



health

Department:  
Health  
REPUBLIC OF SOUTH AFRICA

# **ANTIMICROBIAL RESISTANCE NATIONAL STRATEGY FRAMEWORK 2014 – 2024**

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## I. FOREWORD BY THE MINISTER OF HEALTH

Antimicrobial resistance (AMR) is a major threat to the long-term security of public health and has the potential to negatively impact our society. It is a serious and growing global health security risk, which needs to be prioritised at local and international levels.

A national response to AMR is required to complement the development of a global action plan, as articulated in the WHO resolution EB134/37 "Combating antimicrobial resistance including antibiotic resistance", adopted by the World Health Assembly in May 2014. The summarized actions required of member states include:

- Increase political awareness, engagement and leadership
- Strengthen infection prevention and control
- Strengthen international collaboration
- Strengthen overall pharmaceutical management systems, including regulatory systems and supply chain mechanisms, as well as laboratory infrastructure
- Monitor the extent of antimicrobial resistance
- Encourage and supporting research and development
- Promote responsible use of antimicrobials
- Encourage the development of novel diagnostics and antimicrobial drugs
- Develop an AMR Surveillance System for inpatients in hospitals, for outpatients in all other health care settings and the community, and for animals and non-human usage of antimicrobials
- Develop a national plan with accountability and civil society engagement.

In animal health, the International Committee of the World Organization for Animal Health (OIE) published a set of guideline documents in 2003 for all OIE Member Countries relating to the public health risks of antimicrobial resistance, originating from the use of antimicrobial drugs in veterinary medicine. These guidelines were used by the Medicines Committee of the South African Veterinary Association together with the Faculty of Veterinary Science to develop technical guidelines for the responsible and appropriate use of antimicrobials in veterinary medicine in South Africa. These guidance documents underpin efforts that have been made during the past decade to create and strengthen awareness within the veterinary profession of the emerging threat of AMR and their implementation needs to be strengthened through legislative and policy reform in the animal health sector.

The National Department of Health has extracted the key interventions that will form the basis for this strategy from the WHO and OIE recommendations.

The development and implementation of a national AMR strategy that complements international efforts is a major step towards containment of the growing threat of AMR in human and animal health. Global partnerships need to be strengthened because the responsibility for reducing resistance is a shared one. This responsibility is not only limited to the health care sector, but calls for collaborative action in all sectors - human, animal and agriculture.

The AMR strategy will affect South Africa's response to this looming threat. We already have the tools and expertise to make a difference, now all we need is to work together toward a better future.



**DR AARON MOTSOLEDI**  
**MINISTER OF HEALTH**

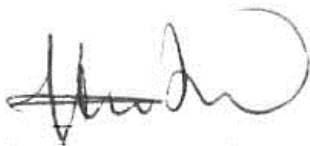
## II. PREAMBLE BY THE DIRECTOR GENERAL

Antimicrobial resistance (AMR) is a major global public health crisis. In the case of bacterial infections, decades-long overuse of antibiotics has resulted in a tipping point, where the world finds itself on the brink of a 'post-antibiotic' era and we will lose the benefits of these medicines entirely.

The discovery of penicillin in 1928 heralded a revolution in the treatment of infections. But even at that time, Alexander Fleming warned us about driving selection of resistance through inappropriate use. Since 1987, no new class of antibiotics has been discovered. The alarming trend in the rise of resistance to existing antibiotics and the slow-down in the development of new antibiotics will lead to the catastrophic consequence of not being able to treat common infections effectively. Conditions that were previously managed with first line agents are becoming harder to treat because infections have become more severe, often requiring prolonged treatment, as is the case with drug-resistant tuberculosis (TB). This also leads to an increase in the cost of healthcare because of the need for more expensive second or third line antimicrobial agents for a prolonged duration, increased hospitalization and length of stay of those hospitalized, and importantly, a reduced quality of life.

In 2013, the identification of a *Klebsiellapneumoniae* resistant to all available antibiotics exemplified the most extreme case of multi-drug resistant (MDR) bacterial infection yet documented in South Africa. A potentially stark future awaits us, where patients may die of untreatable bacterial infections, which were previously easily managed.

