

Antimicrobial Resistance Advocacy and Containment in Ethiopia:

***Report of Initial
Activities in
February–March
2006***

Management Sciences for Health
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Strategic Objective 5

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About RPM Plus

RPM Plus works in more than 20 developing and transitional countries to provide technical assistance to strengthen pharmaceutical and health commodity management systems. The program offers technical guidance and assists in strategy development and program implementation both in improving the availability of health commodities—pharmaceuticals, vaccines, supplies, and basic medical equipment—of assured quality for maternal and child health, HIV/AIDS, infectious diseases, and family planning and in promoting the appropriate use of health commodities in the public and private sectors.

Abstract

Antimicrobial resistance (AMR) is now recognized as an extremely serious global public health problem. The U.S. Agency for International Development—supported Rational Pharmaceutical Management Plus Program (RPM Plus) of Management Sciences for Health is currently supporting various activities to help contain this problem, including an activity aimed at assisting in-country stakeholders to mount a country-level AMR advocacy and containment program. At the request of the Drug Administration and Control Authority of Ethiopia, RPM Plus sent a team of Maria Miralles and Mohan Joshi to Addis Ababa in February–March 2006 to assist the local partners in initiating such a country-level AMR program. This report describes the activities accomplished during the trip, including the First AMR Stakeholders’ Meeting that was held on March 2, 2006, in Addis Ababa.

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Key Words

Antimicrobial resistance; drug resistance; Ethiopia

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ACRONYMS

AAU	Addis Ababa University
ACT	artemisinin-based combination therapy
ADR	adverse drug reaction
AMR	antimicrobial resistance
APUA	Alliance for the Prudent Use of Antibiotics
ARVs	antiretrovirals
CDC	U.S. Centers for Disease Control and Prevention
DACA	Drug Administration and Control Authority
DTC	Drug and Therapeutics Committee
EHNRI	Ethiopian Health and Nutrition Research Institute
EMA	Ethiopian Medical Association
ENA	Ethiopian Nursing Association
EPA	Ethiopian Pharmaceutical Association
EPHA	Ethiopian Public Health Association
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
HAPCO	HIV/AIDS Prevention and Control Program
HIV/AIDS	human immunodeficiency virus/acquired immunodeficiency syndrome
INRUD	International Network for Rational Use of Drugs
LOE	level of effort
MDR	multidrug resistant
MoH	Ministry of Health
MSH	Management Sciences for Health
PASS	Pharmaceutical Administration and Supply Services
PEPFAR	President's Emergency Plan for AIDS Relief
RPM Plus	Rational Pharmaceutical Management Plus Program
STIs	sexually transmitted infections
TB	tuberculosis
UNICEF	United Nations Children's Fund
USAID	U.S. Agency for International Development
WHO	World Health Organization

BACKGROUND

During the last six decades, the ability to manage infectious diseases has greatly improved because of the availability of various antimicrobial agents. But this ability is being severely threatened by the rapidly growing problem of antimicrobial resistance (AMR).

With support from the U.S. Agency for International Development (USAID), the Rational Pharmaceutical Management (RPM) Plus Program of Management Sciences for Health (MSH) and other partners have developed an approach to contain AMR at country level. Figure 1 shows the elements of the approach.

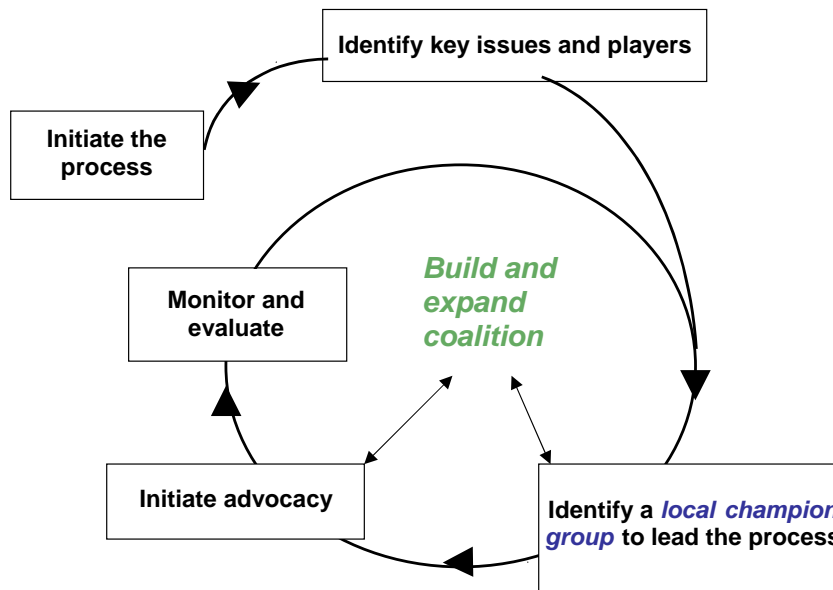


Figure 1. Initiating a country-level AMR strategy.

The approach was first piloted in Zambia.¹ There is a need to expand such an effort to other countries, incorporating the lessons learned from the Zambian experience.^{2,3} Ethiopia is currently interested in implementing AMR-related activities in the country.

Infectious diseases are a major cause of morbidity and mortality in Ethiopia. Along with nutritional problems, they account for 60–80 percent of health problems in the country.⁴ The

¹ Joshi, M., N. Pollock, and K. Garrison. 2004. *Antimicrobial Resistance Stakeholders' "Call for Action" Meeting: Lusaka, November 12, 2004*. Submitted to the U.S. Agency for International Development by the Rational Pharmaceutical Management Plus Program. Arlington, VA: Management Sciences for Health.

² Joshi, M., N. Pollock, and O. Hazemba. 2005. *Supporting Country-Level Strategies for Advocacy and Containment of Antimicrobial Resistance, SEAM Conference, June 20–22, 2005*. Paper presented at the SEAM (Strategies for Enhancing Access to Medicines) Conference, June 20–22, Accra, Ghana.

