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TECHNICAL PROGRAM UPDATE



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SIAPS
Systems for Improved Access
to Pharmaceuticals and Services

SLOWING ANTIMICROBIAL RESISTANCE THROUGH STRONGER HEALTH SYSTEMS

Antimicrobial resistance (AMR) has been recognized as a major public health problem that threatens to reverse many achievements of modern medicine. Despite increased efforts to address the issue, resistance continues to grow to a multitude of medicines used to prevent and treat infections caused by bacteria, parasites, viruses, and fungi. This technical update discusses how the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program, funded by the US Agency for International Development (USAID), is working to address the multifaceted and multidimensional drivers of AMR through a health system strengthening approach with interventions spanning the global, regional, national, and local levels.

GLOBAL CONTEXT

AMR can be found in every corner of the globe and in all populations—cutting across geographic divides, political boundaries, and socioeconomic groups. Although high-income countries are continuing to struggle to contain AMR, the problem is even more worrisome in low- and middle-income countries where resources, capacity, and political will are frequently insufficient to adequately address the issue.

The growing spread of AMR has major implications for the prevention and treatment of common infections, hospital-acquired infections, and programs aimed at reducing the burden of diseases like malaria, tuberculosis (TB), and HIV and AIDS. However, because comprehensive reporting mechanisms are often not in place, enforced, or accurate, AMR is frequently underreported and more

What is AMR?

Antimicrobial resistance (AMR) is the resistance of a microorganism (bacteria, fungi, viruses, and parasites) to a drug that was originally effective in treating infections caused by the microorganism.¹

research is needed to truly understand the scope and impact of the problem, especially in resource-constrained settings.

Of chief concern is the continuing rise in resistance to antibiotics used to treat bacterial infections. Patients infected with drug-resistant bacteria typically require more difficult and expensive treatment options, and are at risk for increased morbidity and mortality. Furthermore, since

treatment regimens may be less effective on resistant bacteria, patients stay infectious longer, increasing the risk that the resistant bacteria will be transmitted to others.¹

Although some level of AMR occurs naturally, its spread is exacerbated by unnecessary or inappropriate medicines use, improper infection control or prevention practices, and non-adherence to treatment regimens.

Recognizing the potentially grave impact of AMR on global health outcomes, the World Health Organization (WHO) published the *Global Strategy for Containment of Antimicrobial Resistance* in 2001, devoted World Health Day in 2011 to AMR, and has recently passed a third World Health Assembly resolution ([WHA 67.25](#)) to help address, build awareness, and promote coordinated global action to keep AMR from eroding the progress of modern medicine.

SIAPS APPROACH

SIAPS views AMR as a fundamental barrier and serious threat to its efforts to develop strong and robust health systems that are able to provide equitable access to safe and effective medicines and quality services. The [SIAPS approach](#), rooted in the WHO health system building blocks model and the key principles of the Global Health Initiative, works to address AMR through an array of health system-strengthening interventions at the global, regional, national, and local levels. By partnering with and engaging national governments, local organizations, and health facilities, and other partners, SIAPS aims to build capacity, encourage

country ownership, improve metrics for surveillance, and address immediate pharmaceutical needs while strengthening the system as a whole.

IMPLEMENTATION

Building on the experiences and lessons learned from predecessor projects like the Strengthening Pharmaceutical Systems (SPS) and Rational Pharmaceutical Management Plus (RPM Plus) programs, SIAPS has developed a set of key interventions that work to address the many interconnected causes of AMR and has implemented AMR-related activities in nearly 20 countries (Table 1).

Global, Regional, and National Advocacy

Although the scope and impact of the problem are not well defined, especially in resource-constrained countries, there is no shortage of data that indicate AMR is one of the most serious threats to global health. And yet, AMR does not receive the global attention, urgency, or resources needed to properly address the problem. SIAPS collaborates at the global level with partners such as the World Health Organization, and at regional and national levels to help raise awareness, share knowledge, and advocate for greater investment in AMR containment.

