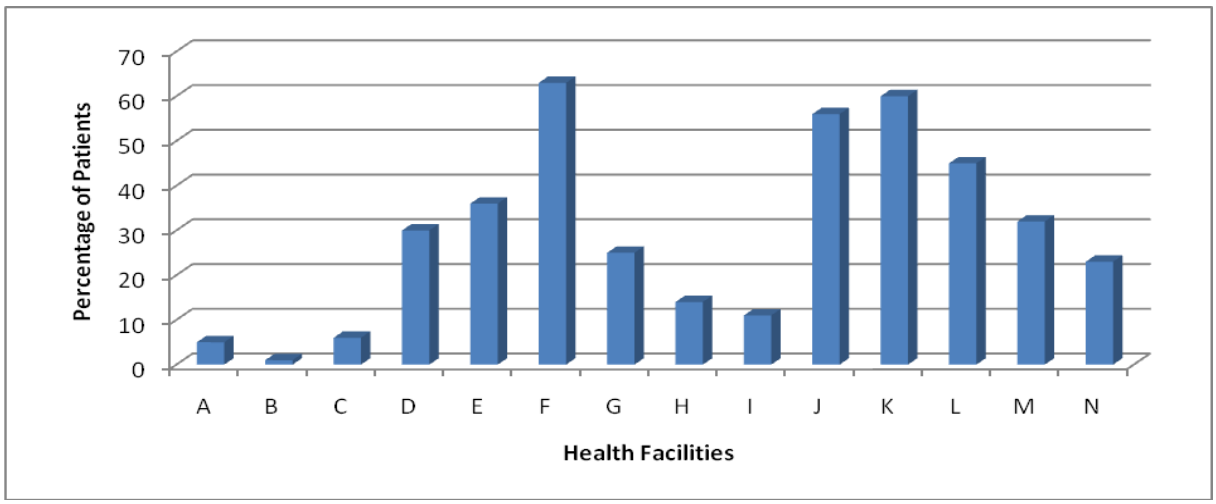

Figure 12. Percentage of patients with knowledge of their medicine dosage (by health facility)

Average Stock-Out per Month

The average number of days out of stock for 15 key medicines was 6.6 days per month. Stock-outs varied widely between facilities and ranged from 0 to 21.8 days per month. On the day of the survey, 78 percent of the 15 key medicines were available in the pharmacy. The non-availability of medicines is an important contributing factor to irrational medicine use. When first-line medicines are not available, second-line and more expensive (and sometimes less effective) alternates may be prescribed or patients may be given prescriptions to purchase with their own resources.

Results for this indicator are presented graphically as an average for each province, health facility, and by donor support.

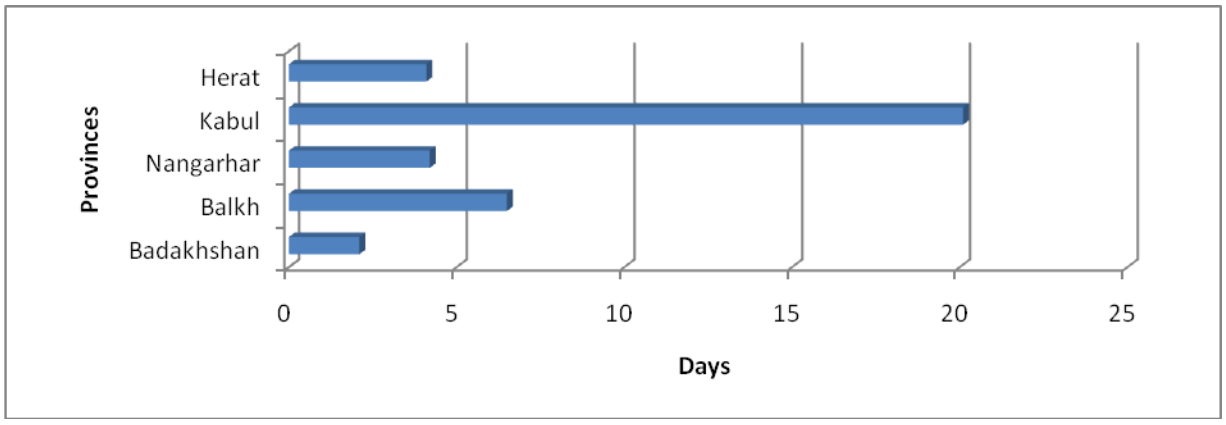

Figure 13. Average number of days out of stock per month for 15 key medicines (by province)

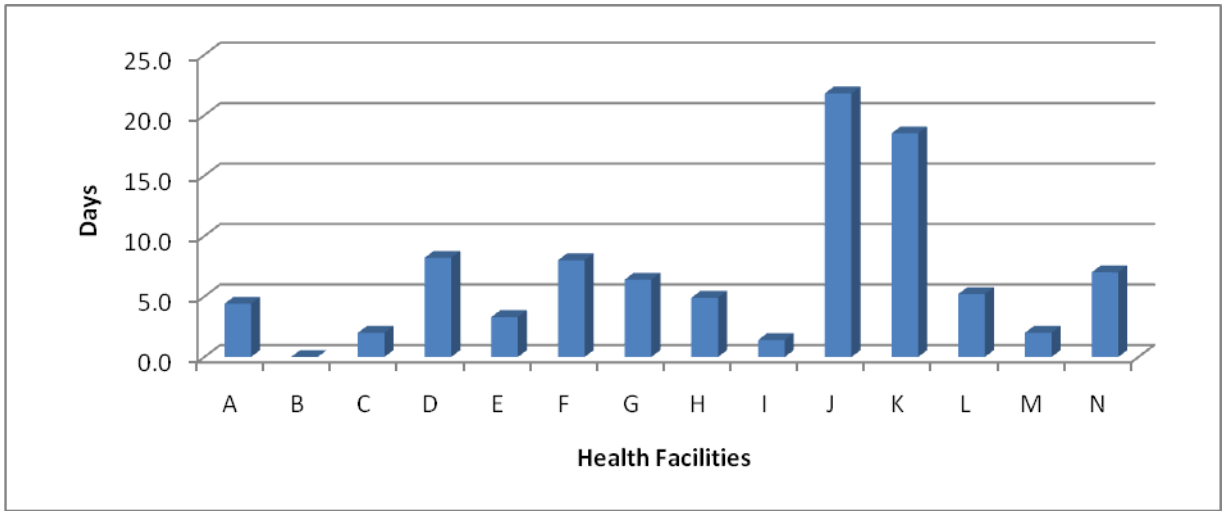

Figure 14. Average number of days out of stock per month for 15 key medicines (by health facility)

Availability of EDL, Guidelines, and Drug Information Resources in Health Facilities

Availability of guidelines and documents including EDL, IMCI guidelines, and drug information resources were reviewed at each health facility. The following documents were available at the 14 primary health facilities hospitals.