³ Sanchez, M., and B. Dolores. February 2006. *Antimicrobial Resistance Country-Level Implementation Pilot in Zambia: Rapid Appraisal of Advocacy Activities*. Submitted to the Management Sciences for Health/Rational Pharmaceutical Management Plus Program by Links Media.

⁴ Ethiopian Federal Democratic Republic, Government of. December 2004. *Health and Health Related Indicators*. Addis Ababa: Planning and Programming Department, Ministry of Health.

Department of Disease Prevention and Control of the Ethiopian Ministry of Health (MoH) reports that “the country’s most important health problems are communicable diseases such as diarrheal diseases, malaria, HIV/AIDS, tuberculosis, sexually transmitted infections (STIs) and epidemic-prone diseases like meningococcal meningitis, cholera, measles and bacillary dysentery.”⁵

Ethiopia is one of the countries most heavily affected by HIV/AIDS, and an estimated 1.5 million people are currently living with this problem (national prevalence in urban areas being 12.6 percent and in rural areas 2.6 percent).⁶ Ethiopia also has a very high burden of tuberculosis (TB). It ranks eighth among the world’s 22 countries with a high burden of TB, with a prevalence of 533 cases (all forms of TB) per 100,000 population. The prevalence of HIV in adult TB patients is estimated at 21 percent.⁷ Another leading problem in Ethiopia is malaria, which accounted for 15.5 percent of outpatient visits, 20.4 percent of admissions, and 27.0 percent of inpatient deaths in 2002–2003.⁸ Several global initiatives—including the President’s Emergency Plan for AIDS Relief and the Global Fund to Fight AIDS, Tuberculosis, and Malaria (GFATM)—are currently working in Ethiopia to increase access to antimicrobials for these three major diseases. As availability and use of antiretroviral (ARV), anti-tuberculosis, and antimalarial medicines are increasing, it is critically important to implement measures to try to preserve the effectiveness of these agents. It is also equally important to try to preserve the effectiveness of antimicrobials used for other common conditions in Ethiopia such as STIs, pneumonia, bacillary dysentery, and meningitis.

Although large-scale studies and documentation do not exist on the problem of AMR in Ethiopia, the available reports do indicate that it is already a problem that is growing. Documented high levels of chloroquine and sulfadoxine-pyrimethamine resistance among *Plasmodium falciparum* strains is a clear example of the problem of AMR that necessitated recent regimen change to artemisinin-based combination therapy (ACT).

Recently, the Drug Administration and Control Authority (DACA) made a formal request to RPM Plus to support them in starting AMR activities in Ethiopia. As a response, an RPM Plus team consisting of Maria Miralles and Mohan Joshi visited Addis Ababa to help initiate the activity. Ms. Miralles was in Ethiopia from February 20 to March 2, 2006, and Dr. Joshi from February 15 to March 3, 2006.

⁵ Ethiopian Federal Democratic Republic, Government of. Undated. *Guidelines for the Prevention and Control of Selected Major Epidemic Diseases in Ethiopia*. Addis Ababa: Department of Disease Prevention and Control, Ministry of Health.

⁶ Ethiopian Federal Democratic Republic, Government of. January 2005. *Guideline for Implementation of Antiretroviral Therapy in Ethiopia*. Addis Ababa: Ministry of Health.

⁷ World Health Organization. 2006. *Global Tuberculosis Control: Surveillance, Planning, Financing*. Geneva: World Health Organization.

⁸ Jima, D., et al. 2005. Efficacy of Sulfadoxine-Pyrimethamine for the Treatment of Uncomplicated Falciparum Malaria in Ethiopia. *East African Medical Journal* 82(8):391–95.

Purpose of Trip

Ms. Miralles and Dr. Joshi traveled to Addis Ababa to consult with RPM Plus/Ethiopia country staff and DACA officials, identify and meet with other AMR stakeholders, and assist the local counterparts in planning initial next steps for AMR advocacy and containment activities.

Scope of Work

The scope of work for Dr. Joshi included—

- Brief the resident representatives of RPM Plus/MSH/Ethiopia about the pilot experience in Zambia and the lessons learned from that experience and then discuss logistics and coordination of potential activities in Ethiopia.
- Present the “USAID-initiated country-level AMR advocacy and containment approach” to DACA officials and other relevant local stakeholders and work with them to identify the approach that would be most appropriate for Ethiopia.
- Assist the local counterparts in identifying candidates to form a local champion group to lead the in-country AMR activity and plan the immediate next steps.
- Discuss with local stakeholders the feasibility of holding a training course on Drug and Therapeutics Committees (DTCs) and training of trainers in Ethiopia in 2006 as an intervention to strengthen the pharmaceutical management and overall AMR containment process in the country.
- Debrief with USAID, if requested.
- Prepare and disseminate a trip report.

The scope of work for Ms. Miralles was—

- Participate in discussions with key DACA officials and other key stakeholders along with other members of the team.
- Provide inputs to the team and the local counterparts for planning the next steps, including setting up a system for regular reporting on progress and important outcomes.
- Debrief with the USAID/Ethiopia Mission if requested.

ACTIVITIES

Meet with RPM Plus/Ethiopia Technical Staff and Local Stakeholders

Maria Miralles and Mohan Joshi initially met Gabriel Daniel and Negussu Mekonnen—senior program associates overseeing RPM Plus Ethiopia work—and briefed them about the expected approach for the country-level AMR activity and the lessons learned from the Zambian experience. Mr. Daniel and Mr. Mekonnen concurred with the suggested approach and provided names of appropriate local stakeholders for contact and discussion. They also facilitated in obtaining appointments with those stakeholders.