Advocacy coalitions

Leveraging strong partnerships with regional and national organizations, SIAPS forges [local advocacy coalitions](#) against the common threat of AMR and supports these efforts by training advocates,



Journalists raise their hands in solidarity to support AMR advocacy and containment at the close of a SIAPS-supported workshop organized by the Food, Medicine and Health Care Administration and Control Authority of Ethiopia in June 2012.

journalists, and partners to ensure that accurate messages, effective interventions, and appropriate tools are disseminated across these networks.

►► On a regional scale SIAPS supported the Ecumenical Pharmaceutical Network (EPN), a faith-based regional network with member organizations in multiple countries, to conduct a training of trainers workshop on AMR and appropriate antibiotic use for EPN experts from Zimbabwe, Tanzania, and Zambia. Equipped with the necessary tools and resources to train others, participants developed action plans for carrying out AMR-related trainings and interventions tailored to their unique country context.

A public awareness poster used during the AMR Prevention and Containment Day organized by the Federal Ministry of Health and other national partners in collaboration with SIAPS and WHO on June 15, 2013 in Ethiopia.



►► In Namibia, SIAPS helped build a multi-sectorial coalition against AMR by mobilizing policymakers, program managers, and health practitioners to issue a call-for-action to minimize the risk of AMR. An action framework and action plan were developed and agreed upon by stakeholders to guide the implementation of activities to enhance rational medicine use and contain AMR in Namibia.

Strengthening National Health Systems

Effective governance, transparent management, and appropriate accountability all strengthen national health systems, and are central to country-level interventions that help curb the spread of AMR.

SIAPS works with ministries of health, national regulatory authorities, and private sector stakeholders to improve medicine use and address AMR through strengthened regulatory functions; development and implementation of standard treatment guidelines, essential medicines lists, and formularies; surveillance of medicines safety, effectiveness, and quality (pharmacovigilance); improved infection control practices; and human resource capacity building.

Standard Treatment Guidelines and Essential Medicines Lists

[Standard Treatment Guidelines \(STGs\) and Essential Medicines Lists \(EMLs\)](#) guide the selection of medicines and outline appropriate treatment regimens. Combined with a national formulary, these documents are the cornerstones of rational medicines use, reducing excessive, unnecessary, and inappropriate prescribing practices which can be major contributors to the spread of AMR. SIAPS works with several countries to develop and implement STGs and EMLs and monitor their use.

►► In Namibia, SIAPS supported the Essential Medicines List Committee to revise and publish the fifth edition of the National EML (Nemlist) which was officially launched by the Ministry of Health and disseminated to all public health facilities in the country.

►► Similarly, SIAPS provided technical assistance to South Africa's National Essential Drug List Committee to develop the 2012 hospital-level STGs and EML. Although these publications are regularly revised, published, and distributed to public health facilities, they are not always available to quickly reference during patient consultations. Even when they are available, some prescribers have reservations about using them in front of their patients. To help encourage widespread use of the hospital-level STGs and EML, SIAPS worked with government partners to make the documents available online and through a smart phone application. By leveraging online and mobile technology, SIAPS is making these documents easier for prescribers to use and access which in turn is expected to ensure the right medicines are being prescribed at the right time.

Strengthening Regulatory Systems

Over 70% of countries in sub-Saharan Africa have minimal or no regulatory capacity, severely limiting their ability to manage and provide access to safe, effective, and quality medicines.² This can result in the proliferation of poor quality medicines, which can accelerate the spread of AMR. By [strengthening regulatory systems](#), supporting the management of key national regulatory functions, and developing national-level guidelines, SIAPS is working to improve in-country regulatory processes that can help slow the spread of AMR.

Monitoring the safety, quality, and effectiveness of medicines, also known as pharmacovigilance, is a

key component of strong regulatory systems and is vital in identifying current levels of AMR, determining whether current treatment regimens are still effective, monitoring adverse events, and keeping substandard and counterfeit medicines off the market and out of the hands of patients. SIAPS helps regulatory authorities carry out pharmacovigilance activities by supporting both passive and active surveillance systems and the collection and analysis of data to support informed decision making.