- Afghanistan EDL—37 percent
- IMCI guidelines—21 percent
- Drug Information Resources—0 percent

The surveyed hospitals had very poor availability of these important documents, guidelines, and drug information resources, which are all needed to help manage the use medicines in primary health facilities. The lack of an EDL and drug information resources is a poor indicator of RMU. The EDL and IMCI guideline should be present in all facilities and certainly at least one current and reputable drug information source should be available.

RESULTS AND ANALYSIS: HOSPITAL ANTIMICROBIAL INDICATORS

Percentage of Patients with Diagnosis of Pneumonia Treated According to Hospital Guidelines

Of all patients reviewed, 7.8 percent had a diagnosis of pneumonia. There were no cases treated according to hospital-approved guidelines. Guidelines are an important methodology for guiding the correct and rational selection of antimicrobials for treating pneumonia and other infectious diseases. The development, dissemination, and appropriate use of guidelines are necessary to improving the use of medicines in hospitals and primary health care facilities.

Percentage of Medicines Prescribed by Generic Name

Eighty-eight percent of medicines were prescribed by generic name for the five provinces with a range of 17 to 100 percent. This is a good indicator of rational use for public hospitals. Private hospitals prescribe by generic name at a much lower level, including one private hospital that used generic names in only 17 percent of prescriptions. For this hospital, brand names medicines are being prescribed frequently and possibly at a much higher cost to the patient. These higher costs are not necessary as generic products are available at a lower cost.

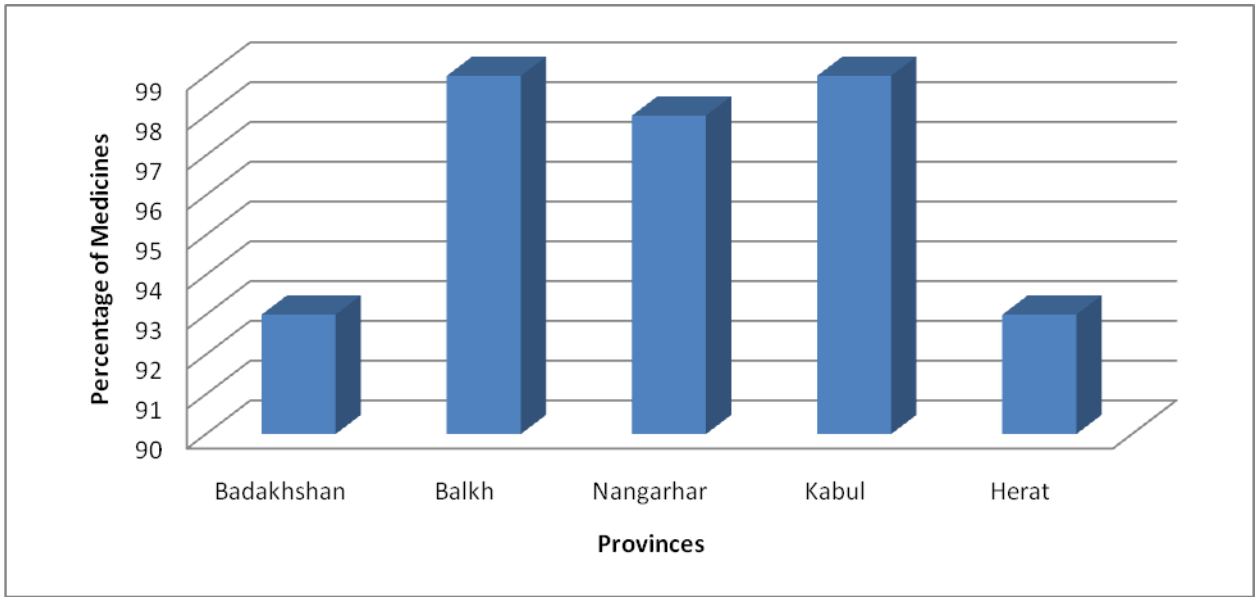

Figure 15. Percentage of medicines prescribed by generic name (by province)