Ms. Miralles and Dr. Joshi met a total of 21 stakeholders from various organizations, including government, nongovernmental organization, university, professional association, and development partners. At each meeting, they briefed participants about the global AMR problem and objectives of the visit and then provided a two-page briefing document (Annex 1). The U.S. team asked each stakeholder about their view on the need for AMR work in Ethiopia, the appropriateness of the idea of holding a stakeholders’ meeting at the start of the activity, and any other suggestions they might have. Major comments made by individual partners are described in the “Partners and Collaborators” section below. The overall summary of the responses obtained indicated that—

- AMR is a growing problem in Ethiopia, most acutely exemplified by the malaria case.
- The effectiveness of Coartem, ARVs, anti-TB drugs, and other antibiotics needs to be preserved.
- The initiative is timely, especially in light of large quantities of HIV/AIDS, malaria, and TB drugs flowing into the country.
- As yet no systematic attempt has been made to address this urgent issue.
- They are willing to be a part of the process to mount advocacy and containment activities.
- Calling a meeting of key stakeholders to generate ideas to identify the right approach for Ethiopia would be a good way to start the process.

Dr. Joshi spent the remaining time reviewing available literature on AMR and pharmaceutical management issues in Ethiopia and preparing a presentation for the first AMR stakeholders’ meeting (see below). Ms. Miralles revised the draft workbook on building local support and catalyzing action for containing drug resistance. The key contents of the draft workbook are identifying and engaging drug resistance stakeholders; advocacy and coalition-building guidelines; and information collection tools and analysis guidelines.

Attend and Facilitate the First AMR Stakeholders' Meeting

DACA organized an AMR stakeholders' meeting on March 2, 2006, at Hilton Hotel in Addis Ababa in collaboration with RPM Plus/MSH. A total of 25 stakeholders attended the meeting (Annex 2). The RPM Plus team provided technical and logistical support to DACA in organizing the meeting.

The meeting started at 9:45 a.m. and lasted for two and half hours. Mr. Abraham G/Georgis of DACA opened the meeting and welcomed the participants. He touched on the problem of AMR and briefly described the efforts being made by DACA to promote rational use of medicines, including antimicrobials, through national drug policy, list of essential medicines, standard treatment guidelines, formularies, public education, and training of health professionals. He expressed the view that containment of AMR requires collaborative efforts of stakeholders from various sectors.

He was followed by a 15-minute self-introduction session by the participants of the meeting. They represented DACA, MoH, World Health Organization (WHO), USAID, U.S. Centers for Disease Control and Prevention (CDC), RPM Plus/MSH, U.S.-based universities, Ethiopian Health and Nutrition Research Institute (EHNRI), School of Pharmacy of the University of Addis Ababa, Ethiopian Pharmaceutical Association (EPA), Ethiopian Public Health Association (EPHA), International Network for Rational Use of Drugs (INRUD)/Ethiopia, and Ethiopian Pharmaceutical and Medical Supply Manufacturers Association.

In the next 10 minutes, Dr. Miralles of RPM Plus explained the objectives of the meeting, which were to—

- Inform stakeholders of the AMR initiative
- Confirm the need for action
- Identify other potential stakeholders/partners
- Achieve consensus on approach and plan for next steps

To create the context for discussion, Mohan Joshi of RPM Plus made a 25-minute PowerPoint presentation (Annex 3) on the global AMR situation, including its impact, the current Ethiopian situation, the WHO Global Strategy for the Containment of Antimicrobial Resistance, the need to initiate AMR strategies at country level, experience from such an application in Zambia, and the possible next steps.

This presentation was followed by a 45-minute open discussion facilitated by Mr. Michael Gabra of RPM Plus. Topics discussed during this session were validity of the issue, relevance for the stakeholders, and identification of other stakeholders. The major comments/conclusions that emerged from this participatory session were—

- AMR is a growing problem in Ethiopia and needs to be addressed immediately in order to preserve the effectiveness of the existing antimicrobial drugs. Therefore, this initiative toward AMR advocacy and containment is highly relevant and timely.

- Broad base of stakeholders is important to move the AMR agenda forward in a comprehensive way. In addition to those who attended the meeting, other stakeholder groups that would need to be involved in the future include the Ethiopian Nursing Association (ENA), Ministry of Agriculture, private sector associations, media personnel, and individuals/groups representing different regions of the country.
- Major problems identified—
 - Irrational use of antibiotics
 - Free availability of antibiotics over the counter
 - Lack of infection control units in hospitals
 - Black market
 - Substandard and counterfeit medicines
 - Large gap between the public and the private sectors
 - Limited knowledge and awareness regarding AMR
 - No synergy between MoH and medical doctors/hospitals with a gap in communication
 - Limited ability to do diagnostics at rural health facilities
- Key observations made—
 - Because it will be difficult to afford second-line medicines, it is vital to protect the effectiveness of the existing first-line antimicrobials.
 - DTCs will be important for AMR containment. The DTC at Police Hospital in Addis functions well and has developed its own formulary and established levels of prescribing authority. The infectious disease surveillance services in hospitals can work in collaboration with DTCs to increase information flow and reduce information gap.
 - A need exists for a national monitoring and reporting system instead of disseminating information individually.
 - The use of antimicrobials in animals affects human health, so veterinary use also needs to be addressed while moving forward with the AMR containment process in the country.
 - The implementation of treatment guidelines needs to be emphasized.
 - Hospital laboratory/microbiology services require strengthening.
 - The private sector (including private hospitals) needs to be involved in the process.
 - Regarding antiretroviral therapy, a need exists to increase efforts to enhance adherence and strengthen lab tests at regional levels.

- Facilitating factors that were acknowledged—
 - Recognition of the problem of AMR by the government as well as other stakeholder bodies and their willingness to contribute to its containment.
 - Existence of some local research reports that provide evidence regarding the problem of AMR in the country.
 - Initiatives by DACA, including the development of different documents (standard treatment guidelines, essential medicines lists, formularies, and other guidelines on DTC, adverse drug reaction monitoring, and drug donations), and public education on rational medicine use through radio programs in five languages.
 - DACA initiative to implement a Data and Information Bank, which will provide a pool of information on issues relating to rational medicine use.
 - Different universities involved at different regional sites that can facilitate the process of generating regional/local efforts.
 - Interest and efforts to establish DTCs at hospitals and to improve their performance.
 - Support from WHO, USAID, CDC, and other collaborating agencies in the area of HIV, TB, malaria, surveillance, training, and rational use of medicines.