This national AMR strategy document has been developed as a framework for managing antimicrobial resistance, to limit further increases in resistant microbial infections, and improve patient outcomes. In this policy, priority is given to resistance of bacterial infections other than tuberculosis to antibiotics, as structures to address resistance in tuberculosis as well as resistance in HIV, already exist in the national Department of Health. However, many of the interventions included in the strategy apply equally to all antimicrobials.



**MS PRECIOUS MATSOSO**  
**DIRECTOR-GENERAL: HEALTH**

### III. ABBREVIATIONS

AFA	Antimicrobial Feed Additive
AMR	Antimicrobial Resistance
AMS	Antimicrobial Stewardship
DAFF	Department of Agriculture Forestry and Fisheries
HAI	Hospital Acquired Infection
HSS	Health Systems Strengthening
IPC	Infection Prevention and Control
MDR	Multi-Drug Resistance
NDoH	National Department of Health
OIE	International Committee of the World Organization for Animal Health
WHO	World Health Organization

### IV. DEFINITIONS

**Antibiotic:** any of a large group of chemical substances, such as penicillin, having the capacity to inhibit the growth of, or to destroy bacteria and other microorganisms, used chiefly in the treatment of infectious diseases

**Antimicrobial:** an agent such as a drug that destroys or inhibits the growth of a microorganism

**Antimicrobial resistance (AMR):** the ability of a microorganism to withstand treatment with an antimicrobial drug'

**Antimicrobial stewardship (AMS):** a multi-disciplinary, systematic approach to optimising the appropriate use of all antimicrobials to improve patient outcome and limit emergence of resistant pathogens whilst ensuring patient safety.

**Equity:** is impartial or just treatment, requiring that similar cases be treated in similar ways.

**Essential medicines:** are those that satisfy the priority health care needs of the population. Essential medicines are intended to be available within the context of functioning health systems at all times in adequate amounts, in the appropriate dosage forms, with assured quality, and at a price the individual and the community can afford.<sup>1</sup>

**Evidence based medicine:** is a process of independent and objective decision making based on consideration of objective data with integration of best research evidence (external) with clinical expertise (internal) and patient values.

**Governance:** is the strengthening of organisational structures for appropriate decision making, authority and oversight.

**Good governance:** is characterised by equity, transparency, evidencebased medicine, accountability, participation, rule of law and responsiveness.

**Medicine management system:** is a set of practices and policies related to the selection, procurement, distribution and use of medicines.

**Rational medicine use:** requires that patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community.<sup>2</sup>

**Transparency:** means that the degree of disclosure to reach agreements, dealings, practices and transactions is open to verification.

<sup>1</sup>[http://www.who.int/medicines/services/essmedicines\\_def/en/](http://www.who.int/medicines/services/essmedicines_def/en/) (accessed 13/02/2014)

<sup>2</sup>[http://www.who.int/medicines/areas/rational\\_use/en/](http://www.who.int/medicines/areas/rational_use/en/) (accessed 11/03/2014)

## V. INTRODUCTION

Antibiotics play a vital role in the management of bacterial infections, reducing morbidity and preventing mortality. They are estimated to increase life expectancy by 20 years. However, the extensive use of antibiotics has resulted in drug resistance that threatens to reverse the life-saving power of these medicines. A tipping point has been reached for the international community, where we find ourselves on the brink of the “post-antibiotic era”. In South Africa, the identification and publication of the first untreatable, pan-resistant *Klebsiellapneumoniae* from the urine of a patient admitted for cardiac surgery<sup>3</sup>, represents the extreme end of the spectrum of increasingly common MDR bacterial infections in this country.

Antimicrobial resistance (AMR), or the ability of a microorganism to withstand treatment with an antimicrobial drug, is a significant and multifaceted public health problem and a direct threat to patient safety and the continued use of available antimicrobials. The societal and financial costs of treating antimicrobial resistant infections place a significant human and economic burden on society.