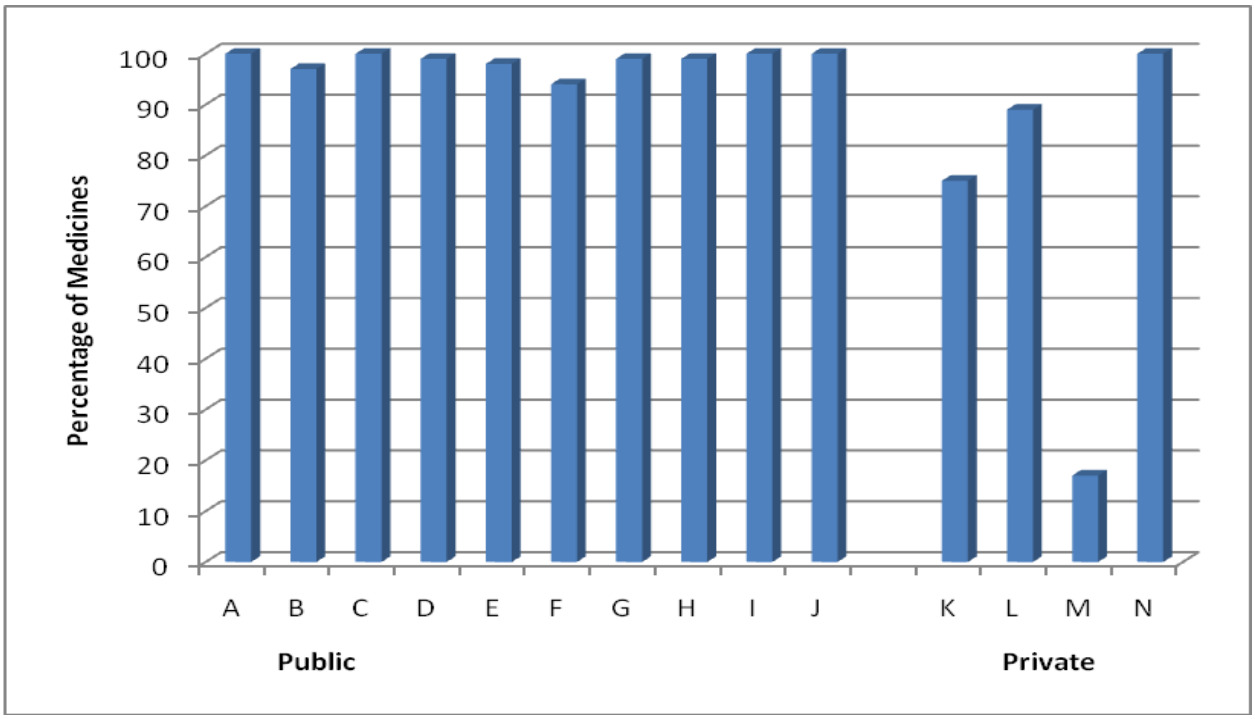

Figure 16. Percentage of medicines prescribed by generic name (by health facility, public and private)

Percentage of Medicines Prescribed from the EDL

Of all medicines prescribed in the 14 hospitals, 96.2 percent were listed on the national EDL. This indicator had a range of 79 to 100 percent. Since hospitals are not required to use the EDL for all of their medicines, the national LDL was also checked which revealed that 99.8 percent of all medicines prescribed were listed. This is an indicator that medicines used in the 14 hospitals are approved for use as listed in the national EDL or LDL and represent safe and effective medicines.

Percentage of Patients Treated with Antimicrobials

The average percentage for all patients admitted to the hospital to receive an antimicrobial is 90 percent with a range of 65 to 100 percent. There is no significant difference between private and public hospitals in antimicrobial use. This relatively high percentage is indicative of the high patient load of infectious diseases. Because of the high number of antimicrobials prescribed in hospitals, these medicines must have the highest priority for monitoring and management to ensure rational use.

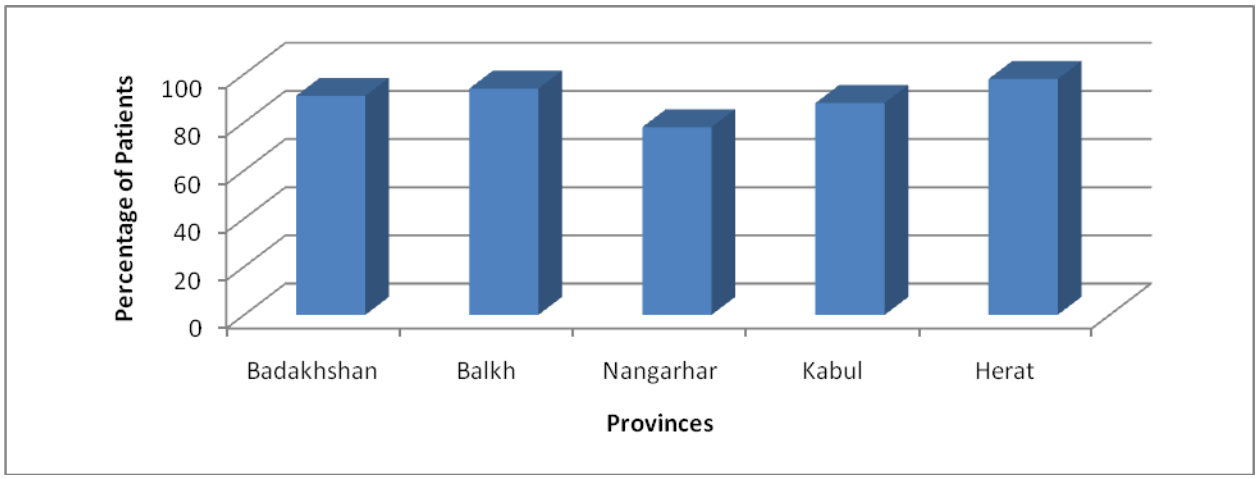

Figure 17. Percentage of patients receiving antimicrobials, hospital admissions (by province)