The subsequent 45-minute session on the next steps was facilitated by Mohan Joshi. Consensus was reached that a working, or “champion,” group would be required to spearhead the AMR advocacy and containment process in Ethiopia. There was significant interaction regarding the composition of the working group, the number of members in the group, and the coordinating organization in the group. All agreed that the working group would have to be multidisciplinary and multiorganizational in composition. It was also felt that the size of the group should neither be too small nor too large. After some discussion about who should take the coordinating role for the group, it was decided that it would be appropriate for DACA to take on this role. It was also emphasized that the group should be a dynamic one that allows for provision to add or change members depending on the future commitment and performance of individual stakeholders.

The following organizations will serve as members in the initial working group—

1. Drug Administration and Control Authority (Coordinator)
2. Ethiopian Health and Nutrition Research Institute
3. Ministry of Health
4. Center for Disease Control
5. U.S. Agency for International Development
6. Rational Pharmaceutical Management Plus/MSH
7. World Health Organization
8. Addis Ababa University
9. Ethiopian Medical Association
10. Ethiopian Public Health Association

11. Ethiopian Pharmaceutical Association
12. Ethiopian Nursing Association
13. International Network for Rational Use of Drugs/Ethiopia

The meeting concluded with the following two consensus-based recommendations—

- The interim AMR working group will come up with its own terms of reference within the next month (by April 2, 2006) and DACA will circulate the draft to the participants of the meeting for feedback/comments.
- The working group will take the lead in organizing a large stakeholders’ “call-to-action” meeting within about three months (by June 2006). In this meeting all/most of the stakeholder groups who are affected by AMR or those who can contribute to its advocacy and containment will be invited.

Start Immediate Follow-Up Activities

- Ms. Miralles and Dr. Joshi suggested to Mr. Daniel and Mr. Mekonnen the possibility of hiring local RPM Plus technical staff to support the AMR work in Ethiopia. This suggestion was based on the lesson learned from the Zambian experience that it would be critical to have a local technical person with dedicated time to assist in ongoing coordination and follow-up. The approach of periodically hiring a consultant did not yield the best results in Zambia. After some discussion on the expected level of effort (LOE) for such a person, it was estimated that 50 percent LOE for AMR work would be reasonable to start with. RPM Plus’s senior program associate Ms. Gladys Teteh, who was also in Ethiopia during the same time, suggested the possibility of the malaria portfolio using and supporting the remaining 50 percent of time of such a person. Ms. Miralles and Dr. Joshi have developed a draft scope of work for the AMR side of activities expected of this potential position.
- Dr. Joshi and Mr. Daniel briefed Dr. Anibal Sosa—the AMR contact person at the partner organization Alliance for the Prudent Use of Antibiotics (APUA)—about the recent initial activities in Ethiopia and suggested that an appropriate period for APUA to visit Ethiopia to start their support in the process would be during the planned AMR stakeholders’ call-to-action meeting.
- Berhan Teklehaimanot, Ms. Miralles, and Dr. Joshi drafted the “minutes” of the March 2 meeting, shared it internally for comments, incorporated Mr. Daniel’s suggestions, and sent it to DACA for review and dissemination.
- Terry Green, Niranjani Konduri, Dr. Joshi and Mr. Daniel discussed DACA’s request for organizing a national course on Drug and Therapeutics Committees and Training of Trainers. A plan was developed for holding the training about August this year. The expected number of participants will be 35. RPM Plus’s Ethiopia office will support 20 to 25 candidates and the AMR portfolio will support up to four candidates. It is expected that support will be available for the remaining candidates through the government and other organizations operating in Ethiopia, including the WHO Country Office.

Collaborators and Partners

- DACA is the key partner for AMR country-level activity in Ethiopia. The objective of DACA is to ensure safety, efficacy, quality, and rational use of medicines. It has four departments: (1) Drug Evaluation and Registration; (2) Planning, Drug Information Establishment and Distribution; (3) Drug Quality Control and Toxicology; and (4) Drug Control and Abuse Prevention. The Chief of Planning, Drug Information Establishment and Distribution Department, Mr. Abraham Gebre Giorgis Kahsay is the main contact at DACA for AMR work. He had sent a formal request to RPM Plus/MSH on December 26, 2005, for assistance with AMR work in Ethiopia. During discussions with the visiting U.S. team (Maria Miralles and Mohan Joshi) he said that AMR is important because of a very high infectious disease burden in the country. He informed the team that AMR will be inserted as a component during formulation of the pharmaceutical master plan for Ethiopia. He also made a request for support of DTC activities as a way to help improve medicine use in hospitals and contain AMR.

Ms. Ribka Mekonen, the drug information pharmacist at DACA, provided valuable support to the team in gathering relevant pieces of information, particularly those pertaining to DACA efforts at rational medicine use. Additional relevant contacts at DACA are Mr. Wondie Alemu of the Drug Quality Control and Toxicology Laboratory Department, Mr. Getahul Gurmessa of the Adverse Drug Reaction (ADR) Monitoring Division, and Mr. Teferi Lemma of the Drug Evaluation and Registration Department.

- The Ministry of Health is another key collaborator. High-level support for AMR work was evidenced by the fact that the team had a very good discussion with the Minister for Health, Dr. Tedros Adhanom. He expressed the need for AMR work and advised that EHNRI be provided a prominent role in the whole process. The team also had discussions with other colleagues within the ministry: Dr. Dadi Jima from the Malaria Unit, Dr. Getachew Wendimagegn at the TB/Leprosy Unit, and Mr. Yohannes Mesfin at the Pharmaceutical Administration and Supply Services (PASS). Dr. Jima said AMR is already a very big problem for malaria—65 percent failure rate for chloroquine (up to 75 percent for children <5 years), 32 percent for sulfadoxine-pyrimethamine, and 36 percent for amodiaquine. The artemether-lumefantrine combination (Coartem) is currently 100 percent efficacious but is costly. Dr. Jima expressed concern that the first dose of Coartem itself is very effective in clearing the parasitemia, which makes people feel better and involves the risk of nonadherence before the course is completed. He stressed the importance of appropriate patient counseling in combination with the drug. Dr. Wendimagegn emphasized the need to start work on AMR right away in order to prevent or delay the increase in the number of multidrug-resistant (MDR) TB cases. Mr. Mesfin stressed the need to look into drug quality issues as a part of the AMR effort.
- EHNRI is the body that conducts health- and nutrition-related research, including those on AMR surveillance and pharmaceutical quality control. EHNRI will be a strong partner as the AMR advocacy and containment process moves forward in the country. The team met Ms. Mekdes Gebeyehu and Mr. Endris Mohammed during their visit at the Institute.

