Session 9.
Strategies to Improve Medicine Use—Overview

Participants’ Guide
This document was made possible through support provided by the U.S. Agency for International Development, under the terms of cooperative agreement number HRN-A-00-00-00016-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the U.S. Agency for International Development.

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Developed in Collaboration with the
World Health Organization
Geneva, Switzerland
# ABBREVIATIONS AND ACRONYMS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ARI</td>
<td>acute respiratory infections</td>
</tr>
<tr>
<td>DTC</td>
<td>Drug and Therapeutics Committee</td>
</tr>
<tr>
<td>DUE</td>
<td>drug use evaluation</td>
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<tr>
<td>EDP</td>
<td>essential drugs program</td>
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<tr>
<td>PHC</td>
<td>public health care</td>
</tr>
<tr>
<td>STG</td>
<td>standard treatment guideline</td>
</tr>
<tr>
<td>USD</td>
<td>U.S. dollar</td>
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<tr>
<td>VA</td>
<td>visual aid</td>
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SESSION 9. STRATEGIES TO IMPROVE MEDICINE USE—OVERVIEW

Purpose and Content

Session 9 is designed to provide information on how members of the Drug and Therapeutics Committee (DTC) can apply interventions to resolve medicine use problems. Considered to be one of the most important functions of a DTC, implementing appropriate strategies to improve medicine use will affect improved health outcomes and decrease cost.

Strategies that will be discussed include the following educational, managerial, and regulatory methods—

- In-service education programs
- Pharmaceutical bulletins and newsletters
- Formulary manuals
- Face-to-face communication
- Standard treatment guidelines (STGs)
- Audit and feedback (drug use evaluations [DUEs])
- Clinical pharmacy programs
- Formulary management, including medicine selection
- Medicine restrictions and control
- Medicine registration and professional licensing

Session 9 comprises an overview of this subject; a more detailed breakdown of STGs and DUEs is provided in later sessions.

Objectives

After attending this session, participants will be able to—

- Identify effective strategies to improve medicine use based on an understanding of the factors underlying medicine use problems
- Choose an appropriate strategy for improving medicine use based on an identified problem
- Understand the importance of educational, managerial, and regulatory interventions in promoting rational use of medicines
**Preparation and Materials**

Read the following—

- Participants’ Guide


**Key Definitions**

**Standard treatment guidelines (STGs)**—A systematically developed collection of statements designed to assist practitioner and patient in making decisions about appropriate health care for specific clinical circumstances

**Formulary manual**—The document that describes medicines that are available for use in the hospital and clinics (provides information on indications, dosage, length of treatment, interactions, precautions, and contraindications)

**Drug use evaluation**—An ongoing, systematic, criteria-based program of medicine evaluations that will help ensure appropriate medicine use. If therapy is determined to be inappropriate, interventions with providers or patients will be necessary to optimize pharmaceutical therapy.

**Introduction**

As delineated in previous sessions, the DTC is responsible for numerous important pharmaceutical management functions. The DTC evaluates new medicines for the formulary, develops policies for medicine use, and identifies and corrects medicine use problems. Earlier sessions have stressed that this evaluation and addition of new medicines to the formulary is one of the most important functions of the DTC because the health care system needs medicines that are of proven efficacy for the medical conditions and diseases of the country. This efficacy must be well recognized and accepted by experts in the field. The DTC must have considerable information concerning all aspects of quality to ensure the products added to the formulary meet minimum quality standards. Evaluation of cost is essential—more important today than at any other time—because the cost of medicines as a percentage of the health care budget is increasing dramatically.

Once medicines have been added to the formulary and all of the evaluation criteria have been satisfied, then serious consideration must be given to ensuring that the medicines are used appropriately by the health care system. Session 9 concentrates on strategies for improving medicine use in the health care system.
Like the functions of evaluating medicines and adding them to the formulary, DTC’s function of ensuring proper use of selected medicines is important to the overall management of medicines: the inappropriate use of medicines will compromise any advantages achieved by proper selection. These complementary issues—selecting an appropriate medicine and then ensuring its appropriate use—lie at the very heart of pharmaceutical management. Consequences of irrational medicine use include the following—

- Increased morbidity and mortality
- Waste of resource
- Increased incidence of adverse drug reactions
- Antimicrobial resistance through misuse and overuse
- Increased infectious diseases due to contaminated and unnecessary injections

Session 9 provides the participants with insights into developing and implementing strategies to improve medicine use. Three types of strategies will ensure the quality of pharmaceutical therapy: educational, managerial, and regulatory. These strategies are discussed in detail and provide information to the participants to improve rational use of medicines.

