Antibiotic resistance in South Africa: your country needs you!

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At the “Pharmacy Beyond Imagination” Conference 2012, SAAHIP organised a two-part workshop on antimicrobial resistance and antibiotic stewardship that was facilitated by Prof Adriano Duse.

This is a summary of the presentation and proceedings.

Part 1: Reflections from Global Antibiotic Resistance Partnership, Phase 1, South Africa

The Global Antibiotic Resistance Partnership (GARP) is a four-country initiative that consists of India, Vietnam, Kenya and South Africa. GARP-South Africa was launched on 8 February 2010 at a meeting attended by 40 experts (clinical, veterinary, policy, research and pharmaceutical spheres). The issues that were identified at this meeting included the establishment of a multidisciplinary GARP-South Africa national task team, and that there is an urgent need for a situational analysis to consolidate all available information pertaining to antimicrobial resistance. This should include reflections on strengths and weaknesses and the identification of gaps in the approach to the challenges posed by antimicrobial resistance. The expertise of the Centre for Disease Dynamics Economics and Policy and all GARP collaborating partners in this venture will need to be drawn upon for translation of all aspects of antimicrobial resistance into policy.

The project consists of two phases:

- **Phase 1/Year 1 (2010-2011):** Phase 1 comprised a situational analysis of antimicrobial resistance in South Africa and collaborating countries. The situational analysis was published as a special supplement to the *South African Medical Journal*, 2011;101(8).
- **Phase 2/Years 2 and 3 (2011-2013):** Phase 2 was guided by data obtained from Phase 1 to inform and develop policy and advocacy for antimicrobial resistance-related issues in each of the collaborating countries.

Despite being relatively well resourced, and having a wealth of available expertise nationally, South Africa has yet to adequately manage the human immunodeficiency virus (HIV) and tuberculosis co-epidemics, or clearly identify the extent and driving factors behind antimicrobial resistance. South Africa has not yet implemented nationally standardised hospital infection and antimicrobial resistance surveillance systems or fully translated available antimicrobial resistance surveillance data into policy. There has been no implementation of nationally standardised and effective infection prevention and control training programmes countrywide.

Common strategies to reduce antimicrobial infections are to use vaccines to prevent infections, restrict and optimise antibiotic usage to prevent antimicrobial resistance and to prevent transmission by means of infection control processes.

Antimicrobial resistance surveillance methods are crucial for the following reasons:

- They act as a barometer of challenges or successes in the fight against antimicrobial resistance. Potential problem areas can be highlighted early and evidence of changes provided if interventions are implemented.
- They are critical to the success of any antimicrobial stewardship initiative as they inform facilities of successful programmes and areas for improvement.
- They are crucial to inform, and be incorporated into, standard treatment guidelines and essential drugs lists, and as a motivation to change current antimicrobial prescribing practices at facility, provincial and national levels.
- Currently, there are very limited data on the extent of antimicrobial resistance in nonacademic public sector hospitals which can be problematic when prescribing antimicrobials. This is because organisms may be resistant to available options.

The following antimicrobial resistance surveillance activities exist in South Africa:

- National Institute for Communicable Diseases, Group for Enteric Respiratory and Meningeal Surveillance in South Africa. Data
are collected in areas of acquired immune deficiency syndrome-related opportunistic infections, epidemic-prone diseases and vaccine-preventable diseases.

- NICD: Antimicrobial Resistance Reference Unit, Enteric Diseases Reference Unit, and the Sexually Transmitted Infections Reference Centre, together with the Department of Health, also collect antimicrobial resistance data.

- South African Society for Clinical Microbiology for the public sector (academic hospitals) data and private sector antimicrobial resistance data, which can be accessed on the website of the Federation of Infectious Diseases Societies of Southern Africa (www.fidssa.co.za).

In terms of prevention of transmission of infections, infection control processes are vital. Healthcare-associated infections are among the most common and serious adverse events in hospitals globally and occur in approximately 1 in 10 admissions overall. In South Africa, to date, there have been no formal reporting schemes on healthcare-associated infections in the public sector. Due to limited resources, there is insufficient commitment to strengthening infection prevention and control in South Africa, as well as inadequate staffing and training of infection prevention and control practitioners. Nurses, in particular, do not get statutory council recognition of infection prevention and control specialisation. Guidelines for antibiotic usage and infection control may be present, but evidence of implementation is scanty. The Best Care Always Campaign Initiative is a strategy that is trying to improve health care, and reduce healthcare-associated infections, to prevent antimicrobial resistance and also develop antibiotic stewardship programmes in hospitals in the country.