- There is a large potential to use the expertise and resources of the Addis Ababa University (AAU) and other universities in Ethiopia for AMR work, particularly in relation with interventions dealing with preservice and in-service education of health care providers, education of patients, and infection control. The Faculty of Medicine, the School of Pharmacy, and the School of Nursing are all important allies in the process. During the current visit the team had interactions with Dr. Teshale, Infectious Disease Specialist, Black Lion Hospital, Faculty of Medicine, and with Dr. Teferi Gedif, Dean of the School of Pharmacy. Dr. Teshale showed concern over growing treatment failures with several inexpensive first-line antimicrobials. He emphasized the importance of infection prevention practices in the hospital setup but said that so far there are no infection prevention/control committees in Ethiopian hospitals. Dr. Gedif explained recent initiatives to include a two-credit-hour drug management component in the undergraduate pharmacy course and a three-credit-hour drug policy and management component in the postgraduate course on social and administrative pharmacy. He also said specific topics on AMR and rational antibiotic use need to be addressed in both undergraduate and postgraduate pharmacy programs.
- Health professional associations—Ethiopian Pharmaceutical Association, Ethiopian Public Health Association, Ethiopian Medical Association (EMA), and Ethiopian Nursing Association—can leverage strong partnership by generating AMR advocacy and awareness among their members and the public through trainings, annual conferences, AMR write-ups in their official publications, and various other activities. During an interaction with the current team, the president of EPA, Dr. Asfaw Debella, indicated the association would be willing to actively participate in the AMR initiative. Two other EPA members who were present during the interaction—Mr. Wondie Alemu and Mr. Endalk Gebrie—also strongly supported the initiative.
- HIV/AIDS Prevention and Control Program (HAPCO) is a semi-autonomous body responsible for prevention, care, and support programs for HIV/AIDS in Ethiopia. It receives assistance through GFATM and the President’s Emergency Plan. CDC and USAID are responsible for implementing the President’s Emergency Plan. USAID supports through RPM Plus and Intra-Health, and CDC supports through four U.S. universities (Johns Hopkins University, Columbia University, University of California in San Diego, and Washington University in Seattle). All are important partners for the AMR work. Dr. Aforwk Kassa at HAPCO suggested that establishing some sort of working group with clearly defined terms of reference would support the AMR work, particularly during the initial stages. He also remarked that so far the emphasis in Ethiopia has been on increasing access to ARVs for AIDS, but now it would be important to emphasize treatment adherence and drug resistance aspects as well.
- The partnership of the CDC is of critical importance because it is supporting surveillance of pathogens and improvement of laboratories in Ethiopia. CDC has provided technical assistance, training, equipment/materials for diagnostics, and treatment monitoring for antiretroviral therapy programs. While in Addis, the team met Dr. Yohannes Mengistu at the CDC office. During discussion, he described CDC’s current work in Ethiopia, supported the initiative, and emphasized the significance of “advocacy” for awareness, for research, and for action.

- WHO is another strong partner organization for the initiative in Ethiopia. The team met with Dr. Daniel Argaw, who works with the Disease Prevention and Control Program, and Mr. Bekele Teferra, who works with the Essential Drugs and Medicines Program. Talking about a situation analysis regarding AMR, Dr. Argaw commented that currently no umbrella brings all the studies and findings together, but such an attempt will be required. He also said so far there has been no systematic and coordinated attempt to address the problem of AMR in the country and the current effort provides a good opportunity. Mr. Teferra supported the idea of having a stakeholder meeting while the RPM Plus team was in Addis. He thought the meeting would provide a forum for a common discussion on the topic and for generating ideas and opinions on the way forward. Mr. Teferra also briefed the team about WHO Country Office's past support toward training on and establishment of DTCs.
- INRUD/Ethiopia is potentially an important player for the AMR activities because its objective is to promote rational use of pharmaceuticals in the country. The coordinator of this group, Mr. Tenah Andualem, indicated that although AMR is already an important issue for Ethiopia, little monitoring is currently in place. He said that the group would be interested in taking part in the initiative.

NEXT STEPS

Immediate Follow-Up Activities

- Follow up with DACA regarding progress on development of the terms of reference for the AMR working group.
- Finalize the scope of work for RPM Plus's joint AMR-malaria local position.
- Assist DACA in organizing the AMR stakeholders' call-to-action meeting in summer this year.
- Provide full technical support for implementation of the planned DTC training of trainers course in Ethiopia. Customize the existing DTC course based on the current needs in Ethiopia. A session covering the role of DTC in managing and preserving effectiveness of antimicrobials used for AIDS, malaria, and TB is expected to be added. Similarly, a dedicated session on AMR will be added to highlight the role DTCs can play to support the AMR containment effort recently initiated in Ethiopia.
- Further revise and finalize the workbook for building local support for containing drug resistance.

Recommendations

- Provide support to the local working group to scale up advocacy and momentum generated by the recent AMR meetings and discussions in Ethiopia and assist the group in expanding local coalition and stakeholder base.
- Provide feasible technical assistance to help implement relevant AMR interventions identified by the local partners.
- Hire local RPM Plus technical staff to assist specifically with AMR and malaria activities.
- Strengthen collaboration with WHO country office, CDC, and the four U.S. universities working in Ethiopia to leverage support and synergy for the AMR activity.
- Explore opportunities for initiating country-level AMR activity in one additional country in FY06 (October 2006 to September 2007).