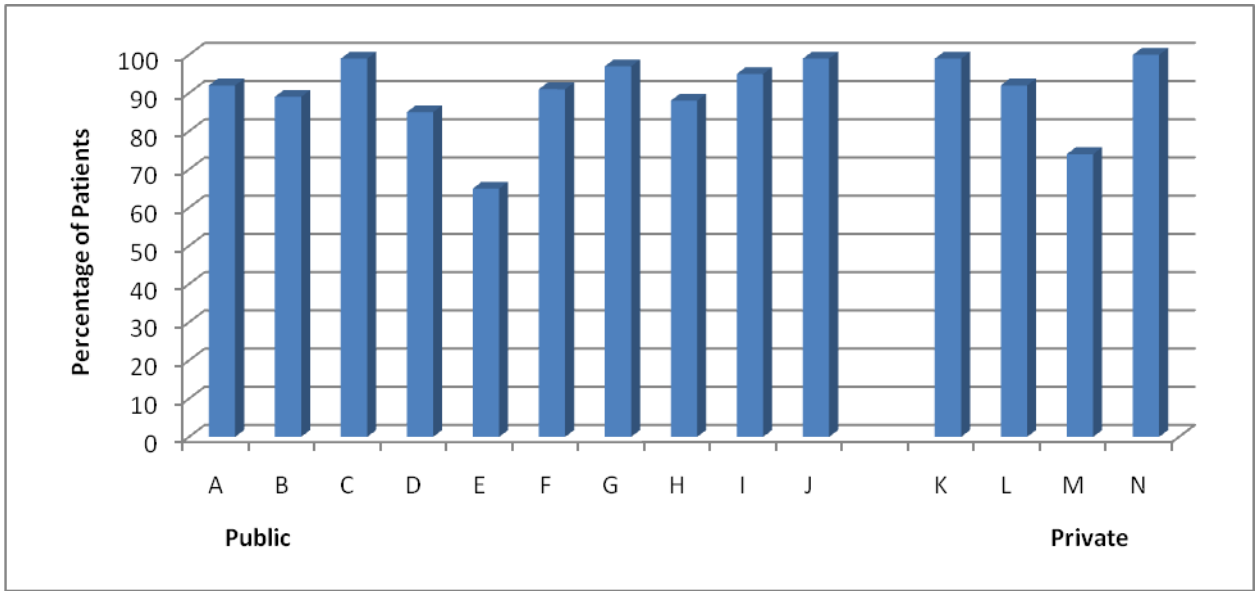

Figure 18. Percentage of patients receiving antimicrobials (by public and private hospitals)

Average Duration of Hospital Stay of Patients Who Receive Antimicrobials

The average number of days per hospital admission for patients receiving antimicrobials is 4.0 days. The range for this indicator is 2.2 to 8.4 days. This is relatively low number of days and is a good indicator that patients are not kept in hospitals for unnecessarily long periods of time.

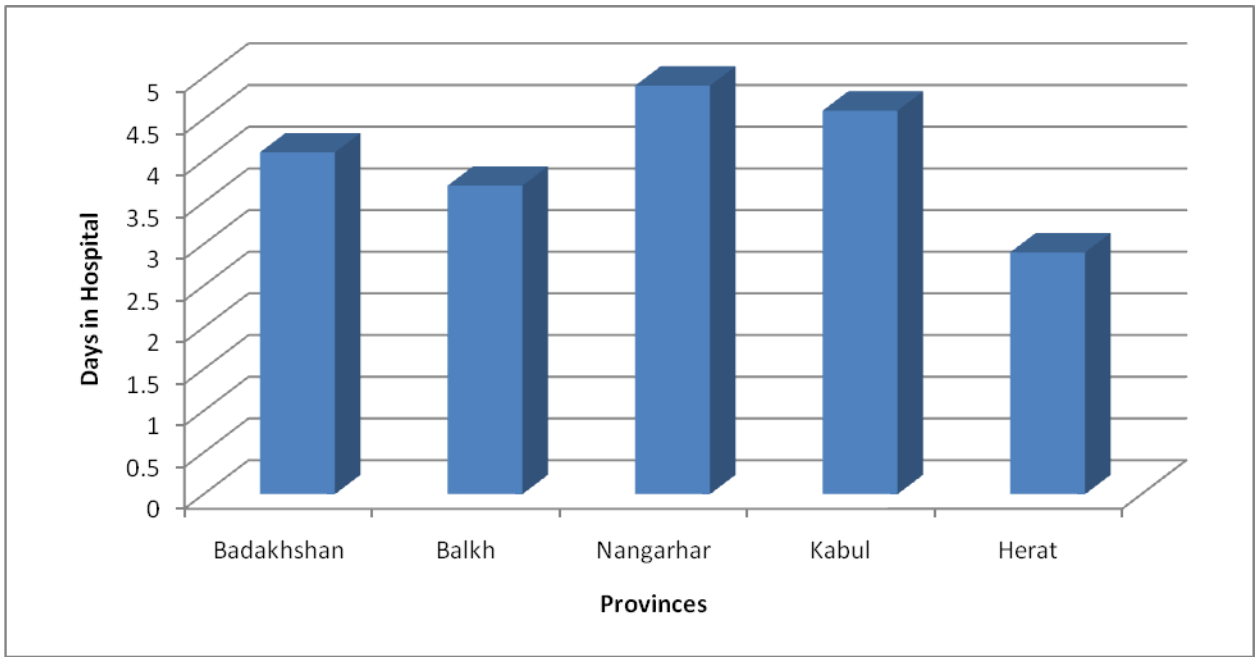

Figure 19. Average number of days in hospitals for patients treated with antimicrobials (by province)

Percentage of Patients with Culture and Sensitivity Tests Performed

There were no culture and sensitivity reports listed for any of the hospital admissions. With the very large number of antimicrobials being prescribed for hospitalized patients, this indicator suggests that there is no guidance for selection and continuing treatment for many infectious diseases.

Average Number of Antimicrobials Prescribed per Hospital Admission

The average number of antimicrobials prescribed is 1.7, with a range of 1.1 to 2.0. This number indicates that patients are not receiving excessive numbers of antimicrobials during their hospital admission.