**Educational Methods for Improving Medicine Use**

The DTC must be involved in educational programs for health care professionals. Physicians, nurses, pharmacists, and, indeed, all professionals need constant updating of their skills and knowledge. It is not possible for physicians or pharmacists to keep up with the constant changes in the pharmaceutical literature without intensive efforts by the individual and the health care system.

Educational methods are intended to inform and persuade practitioners and include the following—

- Printed materials
  - Pharmaceutical bulletins and newsletters
  - Formulary manuals and STGs
- Face-to-face communications with physicians, health care leaders, and patients

**Pharmaceutical Bulletins and Newsletters**

Pharmaceutical newsletters can be a valuable instrument for the DTC in providing medicine information. These newsletters, which can be published monthly, quarterly, or at longer intervals, should provide interested staff with unbiased and accurate information concerning pharmaceutical therapy. Newsletters and bulletins have an advantage over formal group presentations because busy practitioners can read the information on their own schedules.

Numerous pharmaceutical newsletters and bulletins are already published by international services and distributed worldwide, but a local bulletin would also be an invaluable asset. A local
bulletin would provide more information concerning medicines and medicine-related problems of interest at the local level.

Pharmaceutical newsletters are more likely to be effective in improving use of medicines if they do the following—

- Describe the reasons for prescribing behavior—ineffective training in infectious diseases? Distrust of in-country medicines? Reliance on brand name medicines and distrust of generics?

- Offer concise, up-to-date information that can be used immediately

- Provide limited information and repetition of key points in the newsletter—extensive presentations of new information and reviews will not hold the interest of most individuals.

- Provide a graphical, colorful newsletter that will catch the attention of the reader

- Provide reference in the newsletter to information derived from reputable journals and services

- Provide brief, straightforward text

- Provide information oriented toward actions and decisions

- Obtain feedback from the professional staff on the value of the newsletter and institute changes as necessary

**Formulary Manuals and STGs**

The use of a formulary manual has been shown to be valuable in providing medicine information to physicians, pharmacists, and nurses. A formulary manual can be described as the publication dedicated to presenting the formulary list and other information concerning the use of medicines. The formulary manual is a concise, pocket-sized document that provides summary information meant to be readily available for health professionals to use daily. Formulary manuals vary in scope from a listing of essential medicines to comprehensive references that contain medicine information, treatment guidelines, and pharmacy policies and procedures. The following are some examples of content for a formulary manual—

- Medicine formulary list
- Basic information on each medicine (i.e., indications, dose, side effects)
- Supplementary information on each medicine (i.e., price, source of supply)
- Prescribing and dispensing guidelines
- Disease management guidelines for selected conditions
- Pharmacy policies and procedures pertinent to medical staff and pharmacy
- Pharmaceutical procurement policies
Ideally, the manual should have at a minimum the list of formulary medicines and an information section describing each medicine. This manual, when provided in a comprehensive form, provides excellent medicine information for physicians and other professionals. Producing the manual is a time-consuming process and a systematic participatory approach is required to keep revisions updated. See session 2, “Developing and Maintaining a Formulary,” for more detailed information concerning formulary manuals and their content.

STGs serve as evidenced-based reference guides for education of providers and for prescription audit. These documents list the preferred pharmaceutical and nonpharmaceutical treatments approved for a particular health care institution. See session 10, “Standard Treatment Guidelines,” and the “Standard Treatment Guidelines” section below for more information about STGs.