ANNEX 1. BRIEFING DOCUMENT PROVIDED BY THE RPM PLUS TEAM DURING INTERACTIONS WITH LOCAL STAKEHOLDERS IN ETHIOPIA

Country-Level Antimicrobial Resistance Advocacy and Containment

Health gains achieved by priority health programs—including tuberculosis, malaria, acute respiratory disease, sexually transmitted infections, and HIV/AIDS—are increasingly threatened by the growth of antimicrobial resistance (AMR). Consequences of AMR, especially multidrug resistance or MDR, include increased mortality, morbidity, and health care costs. An added risk of rapid AMR escalation now exists with the increased flow of medicines being made available through support from global initiatives such as the Global Fund to Fight AIDS, Tuberculosis and Malaria; Roll Back Malaria; and the President’s Emergency Plan to countries with weak pharmaceutical management systems.

In the past, a common strategy for dealing with drug resistance was to switch to alternative drugs once first-line therapy became ineffective. However, this is not a viable long-term solution because—

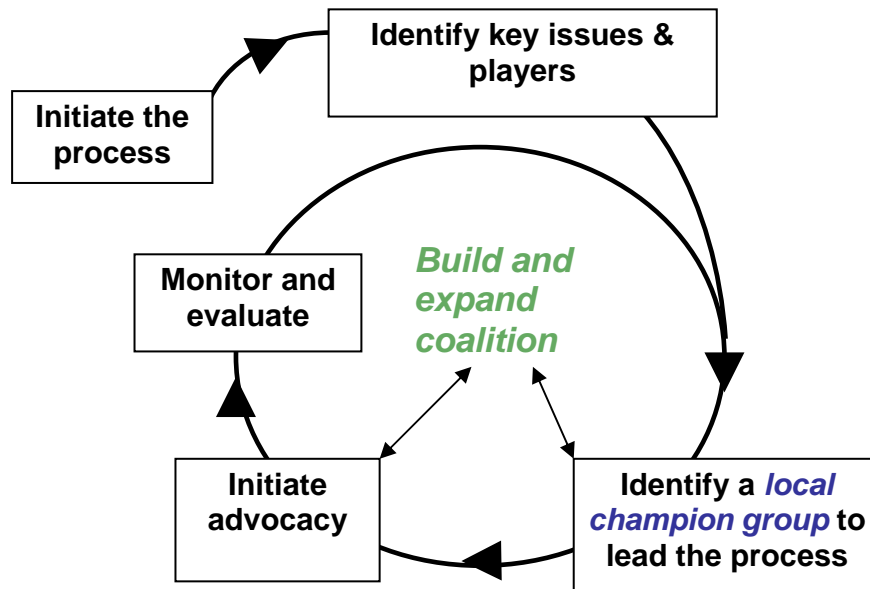
- Drugs are losing effectiveness more quickly than new drugs can be developed.
- The cost of new drugs and combination drugs is significantly higher than for first-line drugs.
- This increased cost, and in some cases the increased complexity, length, and/or toxicity of new treatment regimens, has a negative impact on patient compliance, which in turn increases the risk of developing drug resistance.

The key emphasis should therefore be on preventing the development of AMR and preserving the effectiveness of the existing antimicrobials.

In September 2001, the World Health Organization completed and published its strategy for containment of AMR. This global plan is comprehensive and complex, making it difficult to implement in many developing countries. What is required now is a bridge from this global strategy to implementation at country level. The U.S. Agency for International Development (USAID) is supporting the development of an approach to guide the design of country-level efforts to contain AMR. The primary thrust of this approach is to catalyze an initial response by local stakeholders to build and scale up coalition, commonalities, and advocacy for containing AMR at all relevant levels. The goal is to increase AMR awareness among all sectors and to develop and implement priority interventions that are relevant and feasible in the local context. The figure on the next page outlines the major elements of the approach.

A major thrust of the approach is expanding upon existing information, stakeholder support, and local activities. A key strategy employed is strengthening the capacity of local stakeholders to develop linkages within and across these three domains to create a locally sustainable response. To catalyze action, AMR needs to be framed as “value added” in the context of existing

infectious disease program priorities rather than presented as a separate vertical and competing activity. Synergies are encouraged through coordination and collaboration among stakeholders and partners in the prioritization and implementation of activities. Stakeholder groups to engage in the process include national governments, the public and private sectors, health care professionals and societies, academics, consumers, nongovernmental organizations, the pharmaceutical industry, the media, donors, and international agencies.



RPM Plus/MSH and Change Project/Academy for Educational Development, with support from USAID, implemented this approach in Zambia with encouraging results. Achievements thus far include—

- Completion of a rapid appraisal to understand the key issues that impact AMR in Zambia
- Staging of a successful AMR stakeholders’ “Call to Action” meeting attended by 70 people representing diverse sectors
- Development of a communications and advocacy brief for the public and health providers
- Formation of an Alliance for the Prudent Use of Antibiotics Country Chapter
- Review of in-service training materials on issues related to AMR and preservice curriculum review
- Workshop for physicians on revision and implementation of standard treatment guidelines for major infectious diseases

An interest has recently been expressed by the Ethiopian Drug Administration and Control Authority to collaborate with RPM Plus/MSH to initiate an AMR advocacy and containment process in Ethiopia. At this initial stage RPM Plus will discuss with the key stakeholders to understand their concern for and perspective of AMR and gain their support. The next step will be to collaboratively identify an AMR working group composed of multidisciplinary opinion leaders and action people. Success and sustainability of the approach will be largely dependent on the catalytic role of the AMR working group. RPM Plus's role will be to strengthen the capacity of the working group to fulfill its role.