►► In [Ethiopia](#), SIAPS is working with the Food, Medicine and Health Care Administration and Control Authority to improve medicines quality through systematic and frequent inspections. SIAPS is also supporting national efforts to monitor adverse drug events by strengthening a centralized pharmacovigilance center within the regulatory authority.

►► In Swaziland, SIAPS partnered with the National Pharmacovigilance Center, the National Tuberculosis Program, and the National AIDS Program to develop and strengthen the pharmacovigilance system for TB and HIV programs. Specifically, SIAPS helped develop an active surveillance and reporting system to collect data on adverse drug events associated with antiretroviral and anti-TB medicines. These data are collected, analyzed, and then disseminated at the national and regional levels through *Medicine Safety Watch*, a quarterly newsletter. This new reporting mechanism enables stakeholders in Swaziland to effectively monitor the safety and effectiveness of medicines and identify potential contributors to AMR early.

Building Local Capacity

Appropriately managing the use of medicines in hospitals, health facilities, and community settings is integral to slowing the spread of AMR. SIAPS supports antimicrobial stewardship interventions through medicines and therapeutics committees, infection control practices, and evaluation of medicine use and prescribing practices. Comprehensive antimicrobial stewardship programs have been shown to reduce inappropriate antimicrobial use by as much as 36% in hospital settings.³

Medicines and Therapeutics Committees

[Medicines and therapeutics committees \(MTCs\)](#) help health facilities and hospitals select and manage medicines for the formulary, evaluate medicine use, and implement strategies to improve medicine use. Many facilities in resource-limited settings, however,

either do not have MTCs or lack the capacity to manage them efficiently. SIAPS helps to strengthen the functionality and management of MTCs by providing trainings, supporting studies evaluating medicine use, and assisting with the planning, management, and monitoring processes.

►► To address the variations in the operations and effectiveness of MTCs in South Africa's Gauteng province, SIAPS collaborated with national counterparts to develop a [guidance document](#) that outlines governance structures, operating procedures, accountability systems, roles and responsibilities, and communication strategies. SIAPS also collaborated with committees in three provinces, including Gauteng, to analyze pharmaceutical data and design corrective interventions to address problems.

Infection Prevention and Control

SIAPS promotes [infection prevention and control](#) programs in health facilities to help minimize the risk of hospital-acquired infections. Using an infection control self-assessment tool (ICAT), combined with a continuous quality improvement methodology, SIAPS helps facilities to develop, implement, and monitor infection control practices. SIAPS recently developed a version of the ICAT specifically for use in [primary healthcare settings](#).

►► In South Africa, the ICAT has been adapted by the government for nationwide use and meets the expected levels of care as described by the infection prevention and control sections of the *National Core Standards for Health Establishment*. The use of this checklist-style tool provides the necessary governance, support, and guidance needed by health care professionals to provide quality care and strengthen the effectiveness of the health system.



SIAPS supports countries to implement infection control practices through the development and use of guidelines, tools, and job aids like the one at left from South Africa on proper hand hygiene.

Medicine Use Evaluations

Reviewing and evaluating how medicines are used can be key strategies to improve how specific medicines are prescribed, dispensed, and administered. SIAPS helps facilities to conduct [medicine use evaluations \(MUEs\)](#) to detect and correct inappropriate or excessive medicines use that can lead to shortages and cost overruns and accelerate AMR.

►► In Jordan, SIAPS facilitated an MUE and established a continuous quality improvement system in three hospitals to improve the use of antibiotic prophylaxis during cesarean section. Reviewing the use of antibiotics led to standardized prophylaxis protocols and procedures, improvements in the correct administration of antibiotics, and overall cost savings for each facility. Since the first MUE for cesarean section, this same approach has been adopted by other hospitals and for other surgical procedures.

Pre-service and In-service Curriculum Development and Training

Ensuring that the future cadre of health care workers has the skills needed to effectively manage the use of medicines, implement infection control practices, and support surveillance activities is a key strategy to curb AMR. Using the guidance document, [Revising Pre-service Curriculum to Incorporate Rational Medicine Use Topics](#), SIAPS helps national stakeholders carry out [pre-service trainings](#) and establish rational use and AMR-related competencies for healthcare workers.