**Face-to-Face Communications**

*In-service Education Programs, Workshops, and Seminars*

The information database on medicines and pharmaceutical therapy is constantly changing. A physician or pharmacist who has recently graduated from a training program will find that his or her knowledge base becomes inadequate in a remarkably short period. Since good patient care requires the professional to have up-to-date information, in-service education and other educational programs are necessary. The DTC should have a plan to provide these programs at times when as many of the professional staff as possible can attend.

This type of information program has varying degrees of success, depending largely on the materials being presented, the style of presentation, and the education and experience of the instructor. Key points concerning face-to-face communications include the following—

- Focuses on information of local relevance
- Is kept brief (a few clear messages and instructions on what to do)
- Supplies the repetitive information needed for individuals to learn
- Is run by a presenter who has in-depth knowledge and interest in the subject and the materials presented and who has an effective teaching style

*Educational Outreach (Person-to-Person or Academic Detailing)*

Person-to-person education is the most effective educational method of changing prescribing behavior. The beneficial effects can be striking because people will be more attentive and absorb more information with this type of education. The world’s pharmaceutical companies have shown this technique to be extremely useful; they have hired thousands of representatives to meet face to face with prescribers to provide information and market their products. Pharmaceutical representatives have been remarkably successful. Academic detailing can accomplish the same result but brings a more balanced, objective message.
Principles of this type of education include the following—

- Focusing on specific problems and targeting the prescribers
- Addressing the underlying causes of prescribing problems such as inadequate knowledge
- Allowing an interactive discussion that involves the targeted audience
- Using concise and authoritative materials to augment presentations
- Giving sufficient attention to solving practical problems encountered by prescribers in real settings

*Influencing Opinion Leaders*

The identification of health care leaders and other influential persons involved in prescribing medicines and then providing education, guidance, and policies to them can have important benefits. These leaders of the health care system may well be in a position to teach or direct other doctors, students, and pharmacists on the appropriate standards of care.

A study in the United States described an intervention which targeted authoritative senior department members on the issue of antibiotic prophylaxis of caesarian sections. The intervention involved developing guidelines, which were presented to leaders in the department of obstetrics and gynecology in a hospital. These department leaders ensured through various means that the desired antibiotic cefazolin was used rather than cefoxitin. Although both antibiotics were available, a dramatic change in usage patterns occurred (figure 1).

![Figure 1. Effects of opinion leaders on the choice of antibiotic for prophylaxis in a teaching hospital.](image-url)
Patient Education

Patient education is a vital concept that will influence medicine prescribing. Providing regular patient education by physicians, nurses, and pharmacists will teach patients appropriate therapy and improve health outcomes. An educated patient population will make fewer demands for inappropriate medicines, especially antibiotics. Patient education will result in a corresponding improvement in how patients perceive pharmaceutical therapy and compliance with their medicine regimens.

A study from Indonesia demonstrated that moderated group discussions between community members and health workers, where both feelings about injections and scientific information about their risks were discussed, were effective in reducing the rate of injection use in public health facilities (Hadiyono et al. 1996 *Social Science Medicine*). The findings from this study in Indonesia (figure 2) are described below.

![Percentage Prescribing Injections](image)

**Figure 2. Impact of patient-provider discussion groups on injection use in public health care facilities in Indonesia.**

Sites for Face-to-Face Education

Persuasive face-to-face education is a flexible strategy that can occur in any setting where educators are able to talk to prescribers (or partners), for example—

- Health centers
- Hospitals
- Pharmacies
- Universities
- Continuing education seminars held at the district level
Managerial Methods

The DTC, through its function of providing rational pharmaceutical therapy, should have a number of managerial methods in place to help ensure that medicines are used correctly. These methods include the following—

- STGs
- DUEs (audit and feedback)
- Clinical pharmacy programs
  - Monitoring of medicine use
  - Therapeutic interchange program
- Medicine and antibiotic restrictions
  - Structured order form
  - Medicine availability restrictions
  - Automatic stop orders

Standard Treatment Guidelines

STGs bring another important dimension to improving pharmaceutical therapy. When developed and implemented correctly, guidelines bring significant advantages to health care programs. By definition, a treatment guideline is a systematically developed statement designed to assist practitioner and patient in making decisions about appropriate health care for specific clinical circumstances.