ANNEX 2. STAKEHOLDERS INVITED FOR THE MARCH 2, 2006, AMR MEETING IN ADDIS ABABA

Stakeholders Who Attended the March 2 Meeting

Dr. Abera Geiyd, EHNRI
Dr. Omar Ahmed Omar, USAID Mission, Ethiopia
Dr. Getachew Wondimagegn, TB and Leprosy Control Department, MoH
Mr. Tenaw Andualem, INRUD
Dr. Mehert Yerdaw, School of Pharmacy, AAU
Mr. Teferi Mekonnen, CDC
Dr. Mengistu Tafesse, Columbia University International Center for AIDS Care and Treatment Programs (Ethiopia)
Dr. Wondwoson Amogne, EMA
Dr. Berhanu Tekle, Johns Hopkins University
Dr. Jemal Aliy, HIV/AIDS, MoH
Dr. Melaku Samuel, EPHA
Mr. Bekele Tefera, WHO
Mr. Asmelash Gebere, Ethiopian Pharmaceutical and Medical Supply Manufacturers Association
Dr. Meg Doherty, Johns Hopkins University
Mrs. Muna Ahmed, Ethiopian Pharmaceutical and Medical Supply Manufacturers Association
Mr. Abraham G/Georgis, DACA
Mr. Wondie Alemu, DACA/Quality Control
Ms. Rebecca Mekonnen, DACA
Dr. Asfaw Debella, EPA
Mr. Yohaness Mesfin, MoH/PASS
Dr. Maria Miralles, MSH/RPM Plus, Arlington, Virginia
Mr. Michael Gabra, MSH/RPM Plus, Arlington, Virginia
Mr. Gabriel Daniel, MSH/RPM Plus, Arlington, Virginia
Dr. Mohan Joshi, MSH/RPM Plus, Arlington, Virginia
Ms. Berhan Teklehaimanot, MSH/RPM Plus, Ethiopia

Additional Organizations to Which Invitations Were Sent

Infectious Disease Unit, Faculty of Medicine, AAU
Ethiopian Nursing Association
Ethiopian Medical Association
Malaria Prevention and Control Department, MoH
UNICEF
MSF Holland
School of Nursing, AAU
Department of Pharmacology, Faculty of Medicine, AAU
Armour Hansen Research Institute
Washington University, Seattle/International Training and Education Center on HIV
University of California/San Diego (PEPFAR/Ethiopia Partner)

ANNEX 3. POWERPOINT SLIDES PRESENTED DURING THE MARCH 2, 2006, AMR
STAKEHOLDERS' MEETING IN ADDIS ABABA



MSH MANAGEMENT SCIENCES *for* HEALTH

RPM Plus | Rational Pharmaceutical
Management Plus



**Country-level AMR Advocacy and
Containment Initiative in Ethiopia**

*Antimicrobial Resistance (AMR) Stakeholders'
Meeting, March 2, 2006, Addis Ababa, Ethiopia*



Supported by U.S. Agency for International Development

**ANTIMICROBIAL RESISTANCE
(AMR)
IS A GLOBAL PUBLIC
HEALTH THREAT
REQUIRES URGENT
ACTION**



MSH MANAGEMENT SCIENCES *for* HEALTH
RPM Plus | Rational Pharmaceutical Management Plus

Global Situation

- Pathogens causing TB, malaria, STIs, typhoid, bacterial dysentery, and pneumonia are now resistant or multi-drug resistant (MDR)
- About 1 in 5 cases of TB is MDR
- In 81 of 92 malaria-prevalent countries chloroquine no longer effective
- Up to 10% of hospital-admitted patients get nosocomial infections, most of which are by resistant pathogens

Impact of AMR: Example of multiple drug resistant TB

- **Increased morbidity and mortality**
 - Treatment 100 times more expensive
 - Treatment duration much longer
 - Cure rate much less even in the best centers
- **Prolonged infectiousness with transmission of resistant pathogen to others in the community** (public health impact)

An added **risk of rapid AMR escalation** now exists with recent global initiatives...

...if the increased flow of ARV, malaria, and TB medicines is not matched by strengthening of drug management and AMR-containment activities.

Ethiopian Situation

- Very high **CQ resistance** in *P. falciparum* (65% treatment failure)¹
- High **SP resistance** in *P. falciparum* (32% parasitological failure)^{1,2}
- **MDR TB** – 2.3% (Global Tuberculosis Control - WHO Report 2005)
– 1.5% (preliminary finding of recent Ethiopian surveillance by EHNRI, personal communication by Mekdes Gebeyehu)
- **Streptomycin resistant TB** – 18% (Mekdes, personal communication)
- 12% of **re-treatment cases of TB** found MDR (resistant to both H and R)^{3,4}

Ethiopian Situation (2)

- A cross sectional study conducted in all hospitals, health centers and 6 of the 9 clinics in Addis Ababa showed that overall **primary resistance to anti-TB drugs** amongst the 167 isolates was 15.6%, and primary resistance to 2 or more drugs 7.2%.⁵
- A study in Gondar College of Medical Sciences Teaching and Referral Hospital showed that >68% of **urinary pathogens** isolated were resistant to two or more antimicrobials.⁶
- In a study done at Gondar Health Center, only 7.7% of the **gonococcal isolates** were sensitive to cotrimoxazole and 87.5% were multi-drug resistant. One strain was resistant to as many as 8 antibiotics, including ceftriaxone.⁷

Ethiopian Situation (3)

- In a study conducted in Jimma Hospital during 1997/98, 25 (41%) of the 61 **Staphylococcus aureus** isolates were found methicillin-resistant.⁸
- 165 (16.4%) of the 1006 surgical patients admitted to a hospital in Addis Ababa between Apr 1983 and Jan 1984 developed **nosocomial infection**. About 90% of the nosocomial pathogens were gram-negative bacteria (84% Enterobacteriaceae), which were mostly resistant to the commonly used antibiotics.⁹

Ethiopian Situation (4)

- 52.5% (42/80) of *Salmonella* strains isolated from chicken carcass & giblets were multi-drug resistant.¹⁰
- 93% of *Shigella* isolates in Awassa resistant to ampicillin.¹¹
- High levels of resistance against ampicillin, amoxicillin, amoxicillin-clavulenic acid, and cotrimoxazole by *E.coli*, *Shigella*, *Proteus*, and *Klebsiella* isolated from specimens at 4 diagnostic labs in Addis.¹²