►► In Namibia, SIAPS is collaborating with the School of Pharmacy at the University of Namibia to integrate case-based and self-directed learning on AMR and rational medicines use into the pre-service training of undergraduate pharmacy students to equip them to fight AMR in their future careers.

Community Case Management

Planning, coordinating, delivering, and reviewing health services provided to an individual within a health facility or community setting is referred to as community case management. Through proactive, supportive, and patient-centered care, effective community [case management](#) can help maintain the therapeutic efficacy of medicines, improve health outcomes, and minimize the risk of drug resistance.

►► Working with the ministry of health and community

health workers (CHWs) in Burundi, SIAPS has developed job aids, checklists, and consistent reporting mechanisms to improve outreach, response, and referral times for treating malaria in children. With the help of these interventions, 86% of children under five that presented with a fever were seen by CHWs within 24 hours, of which 98% were tested with rapid diagnostic kits, and 97% of those that tested positive for malaria were treated with artemisinin-based combination therapies. By helping CHWs to identify and treat malaria symptoms at the outset, SIAPS is accelerating access to appropriate treatment regimens while also putting in place mechanisms that help to ensure the completion of treatment and adequate follow-up with patients.

Information, Education, and Behavior Change

Ensuring that patients know when to take medicines, in what quantities, and for how long are crucial aspects to curbing AMR. To help ensure that both provider and patient are well-informed on the importance of completing a full course of treatment, responsible medicines use, and other issues related to AMR, SIAPS is working to expand the use of informational and behavior change communication materials in collaboration with regulatory authorities, health provider groups, and local media.



Namibia's official television station, NBC TV, airs a segment on 'pharmacists against antimicrobial resistance' in September 2013

►► To help increase the public's awareness of AMR and improve the quality of reporting on the topic, SIAPS assisted Ethiopia's regulatory authority in training 37 journalists from an array of media outlets on how to accurately report issues surrounding rational medicine use and AMR. As a result, more than 100 news pieces were published to inform and educate the public on AMR. These included 23 newspaper articles, 70 radio spots, and 11 television broadcasts in national and local languages.

Early Warning Indicators

Drug resistance to antiretrovirals (ARVs) used to treat HIV and AIDS poses a significant threat to global health. The number of people presenting with resistance to primary and secondary lines of

ARV medicines is expected to grow as the number of people receiving therapy increases. To preserve the future effectiveness of ARVs, WHO recommends using early warning indicators to detect and minimize the risk of AMR.

►► SIAPS is assisting partners in Namibia to use the [Electronic Dispensing Tool \(EDT\)](#) to monitor early warning indicators for HIV drug resistance and treatment adherence in 35 public hospitals and HIV and AIDS treatment facilities. Monitoring early warning indicators through platforms like EDT improves the accuracy of data, helps standardize dispensing practices, and enhances collaboration between ART sites on improving service delivery.

Medication Adherence

Successful treatment and optimal health outcomes depend on high levels of [adherence](#) to prescribed treatment regimens. Globally, only 50% of patients are able to adhere to treatment,⁴ and adherence tends to decrease over time. Poor adherence is associated with numerous risks, including the development of AMR, increased health care costs, and negative health outcomes. Having to travel long distances to the nearest health provider or pharmacy for care, experiencing medicine stock outs, and being unable to pay for expensive medicines can all act as barriers to adherence, and all are present in many developing countries.

►► Building on previous work carried out by SPS on HIV treatment adherence, SIAPS has adapted a [medication adherence tool](#) to train adherence officers and treatment supporters [in Swaziland](#) to encourage adherence to TB treatment regimens. Through the use of this tool, the National Tuberculosis Control Program can help patients who are struggling to adhere to treatment regimens through follow up with regional TB coordinators and adherence officers.

Public-Private Partnerships

Working across the public and private sectors is critical to ensuring comprehensive coverage of quality services for patients regardless of whether they visit a government-run or privately run health facility or pharmacy. However, engagement of the private sector remains largely untapped in many countries. Involving the private sector in TB care and treatment, for example, has the potential to improve the systems for referral, diagnosis, and treatment.