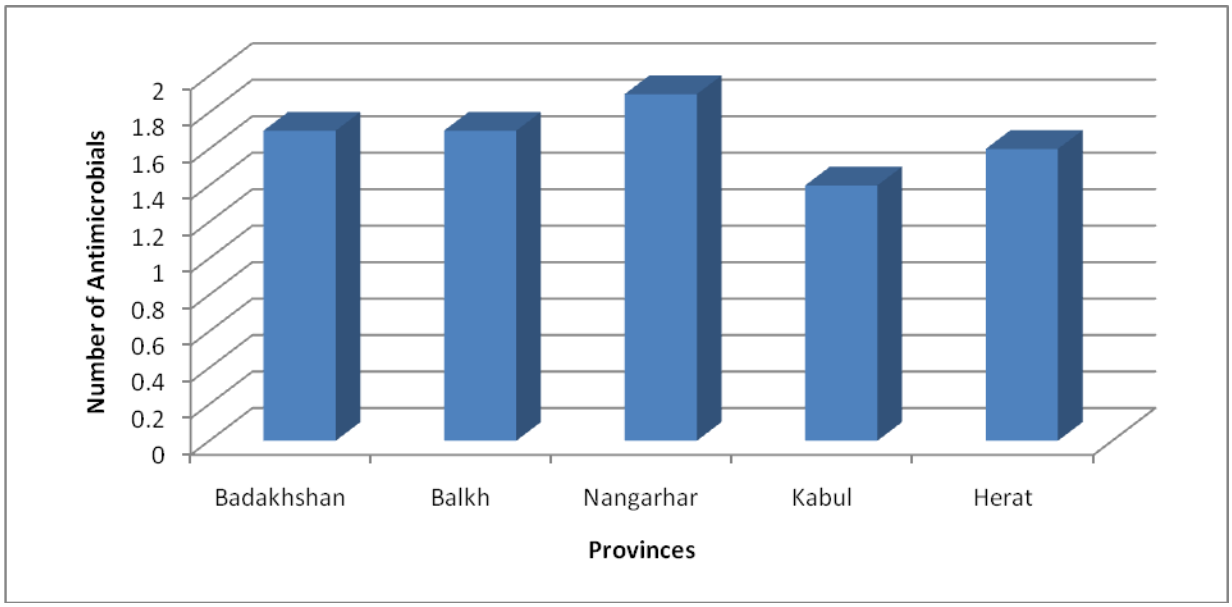

Figure 20. Average number of antimicrobials by admission (by province)

Percentage of Patients Treated with a Third Generation Cephalosporin

The percentage of all patients treated with a third generation cephalosporins is 49.7 percent. The range for this indicator is 3to 100 percent. This indicator on average may be acceptable but individual hospitals are using these important antimicrobials at a very high rate. Private hospitals used this antimicrobial at a higher rate than public hospitals and in one private hospital, all patients reviewed (100 percent) received it. The heavy use of a third generation cephalosporin is an indicator of irrational use which is not only inappropriate and costly, but also leads to the development of antimicrobial resistance. Resistance to this important class of drugs will be devastating to patients as alternate antimicrobials may not be available.

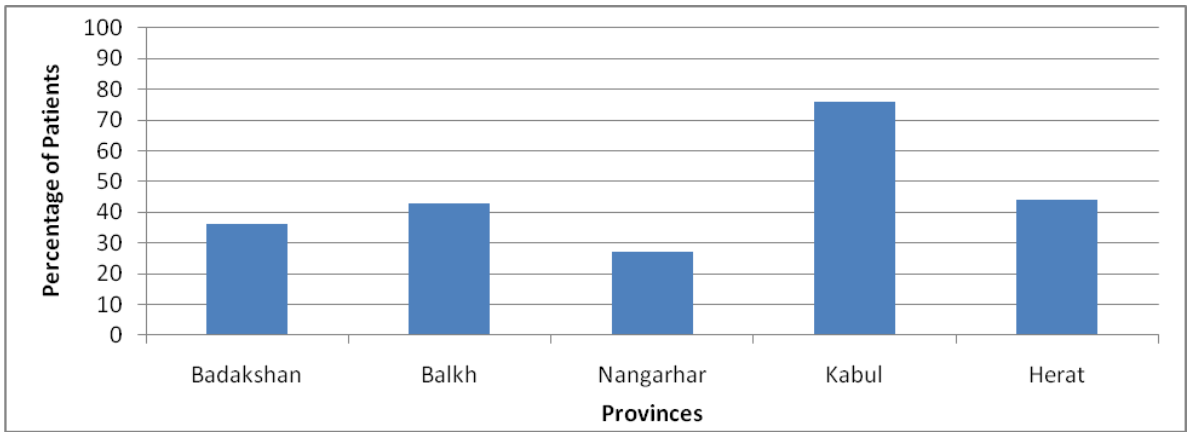

Figure 21. Percentage of patients treated with a third generation cephalopsorin (by province)

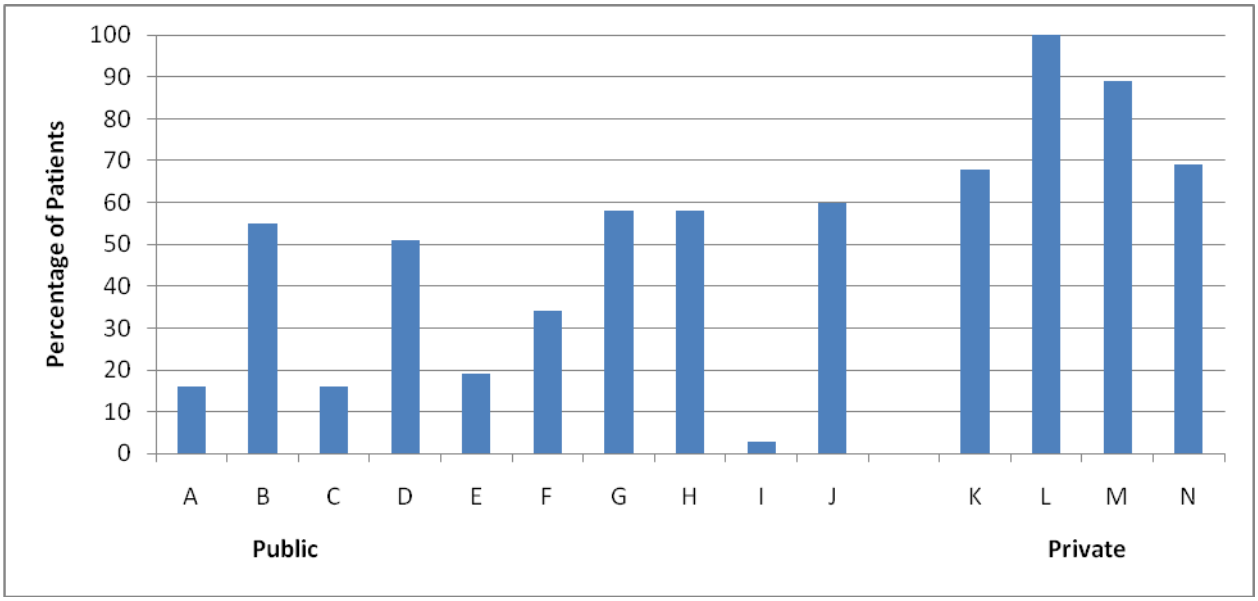

Figure 22. Percentage of patients treated with a third generation cephalopsorin (public and private hospitals)