Ethiopian Situation (5)

- All *E.coli*, *Klebsiella*, and *enterbacter* isolates from clinical and environmental sources of Jimma Hospital showed resistance to ampicillin.¹³
- Widespread resistance to commonly used antibiotics in Yirga Alem Hospital. Significant increase in resistance during a 13-year period observed for *N.gonorrhoeae* against erythromycin, cotrimoxazole, and tetracyclines; for *E.coli* against ampicillin & cotrimoxazole; and for *Proteus* species against ampicillin.¹⁴
- Bacterial susceptibility of different specimens at Arsho Diagnostic Laboratory in Addis between Sep 1, 1994 to April 30, 1995 E.C. showed 92% of the 90 *Staphylococcus aureus* isolates were resistant to vancomycin.¹⁵

Ethiopian Situation (6)

- No infection control committees in institutional settings
- Drug quality concerns, esp. in rural and around border areas
- Unregistered drugs and drug sellers in rural areas
- Long stock-outs of essential drugs in public health facilities¹⁶
- Weak storage capacity of pharmaceuticals¹⁶
- Widespread OTC availability of antimicrobials

Ethiopian Situation (7)

- Low availability of STGs and EDL at health facilities¹⁶
- High levels of antibiotic prescribing^{17,18}
- Examples of inappropriate antibiotic use¹⁶
 - ~ 50% cases of watery non-bloody diarrhea prescribed antibiotic
 - ~ 60% of non-pneumonia ARTI prescribed antibiotic
 - ~ First line antibiotic prescribed in only 54% cases of mild/moderate pneumonia
- Poor dispensing practices
- Low patient knowledge about drugs dispensed to them¹⁶
- Weak monitoring & evaluation of the elements of NDP¹⁶
- Lack of antibiotic policy

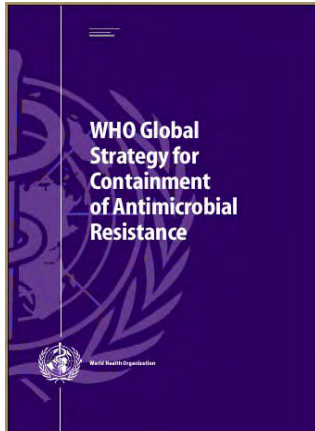
Foundations present that support AMR containment in Ethiopia

- Existence of NDP, STGs, EDL, formularies, list of drugs for various levels, list of OTC drugs
- Pharmacovigilance, drug information, and DTC initiatives
- Trainings on rational drug use; drug supply management; DTCs; drug information; management and rational use of ARVs
- Drug management component in pharmacy courses at AAU
- Commitment of government bodies, university, professional associations, and development partners to the issue of AMR

A Complex Problem Requiring Multiple Solutions (1)

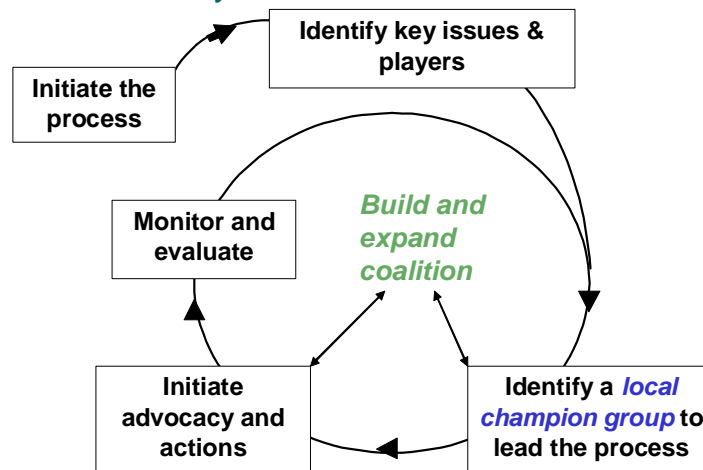
- AMR is an **OVERARCHING ISSUE** involving government, academia, NGOs, consumers and communities, providers, professional bodies, private sector, cooperating agencies, int'l bodies, etc.
- This complex multifactorial problem requires **MULTIFACETED APPROACH** for its prevention and control
 - Education, Regulation, Surveillance, Research

From the Global Strategy to Country-Level Strategies



- WHO Global Strategy published in 2001
- Limited implementation at country level to date
- What is now needed is a bridge from this global strategy to country-level strategies

Initiating a Country-Level AMR Strategy: Build Local Support and Catalyze Action



Guiding Principles

- Generally, much is already known about the causes of AMR and what can be done to contain and prevent it; there is no need to wait for more information to act immediately
- Action must focus on realistic local strategies that capitalize on existing initiatives and resources while generating new ones
- Mobilizing local stakeholders around the common issue of drug resistance is important for coordinated and collaborative action
- The initiative must be seen as adding value to existing health programs rather than a separate, vertical and competing activity

First Application of the Country-Level Approach: Zambia

- **A 10-member multidisciplinary AMR advocacy working group (AWG) formed to catalyze action**
- **Rapid assessment to understand the local context and issues that particularly affect AMR**
- **Capacity building for developing advocacy and communications strategies**
- **Development of a campaign theme and print and radio materials promoting appropriate drug use**
- **Support for the formation and activities of an Alliance for the Prudent Use of Antibiotics (APUA) country chapter**

Zambia Application (continued)

- Review of in-service and pre-service curricula for AMR related content
- Staging of an AMR stakeholders' *Call to Action* meeting attended by 70 national AMR stakeholders
- Wide coverage of the stakeholders' meeting and AMR issues in Zambian newspapers
- Workshop for physicians on implementation of STGs for infectious diseases to improve prescribing

Next Steps for Us...

- Agree on moving forward with this discussion on AMR in Ethiopia
- Achieve consensus on the approach
- Identify additional stakeholders
- Jointly decide on the next steps
 - ~ Decide the need and composition of an “AMR Advocacy Working Group” which will define the next steps and CATALYZE actions