STGs are disease-oriented, whereas formulary manuals are very much medicine-oriented documents. Both of these documents provide important information for medical, nursing, and pharmacy staff. Every effort should be made to produce both of these manuals, have them readily available for all practitioners, and update them on a regular basis to ensure accuracy of the information provided.

Establishing an STG is a lengthy process, and one that must be done methodically and completely to have a product that all practitioners are willing to accept. The following study illustrates the value of STGs.
Table 1. A Combined Intervention Strategy in Uganda

<table>
<thead>
<tr>
<th>Group</th>
<th>% Px conforming to STG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group—no intervention</td>
<td>24.8 → 29.9% (+5.1%)</td>
</tr>
<tr>
<td>Dissemination of STG</td>
<td>24.8 → 32.3% (+7.5%)</td>
</tr>
<tr>
<td>STG plus on-site training in therapeutic problems</td>
<td>24.0 → 52.0% (+28.0%)</td>
</tr>
<tr>
<td>STG plus on-site training in therapeutic problems plus four supervisory visits in six months</td>
<td>21.4 → 55.2% (+33.8%)</td>
</tr>
</tbody>
</table>


See session 10, “Standard Treatment Guidelines,” for more detailed information concerning advantages, disadvantages, and the process of developing this important document.

**Audit and Feedback**

Audit and feedback is a managerial strategy that has been found to be successful in changing medicine use behavior. This strategy involves the monitoring of medicine use and then giving feedback on the information collected to prescribers to change medicine use behavior. This audit and feedback methodology is ideally suited for the DTC.

One type of audit and feedback program is the DUE, an ongoing, systematic, criteria-based program that will ultimately help ensure appropriate medicine use. DUEs are useful for identifying medicine use problems as well as providing an intervention method to resolve these problems. A DUE can be structured so that it will assess the actual process of administering or dispensing a medicine (i.e., appropriate indications and dose) and assess the outcomes (e.g., cured infections, decreased lipid levels).

A system of DUEs can be established in a short period once the actual medicine use problems have been identified. Many of these problems can be identified from activities described in session 7, “Identifying Problems with Medicine Use,” and session 8, “Understanding the Problems Associated with Medicine Use—Qualitative Methods.” Regular meetings of the DTC and assessments of quality measurements in the health care system should be able to identify problems that can be addressed in a DUE for resolution.

DUE should be an ongoing process during which medicine-related problems are regularly addressed. DUE must be considered a long-term program, one that is continuously updated and revised to reflect current situations and needs within the health care institution.

DUEs are discussed in more detail in session 11, “Drug Use Evaluation (DUE).”
Clinical Pharmacy Programs

The use of clinically oriented pharmacy personnel to help achieve rational use of medicines is an important intervention, one that is frequently overlooked in many countries. A well-trained pharmacist will have the skills to monitor, evaluate, and make recommendations on the use of medicines. These skills should be used as much as possible to improve pharmaceutical therapy. Pharmacists have been shown to contribute to improved care when they are involved on medical ward rounds. Studies have shown this practice to be a valuable addition to improving the use of medications in a hospital.

These individuals can be expected to ensure that indications for use are appropriate; that correct doses are prescribed, medicine interactions, and adverse drug reactions are avoided or minimized; and that patient counseling and education is provided. Pharmacy personnel can supply medical providers with up-to-date, unbiased information to help with difficult pharmaceutical therapy decisions. Pharmacists with medicine information skills should be members of the DTC. Where skills may not be available to provide some of these services, it is advisable to provide training because availability of these skills has been shown to be cost-effective in improving pharmaceutical therapy and in decreasing adverse events.

An important part of a pharmacy program is to control the use of certain medications by providing generic substitution and therapeutic substitution (interchange). In these programs, pharmacists are authorized to substitute a medicine that has been prescribed by a physician with a medicine that is considered to be equivalent. The DTC and medical staff must approve of any medicines that are a part of a therapeutic substitution scheme.