►► With support from SIAPS, the Tanzania National Tuberculosis and Leprosy Program piloted an

	Advocacy	Standard Treatment Guidelines/ Essential Medicine Lists/Formulary	Strengthening Regulatory Systems	Pharmacovigilance	Medicine and Therapeutic Committees	Infection Prevention and Control	Medicine Use Reviews/Evaluations	Information, Education, and Behavior Change	Pre- and In-service Training	Community Case Management	Medication Adherence	Early Warning Indicators	Public-Private Partnerships
Bangladesh			•	•									
Burundi										•			
DR Congo		•			•					•			
Ethiopia	•	•	•	•	•		•	•	•				
Guinea		•								•			
Jordan		•					•						
Kenya							•						•
Lesotho		•											
Liberia		•											
Mali		•								•			
Mozambique		•			•								
Namibia	•	•	•	•	•		•	•	•		•	•	
Pakistan													•
South Africa		•			•	•	•	•					
South Sudan			•		•								
Swaziland		•		•	•		•				•		
Tanzania													•
Ukraine				•			•						

Table 1. SIAPS-supported capacity building efforts that directly or indirectly contribute to AMR prevention and containment

Key Publications and Tools

- [Building Local Coalitions for Containing Drug Resistance: A Guide](#) (English, French, Spanish)
- [Revising Preservice Curriculum to Incorporate Rational Medicine Use Topics: A Guide](#)
- [Containing Antimicrobial Resistance: A Guide for USAID Missions to Institution-Based Interventions](#)
- [Antimicrobial Resistance Module for Population-Based Surveys](#)
- [Drug and Therapeutics Training Course](#) for participants and trainers
- [Infection Control Assessment Tool](#) for hospitals and the user manual
- [Infection Control Assessment Tool for Primary Health Care Settings](#)
- [Patient Adherence Record](#) to measure adherence to antiretroviral therapy
- [How to Investigate Antimicrobial Use in Hospitals: Selected Indicators](#) (English, French, Spanish)
- [Supporting Pharmacovigilance in Developing Countries: The Systems Perspective](#) (English, French, Spanish)
- [Enhancing Health Outcomes for Chronic Diseases in Resource-Limited Settings by Improving the Use of Medicines: The Role of Pharmaceutical Care](#)

intervention designed to increase early TB case detection by engaging private sector drug dispensers to identify and refer persons with presumptive TB. The results of the pilot intervention demonstrated that the private pharmaceutical retail sector has the potential to contribute to early TB case detection. A similar program is being initiated with drug dispensers in [Pakistan](#) where the initiative has gained support from national stakeholders and the program is being scaled up.

NEXT STEPS: ACCELERATING OUR RESPONSE

To ensure that people in every part of the world have access to safe and effective medicines, SIAPS is committed to continuing to build on our work, increase local capacity and ownership, engage with the global health community to share best practices, and collaborate with stakeholders at all levels of the health system to help accelerate the response to AMR.

SIAPS understands that the multifaceted and multidimensional drivers of AMR require systems-level

approaches to truly amount to progress against its continuing spread. Through strategic implementation of proven interventions, SIAPS is working to build stronger health systems that are better equipped to respond to the challenges of preventing and containing AMR.

Endnotes

- ¹ World Health Organization, 2014. *Antimicrobial Resistance Global Report on Surveillance*. Retrieved at: <http://www.who.int/drugresistance/documents/surveillancereport/en/>. Accessed on May 18, 2014.
- ² World Health Organization, Regional Office for Africa. First African Medicines Regulatory Authorities Conference Final Report. Addis Ababa, Ethiopia; 2005.
- ³ Dellit et al. Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America Guidelines for Developing an Institutional Program to Enhance Antimicrobial Stewardship. *Clinical Infectious Diseases* 2007; 44:159–77
- ⁴ WHO 2011. The World Medicines Situation 2011. Geneva, Switzerland.

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

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