Part 2: Antibiotic stewardship in South Africa

Antibiotic stewardship programmes (ASPs) require that a multidisciplinary ASP team is formed (infection diseases physician, clinical microbiologist, infection prevention and control officer, clinical pharmacist and information technologist). Collaboration between the ASP team, infection prevention and control, pharmacy and the therapeutics committee is essential. Hospital administration, medical staff leadership and other stakeholders need to liaise with one another to ensure that the ASPs function under the auspices of quality assurance and patient safety. The infection diseases physician and clinical pharmacist must negotiate with hospital management to obtain authority, compensation and expected outcomes of the programme. Hospital administration support is vital for the necessary infrastructure to measure antimicrobial use and to track it on an ongoing basis.

Core proactive strategies include the following:

- Conducting an audit of antimicrobial use by the provider with direct interaction and feedback to the prescriber. This is performed by either an infectious diseases physician or a clinical pharmacist with infectious diseases training.

- Requiring preauthorisation for selected antimicrobials to limit their use. In institutions that do this, it is necessary to monitor overall trends in antimicrobial use to assess whether there is simply a shift to an alternative agent and to respond to such shifts in use.

- Using antimicrobial order forms as a tool to assist with the implementation of practice guidelines.

- Streamlining or de-escalating empirical antimicrobial therapy as this can effectively target the causative pathogen, resulting in decreased antimicrobial exposure and substantial cost savings.

In providing pharmaceutical care, pharmacists can actively engage in this process by asking the following questions:

- Is the indication for commencement of antimicrobial therapy documented in the patient’s bed notes? Is it valid? Was antimicrobial therapy required in the first place?

- Does empirical therapy target the most likely pathogens and is it based on knowledge of the hospital’s/unit’s antimicrobial resistance profiling?

- Are antimicrobials being given with the correct dosage, route of administration, time intervals and duration?

- Once culture and antibiogram results were available, was there a review, streamlining or de-escalation of the antimicrobial therapy?

- Is colonisation being differentiated from infection and with which criteria?

- What was the “hang time”? (This refers to the time interval between the prescription of an antibiotic and administration to the patient).

- What was the time from positivity of the blood cultures in the microbiology laboratory to administration of the antimicrobial?

- What was the actual time that a patient first received the oral dose of the antimicrobial, i.e. when was an intravenous to oral dose switch carried out?

Pharmacists play a role in checking on dosages.

In this regard, they can determine the following:

- Was a loading dose given?

- Was weight-based dosing considered?

- Was dosing consistent with pharmacokinetic and pharmacodynamic considerations?

- Were patient co-morbidities taken into consideration?

- Would an extended infusion dosing strategy have been appropriate?

Prof Duse ended with the following message: “Appropriate antibiotic use depends on understanding the pathogen, the host and the antimicrobial. Appropriate use of antibiotics is one of the main tools in preventing resistance development. Pharmacists can play a vital role in antimicrobial stewardship and patient care. It is time we stepped up to the challenge”.

S Afr Pharm J 2012 Vol 79 No 5
Since the workshop, an important article by David McQuoid-Mason, entitled *Hospital-acquired infections: when are hospitals legally liable?* was published (*S Afr Med J*. 2012;102(6):353-354).

The key message in this publication was:

“Hospital and hospital administrators may be held directly liable for not introducing or implementing best practice infection control measures that result in harm to patients. The hospital may also be held vicariously liable where patients have been harmed because hospital staff negligently or intentionally failed to comply with the infection control measures implemented by the hospital, during the course and scope of their employment.”

So, even with ASPs and infection prevention and control programmes being designed and implemented in hospitals, hospital staff, including pharmacists, may not follow the guidelines. Should a patient be harmed in the process, both the hospital and the staff could be held liable. This implies that staff may be held personally liable, subsequently be sued in a personal capacity, or depending on their employment contract, may be liable to reimburse the employer for damages paid out to the harmed patient. Therefore, pharmacists can no longer plead ignorance, or not get involved in these activities.

By law, pharmacists are required to be mindful of hospital-acquired infections and the prevention thereof. Get involved! Better still, take the lead!