Generic substitution can be defined as the dispensing of a product that is generically equivalent to the prescribed product (i.e., having the same active ingredients in the same dosage form) and that is identical in strength, concentration, and route of administration. Considering the wide range of generic products available on the market and the significant difference in the price and quality of brands compared to generics, substitution is an efficient use of resources and can result in significant savings and improved quality.

Controversy about generic prescribing and substitution centers around bioavailability and bioequivalence of the different generic products, especially if the procurement department uses multisource products. Bioavailability refers to the speed and the extent of absorption of a medicine’s active ingredient in the blood stream. Although bioavailability is unlikely to vary significantly between most brand name and generic products (if purchasing is done through reliable, registered, and prequalified suppliers), acknowledging clinically important bioavailability problems with generic products, where they exist, is important. Several important medicines may have bioavailability issues, including digoxin, phenytoin, warfarin, rifampicin, and others. See session 5, “Pharmaceutical Quality Assurance,” for more information on this topic.

Therapeutic substitution (interchange) programs allow substitution or interchange of approved products that may differ in active ingredients, but have similar therapeutic activity in terms of efficacy and safety (e.g., lisinopril substituted for enalapril). Therapeutic substitution is
especially helpful when newer, expensive, patented, or single-source medicines are prescribed. This program can be beneficial when inappropriate prescribing of a specific medicine has been found and a suitable available alternative is comparable in efficacy and safety. As stated above, the DTC (and medical staff) must approve of any medicines that are a part of a therapeutic substitution scheme.

**Medicine Restrictions**

Many medicines, especially antibiotics, are misused, creating the need to apply restrictions on availability and use. Some common types of restrictions and controls follow.

**Formularies and Procurement Lists**

The most common method to restrict medicine availability is by use of an approved formulary or by use of a restricted procurement list. These lists are especially useful for limiting the number of antibiotics, which can become excessive if many providers and prescribers choose many different antibiotics and have many different brand preferences. Formularies can also restrict the use of medicines by limiting the number and types of medicine that will be made available at each level of health care.

Formulary management and medicine selection are discussed in detail in session 2, “Developing and Maintaining a Formulary,” and session 3, “Assessing Medicine Efficacy.”

**Structured Order Forms**

Another method of medicine restriction is the use of a structured order form that requires certain antibiotics to be prescribed (as listed on the form) for certain indications only. These forms may also have preprinted doses and dose intervals. This method has been successful for controlling medicine use in some hospitals.

**Automatic Stop Orders**

Automatic stop orders are useful for hospitalized patients and enforce restrictions on the duration of medicine use. This method has been found to provide valuable controls on the extended use of medicines, especially antibiotics and narcotics. It is a common problem for patients to be left on antibiotics for a long period because physicians have neglected to discontinue the medicine.
Control of Medical Representatives and Other Pharmaceutical Promotion Activities

Within the administrative area of the committee, the DTC must play a role in the management of pharmaceutical company representatives and promotion of medicines. Medical representatives may promote their products with biased or inaccurate information. All promotional claims should be reliable, accurate, truthful, informative, balanced, up-to-date, capable of substantiation, and in good taste. The World Health Organization’s ethical criteria for medicinal pharmaceutical promotion can serve as a basis to develop measures and guidelines on pharmaceutical promotion that can be used in hospitals.

Avoiding Perverse Financial Incentives Medicine

Perverse financial incentives must always be avoided. The way hospitals and health facilities charge for medicines, particularly for outpatients and pharmacies, may affect the way they are used. Such examples of adverse promotion include—

- The promotion of overuse (including the use of expensive medicines where cheaper one would be just as good) and polypharmacy where prescribers earn part of their income from the sales of medicines

- The promotion of polypharmacy where the patient must pay the same fee or fixed charge regardless of the number and quantity of medicines they receive (e.g., a registration fee covering all medicines)

The DTC has a role in advising the hospital management or other health authority concerning these issues. If possible, agreement should be established that none of the prescribers has a direct financial interest in the health facility pharmacy.
An example of the effects of different kinds of user fees is illustrated below.