Number of Doses of Antimicrobials for Surgical Prophylaxis

This indicator was not completed as the definition of surgical prophylaxis and surgical prophylaxis guidelines were not available at the respective hospitals. Generally speaking, hospital did not use prophylaxis as defined by many countries, e.g., a single dose of one antimicrobial administered within 1 hour before the procedure. Most hospitals used multiple doses (sometimes lasting for several days), single or multiple antimicrobials, and administration times starting before or after the procedure. Antimicrobials used include ampicillin, gentamicin, ceftriaxone, cefazolin, and metronidazole.

There were no guidelines available and there was no standardized approach to surgical antimicrobial prophylaxis except in one province. A single hospital in Herat Province did have a standardized approach using a single dose of a first generation cephalosporin for surgical prophylaxis.

The overuse of antimicrobials for surgical prophylaxis is irrational and leads to high cost for the hospital (including medicines, medical supplies, and nursing administration costs), increase in adverse drug reactions (related to drug and injections), and the development of antimicrobial resistance.

Average Days Out of Stock of Key Antimicrobials

The average number of days out of stock is 8.7 days per month for 15 key antimicrobials. This figure is very high and indicates that many antimicrobials may be out of stock requiring

physicians to use second- or third-line medicines or requiring patients to purchase drugs at a local pharmacy. This out-of-stock status leads to the inappropriate use of medicines.

Stock-out data is presented graphically by province average and individual health facility.

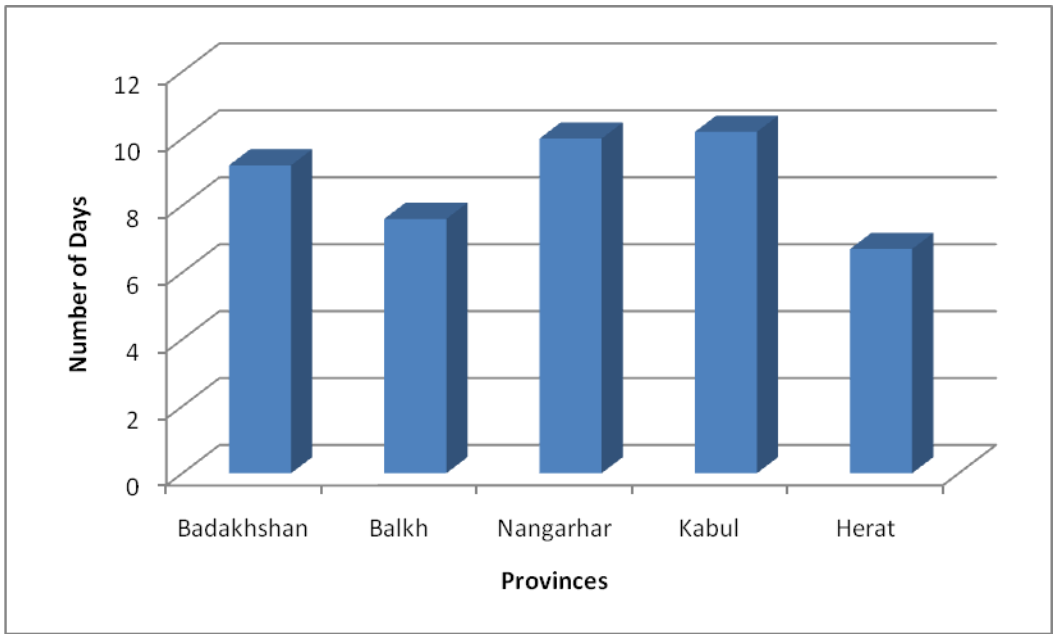

Figure 23. Average number of days out of stock per month by province (15 key antimicrobials)

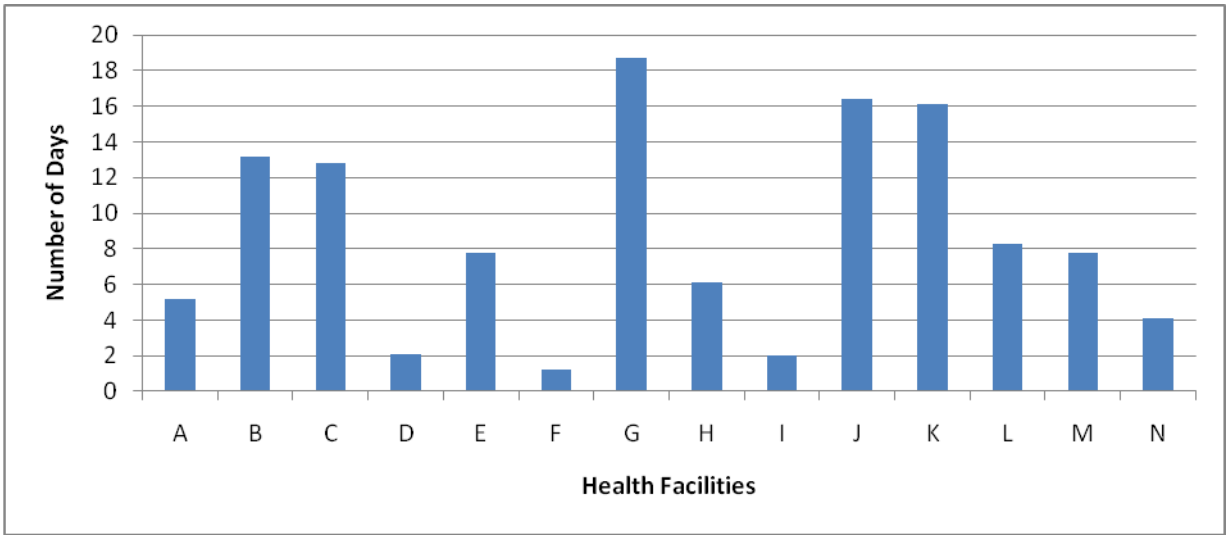

Figure 24. Average number of days out of stock per month per hospital (15 key antimicrobials)