**Table 2. The Effects of Different Kinds of User Fees in Nepal**

<table>
<thead>
<tr>
<th>Group</th>
<th>Control</th>
<th>1-band fee per pharmaceutical item</th>
<th>2-band fee per pharmaceutical item</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>average number of pharmaceutical items per prescription</td>
<td>2.9</td>
<td>2.9</td>
</tr>
<tr>
<td></td>
<td>percentage of prescriptions conforming to STGs</td>
<td>23.5</td>
<td>26.3</td>
</tr>
<tr>
<td></td>
<td>average cost per prescription (Nepali rupees)</td>
<td>24.3</td>
<td>33.0</td>
</tr>
</tbody>
</table>


**Regulatory Methods**

Influencing appropriate medicine use through regulatory or statutory requirements is an important factor in promoting rational use of medicines.

**Pharmaceutical Registration**

Pharmaceutical registration, when enforced properly, places restrictions on medicines imported into the country. Registration keeps ineffective, poor-quality, and dangerous medicines out of the country and, thus, off the market. Monitoring and enforcement of the system is important because of the possibility of a large number of medicines reaching the public and private health care systems and private nonmedical medicine sellers or distributors. DTCs should ensure that only registered medicines are procured and used within the hospital and primary care clinics.

**Professional Licensing**

Licensing of health care professionals is a common practice that restricts the membership of the health care staff to individuals who are at least minimally competent and have necessary training and experience. Licensing can be extended to include level-of-use prescribing. This regulatory method places restrictions on the types of medicines that providers can prescribe depending on their training. These restrictions are necessary to limit untrained or minimally trained individuals to the appropriate level of clinical practice in the health care system.

DTCs should ensure that only licensed health care professionals are employed and that their duties comply with national regulations concerning their level of prescribing privileges.
Licensing of Pharmaceutical Outlets

Licensing of pharmaceutical outlets restricts the distribution of medicines to limited and qualified distributors and retailers in a country. Although difficult to enforce, it does provide the basis for which an individual or company can legally distribute prescription and nonprescription medicines. DTCs should make every effort to ensure that pharmacies are licensed and all medicines are purchased from these facilities.

Regulation of Pharmaceutical Promotion

Regulating pharmaceutical promotion activities at the national level can augment local efforts at controlling biased promotion of medicines and medical supplies. These regulations can be invaluable in controlling inappropriate use of many pharmaceuticals.

Choosing an Intervention

Choosing an intervention depends on the type of medicine use problem and the reasons it exists. Studies have shown the following—

- A single educational strategy is usually not very effective and the impact is not sustainable.
- The use of printed materials alone is not effective or advisable.
- A combination of strategies always produces better results than a single strategy.
- Focused, small groups and face-to-face interactive workshops have been shown to be effective.
- Monitoring and feedback and peer review are effective strategies to improve medicine use.
- Economic strategies are powerful strategies to change medicine use, but may be difficult to introduce.
- Treatment guidelines are effective when used with other interventions.

The most effective interventions often combine different aspects of educational, managerial, and regulatory strategies to achieve maximum impact. These strategies can be implemented together to achieve maximum impact at a single point in time, or in sequence to reinforce effects. A recent series of interventions by a group in Mexico City aimed at improving the treatment of diarrhea offers a good example of how interventions can combine different approaches (Guttierez et al., 1993; Munoz et al., 1993).
In the initial intervention, a prescribing survey for diarrhea was carried out in two Social Security clinics in Mexico City. Physicians from the clinics then participated in a training workshop led by local “experts” where the results of the survey were presented and the physicians developed a normative treatment algorithm for diarrhea. This workshop was followed for the next six months by a peer review committee activity in which physicians from the clinics rotated through the review committee assessing their own and their colleagues’ diarrhea case records. One remarkable feature of this study is the long follow-up period (18 months), which showed how each strategy reinforced the changes in practice and how well the changes were retained (figure 3).