Availability of EDL (Essential Drug List), Licensed Drug List (LDL), and Treatment Guidelines in Hospitals

Availability of guidelines and documents including EDL, LDL, infection control guidelines, and infection diseases guidelines were reviewed. Very few of these documents were ready available at the time of the survey. The following number of documents was available at the 14 hospitals.

- Afghanistan EDL or LDL–29 percent
- National formulary–0 percent
- Infection control guidelines–29 percent
- Standard treatment guidelines for infectious diseases–7 percent
- Drug information resources–14 percent

Hospitals surveyed had very poor availability of these important documents, guidelines, and drug information resources. All are very much needed to help manage the use medicines in hospitals.

CONCLUSIONS

Afghanistan Ministry of Public Health has contributed significantly to improving the use of medicines over the past 8 years. The development of the Basic Package for Health Services (BPHS), Essential Package of Health Services (EPHS), Essential Drugs List (EDL), and the Licensed Drug List (LDL) are important steps toward achieving goals of RMU. These four important programs provide the framework for managing and improving the use of medicines. The EDL, in particular, lists effective, safe, and cost-effective medicines for Afghanistan. Ineffective, costly, potentially unsafe medicines are eliminated when prescribers comply with use of medicines in this document.

Irrational medicine use is a common and significant problem in the health care systems worldwide, developed and developing countries alike. Irrational use is linked to the lack of knowledge of health care professionals, inadequate health care systems, and poorly educated patients. This medicine use study identifies specific problems of irrational use in both primary health facilities and hospitals. There is antibiotic overuse at most of the health facilities and hospitals studied, including prescribing for conditions that do not warrant any antibiotic use. There is minimal time provided to patients in the consultation room and almost no time spent on counseling patients at the pharmacy. Patient knowledge of medicine dosage is very weak and this leads to poor use of medicines and poor outcomes. Availability of medicines is problematic and some medicines are not available for use in primary health facilities and hospitals. Hospitals prescribe antimicrobials at very high levels and many rely on third generation cephalosporins for a large percentage of their therapeutic treatments and for prophylaxis. Surgical prophylaxis is not standardized and frequently consists of multiple antimicrobials administered in multiple doses for an extended period of time. Standards for treating infectious diseases are not available at all facilities which leads to many different treatments for the same medical condition, many of which are not optimal. All of this overuse and abuse of antimicrobials leads to increase in adverse drug reactions, antimicrobial resistance, and increased health care costs.

There are many strategies and interventions that can improve the use of medicines in Afghanistan. DTCs at the national and the local hospital level can help manage medicines by ensuring that a hospital formulary is established and followed (based on the national EDL and LDL), prescribing is monitored to identify medicine use problems, and interventions are developed and implemented to improve use when problems are identified. DTC interventions include monitoring of available treatment guidelines to ensure they are being used as written, developing relevant local guidelines and policies, providing training for professional staff, and providing education to patients on medicines. The DTC at the national level needs to promote the development DTCs at hospitals throughout the country, develop STGs for the most prevalent diseases in Afghanistan, provide national level training for physicians and pharmacists, strengthen regulatory systems, and provide education for general public on the appropriate use of medicines. Improvement in drug information systems is necessary, including the establishment of centralized drug information center and the provision of key drug information resources at hospitals and primary health facilities.

Current efforts underway to manage and improve medicines use are commendable. A national DTC has been formed to oversee the development of local level DTCs and promote interventions that address RMU throughout the country. The NDTC has started work on the development of a comprehensive set of STGs for BPHS. Training programs on RMU are currently provided in Afghanistan and these are in the process of being revised to improve their content and effectiveness. Pre-service training at Kabul University School of Pharmacy is currently being reviewed and reformed to include more subject matter on RMU, antimicrobial resistance, and drug management.

These important interventions will continue the process of rationalizing medicine use in Afghanistan. As more RMU-related activities are introduced, opportunities for improving the use of medicines will arise and improved patient outcomes can be expected.

ANNEX 1. INDICATORS

Afghanistan Medicine Use Study Indicators—Summary of Indicators, prescribing studies, inventory management reviews

Indicator	Methods to collect data
Primary health care facilities (CHC, BHC)	
Prescribing Indicators	
Average number of medicines prescribed per encounter	Medical record review
Percentage of medicines prescribed by generic name	Medical record review
Percentage of encounters with an antibiotics prescribed	Medical record review
Percentage of encounters with an injection prescribed	Medical record review
Percentage of medicines prescribed from EDL	Medical record review
Average duration of antimicrobial therapy	Medical record review
Patient Care Indicators	
Average consultation time	Observation
Average dispensing time	Observation
Percentage of medicines that are adequately labeled	Patient exit interview and observation
Patient knowledge of correct dosage, route of administration, frequency of use, duration of treatment	Patient exit interview
Facility Indicators	
Percentage availability of key medicines	Pharmacy record review
Average number of days that a set of key medicines is out of stock per month	Pharmacy record review
Percentage of health facilities with access to impartial drug information	Observation of at least one source of information available in the health facility
Percentage of health facilities with the EDL (2007 edition) available	Interview and observation
Percentage of health facilities with IMCI guidelines available	Interview and observation
Hospitals (district and provincial)	
Percentage of patients with diagnosis of pneumonia treated according hospital guidelines	Medical record review
Percentage of antimicrobials prescribed by generic name	Medical record review
Percentage of patients treated with one or more an antimicrobials	Medical record review
Percentage of medicines prescribed from the EDL/LDL	Medical record review
Average number of antimicrobials prescribed	Medical record review
Percentage of patients treated with a third generation cephalosporin	Medical record review
Average number of doses of antimicrobial prophylaxis prescribed for surgical inpatients who received prophylaxis	Medical record review
Patient Care Indicators	
Average duration of hospital stay of patients who receive antimicrobials	Medical record review
Percentage of patients with culture and sensitivity tests performed	Medical record review
Availability of a set of key antimicrobials in the hospital stores on the day of the study	Review pharmacy or hospital stores records
Average number of days that a set of key antimicrobials is out-of-stock per month	Review pharmacy or hospital stores records