![Figure 3. Prescribing for acute diarrhea in Mexico City.](image)

In subsequent work, the intervention was simplified to allow for greater dissemination (results in table 1). In the second phase, the training workshops to review the normative treatment algorithms were conducted by “opinion leaders” in 18 Mexico City clinics, rather than by experts, and there were no post-training peer review committees. In this phase, the observed pre/post increase in use of the diarrhea treatment algorithm was 25.6 percent (from 17.7 to 43.4 percent), compared to 46.7 percent (24.5 to 71.2 percent) in the initial study. In the final phase of the work, rather than conducting the intensive participatory workshops to review the treatment algorithm, the algorithm was simply taught to health staff in 124 clinics around the state of Tlaxcala by “coordinators” from the project. Following this training, use of the algorithm improved by 6.5 percent (from 24.7 to 31.2 percent).
Table 3. Impact of Training on the Use of Diarrhea Treatment Algorithm in Three Mexico Settings

<table>
<thead>
<tr>
<th>Intervention Given by</th>
<th>Prescribers</th>
<th>Baseline (%)</th>
<th>Post (%)</th>
<th>Change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experts in two clinics</td>
<td>31</td>
<td>24.5</td>
<td>71.2</td>
<td>+46.7</td>
</tr>
<tr>
<td>Leaders in 18 clinics</td>
<td>65</td>
<td>17.7</td>
<td>43.4</td>
<td>+25.6</td>
</tr>
<tr>
<td>Coordinators in 124 clinics</td>
<td>157</td>
<td>24.7</td>
<td>31.2</td>
<td>+6.5</td>
</tr>
</tbody>
</table>

This sequence of studies illustrates the magnitude of additional impacts that are possible by combining intervention strategies, but also demonstrates that even relatively limited intervention strategies can result in substantial improvements in practice.

A systematic review of published and unpublished intervention studies to promote rational use of medicines in developing and transitional countries was presented at the first International Conference on Improving the Use of Medicines in 1997. More than 30 studies of acceptable study design (i.e., randomized controlled trial, pre/post with control, or time series study) were found. The studies were grouped by category of intervention and the magnitude of impact was assessed in terms of percentage improvement in a medicine use outcome. The results are shown in figure 4 (which includes an extra category on economic strategies not originally shown in materials from the International Conference on Improving the Use of Medicines 1997).

Figure 4 illustrates that printed educational materials had little impact on medicine use, which improved by 0 to 10 percent. The impact of training programs varied between small and large, depending probably on the quality of the training. Interventions involving group process, supervision and audit, pharmaceutical supply and management, or economics incentives consistently had moderate to large impact.
Activity 1. Case Study: Generic and Brand Name Antibiotics

For this activity, assume that your DTC has noticed an increased use of certain brand name antibiotics for treating adult infections in the outpatient clinic. Less expensive generic products have recently been out of stock, but are now available. Health care providers are reluctant to use the generic products because of a lack of confidence in their quality.

The STGs for these infections are available but are not specific and therefore allow for a wide selection of different antibiotics. The costs of the brand name medicines are approximately 50 percent higher than similar generic medicines available on the formulary. Most physicians and pharmacists agree that the brand name products seem to work better and that patients are less likely to return to the clinic for follow-up visits.

The hospital has significant budget problems and the administration is looking for ways to decease cost without compromising quality. The administration has also had many patient complaints about poor-quality medicines, especially generic products.

- What are the major pharmaceutical management problems in this case presentation?

- Clearly define the beliefs and motivations of the prescribers that may contribute to the observed behavior.

- Once the problem has been defined, what kinds of strategies or interventions would you use to improve pharmaceutical therapy in this hospital and lower medicine cost?
Summary

Session 9 provides information on strategies to improve medicine use—one of the DTC’s many functions. These programs are needed because irrational use of medicines will reverse any advantages gained in providing other DTC functions.

Important strategies to improve medicine use include—

- Educational programs
  - In-service education programs
  - Pharmaceutical bulletins and newsletters
  - Formulary manuals
  - Face-to-face discussions

- Managerial programs
  - DUEs
  - STGs
  - Clinical pharmacy programs
  - Medicines restrictions and control
  - Formulary list, structured order forms, automatic stop orders, and control of medical representatives and other pharmaceutical promotion activities

- Regulatory programs
  - Medicine registration
  - Professional licensing
  - Licensing of medicine outlets

Each of these areas should be addressed carefully for a successful DTC and for a successful pharmaceutical management program.