Existence of standard treatment guidelines for infectious diseases	Interview and observation
Existence of an approved hospital formulary list or essential drugs list (EDL or LDL)	Interview and observation
Existence of the Afghanistan National Formulary	Interview and observation
Existence of infection control guidelines	Interview and observation
Percentage of hospitals with access to impartial drug information	Observation of at least one source of information available in the health facility

ANNEX 2. PRIMARY HEALTH CARE FACILITIES AND HOSPITALS SURVEYED

Badakhshan
Faizabad Provincial Hospital
Keshim District Hospital
Baharak CHC
Layaba BHC
Nahia 3 BHC
Balkh
Balkh District Hospital
Maulana Private Hospital
Mazar Regional Hospital
Langar Khana CHC
Hairatan CHC
Noor Khuda CHC
Nangarhar
Nangarhar Regional Hospital
Nangarhar Provincial Hospital
Nahr-e-Shahi BHC
Shiva CHC
Sultanpur CHC
Kabul
Afghan Private Hospital
Blossom Private Hospital
Indira Gandhi Hospital
Wazir Akbar Khan Hospital
Allahuddin BHC
Rahman Mina CHC
Herat
Guzarah District Hospital
Herat Regional Hospital
Tabiban Private Hospital
Babai Barque CHC
Karokh CHC
Maladan BHC

ANNEX 3. DATA COLLECTORS

SN	Name	Designation
1	Dr.Ayesha	Directory of API
2	Ph.Zarsanga	Member of ED
3	Ph.Qadir Khan	G.M of Research
4	Ph.Lailuma	Member of API
5	Ph.Sejadi	Manager of Education
6	Ph.Maria	GD .Affair
7	Dr.Hedayat	M.D.
8	Dr.Zekria	M.D.
9	Ph.Lamiha	Employee of GDPA
10	Ph.Shakila	G.M. of Regulatory
11	Ph.Nazir	G.M. of Evaluation
12	Ph.Karima	Member of Research
13	Dr.A.Hadi	M.D.
14	Ph.Fahima	EDL officer
15	Ph.Nasir	Manager of Formulary
16	Ph.Sima	Manager of Evaluation
17	Dr.Qutbuddin	M.D.
18	Ph.Zakia	G.M. of NMA
19	Ph.Shahperai	G.M. of Specialty
20	Ph.Khalilulla	General Directorate of Affairs
21	Dr.M.Ali	M.D.
22	Ph.Khan Aqa	Deputy Director of API
23	Ph.A.Qahir	G.M. Administration
24	Ph.Ismail	Member of Regulatory
25	Dr.M.Arif	M.D.
26	Abdul Wali	Ph.IbnSina Hospital
27	Ahmad Fareed	M.Equipment officer-MoPH
28	Abdul Tawab	SPS CPDS Advisor
29	Wahidullah	SPS QA Advisor
30	Dr.Zafar Omari	SPS Team Leader
31	Abdul Zahir Siddiqui	SPS RMU Advisor

ANNEX 4. KEY MEDICINES USED FOR STUDY

Hospital Antimicrobials

Amoxicillin powder for oral suspension, 125 or 250 mg/5 mL
Amoxicillin tablet, 250 or 500 mg
Ampicillin powder for injection, 500 mg or 1 g (sodium salt) in vial
benzathine benzyl powder for injection, 1,2 or 2,4 million IU in 5-mlLvial
benzylpenicillin G (crystal) powder for injection, 1 million or 5 million IU (sodium or potassium salt) in vial
ceftriaxone (restricted indication) vial, 250 mg or 1 gram
chloramphenicol powder for injection, 1 gram (sodium succinate) in vial
ciprofloxacin tablet, 250 or 500 mg (hydrochloride)
cloxacillin capsule/tablet, 250 or 500 mg (sodium salt)
cloxacillin vial, 500 mg for injection
co-trimoxazole (sulfamethoxazole + trimethoprim) tablet, 100 mg + 20 mg or 400 mg + 80 mg
doxycycline capsule/tablet, 100 mg (hydrochloride)
erythromycin tablet, 200 mg (ethylsuccinate)
gentamicin injection, 20, 40, or 80 mg (sulfate)/ml in 2 mL vial
procaine penicillin powder for injection, 2 million IU in vial

Primary Health Facilities Medicines

acetaminophen tablet, 500 mg
aluminum hydroxide + magnesium hydroxide chewable tablet, 200 mg + 200 mg
amoxicillin powder for oral suspension, 125 or 250 mg/5 mL
amoxicillin tablet, 250 or 500 mg
ampicillin powder for injection, 500 mg or 1 gram (sodium salt) in vial
chloramphenicol capsule, 250 mg
co-trimoxazole (sulfamethoxazole + trimethoprim) tablet, 100 mg + 20 mg or 400 mg + 80 mg
ferrous sulfate + folic acid tablet, equivalent to 60 mg iron + 400 microgram folic acid
gentamicin injection, 20, 40, or 80 mg (sulfate)/mL in 2 mL vial
hydrocortisone powder for injection, 100 mg
ibuprofen tablet, 200 or 400 mg
methyldopa tablet, 250 mg
metronidazole tablet, 200 or 250 mg
oral rehydration salt powder, 27,9 g/l
tetracycline eye ointment, 1% (hydrochloride)