The drivers of antibiotic resistance include:

1. **The total volume of antibiotics used:** International estimates suggest that half of all antibiotics prescribed in humans are unnecessary, either as no infection exists, the infection is not caused by a bacterium, or antibiotics are prescribed for too long a duration. Approximately, 80% of all antibiotics used globally are for animal health, agriculture and aquaculture to prevent or treat infection, or for growth promotion in feed animals.
2. **Reliance on broad-spectrum antibiotics**, which have activity against a wide range of different bacteria will select out a greater range of resistant bacterial populations than narrow-spectrum antibiotics, which target the specific bacteria causing infection.
3. **Acquisition of hospital-acquired infection (HAI):** Hospitalised patients are at high risk of developing MDR-bacterial infection, as they are often immune-compromised, may have MDR-bacteria transferred to them as a result of poor hand hygiene practice by health care professionals, and may have MDR-bacteria introduced into the body as a result of invasive procedures and devices.

A return to appropriate, targeted antimicrobial use in humans, animals and the environment is critical to conserve the antimicrobial armamentarium.

As awareness of the current status of AMR in South Africa increased, antimicrobial stewardship (AS) interventions were developed and implemented at the institutional level to begin to address the growing problem. However, they were confronted with the weaknesses of existing control systems and challenges in scaling up interventions. The Antimicrobial Resistance Background Report takes stock of these interventions and describes the strengths and weaknesses of the health system in the light of the AMR situation in the country.

This AMR National Strategy Framework outlines key strategic objectives to slow the development and spread of AMR, and improve patient outcomes through better use of antimicrobials. Whilst acknowledging the importance of AMR in tuberculosis, HIV, and malaria, the immediate and unmet need is to combat increasing levels of resistance in bacteria other than tuberculosis in South Africa, which is therefore the main focus of this document. The AMR National Strategic Framework will be supported by a comprehensive guidance document, The Antimicrobial Resistance Background Report, to facilitate implementation of the strategy at all levels of the health care system.

## VI. LEGISLATIVE FRAMEWORK

- a. The **Constitution of South Africa (Constitution)** guides the substantive content of all laws and policies through its Bill of Rights. The Constitution provides for health policy and practices that respond to the needs of South Africans. In terms of Section 27 of the Constitution access to health care in itself is a basic human right. All reasonable measures must be taken to ensure that this right is protected, promoted, and fulfilled within the limits of available resources.

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<sup>3</sup>Brink AJ et al. J Clin Microbiol. 2013 Jan;51(1):369-72. doi: 10.1128/JCM.02234-12. Epub 2012 Nov 14

- b. The **National Health Act (Act 61 of 2003)** provides the framework for a structured uniform health system within South Africa. The Act specifically provides for the establishment of “a system of co-operative governance and management of health services, within national guidelines, norms and standards, in which each province, municipality and health district must address questions of health policy and delivery of quality health care services”.
- c. The **Medicines and Related Substances Act (Act 101 of 1965)**, as amended, provides the legislative framework to ensure that medicines are safe, efficacious and of good quality. It also provides for control of veterinary medicines in such a way as to ensure that they are produced, distributed and used without compromising human and animal health. Antimicrobials intended for use in animals and registered under Act 101 can only be administered or prescribed by a veterinarian<sup>4</sup>
- d. The **Public Finance Management Act (Act 1 of 1999)** ensures that all revenue, expenditure, assets and liabilities of all levels of governments are managed efficiently and effectively and provides for the responsibilities of persons entrusted with financial management to support, among others, sustainable access to health care and medicines.
- e. The **National Drug Policy (NDP)** health objectives are to ensure the availability and accessibility of essential drugs to all citizens, to ensure the safety, efficacy and quality of drugs, to promote the rational use of drugs by prescribers, dispensers and patients through provision of the necessary training, education and information and to promote the concept of individual responsibility for health, preventive care and informed decision making.
- f. The **Fertilizers, Farm, Feeds, Agricultural Remedies and Stock Remedies Act (Act 36 of 1947)**. This act governs the use of antimicrobials for growth promotion and prophylaxis/metaphylaxis, and the purchase of antimicrobials over the counter (OTC) by the lay public (chiefly farmers). The National Department of Agriculture, Forestry and Fisheries has a responsibility to ensure that farmers have access to veterinary drugs for disease control and improved food production and to safeguard man by monitoring residues (including antibiotics) in products of food-producing animals, preventing zoonoses and controlling notifiable diseases.
- g. The **Health Profession Act (Act 56 of 1974)** provides for control over the education, training and registration for and practicing of health professions registered under this act.
- h. The **Veterinary And Para-Veterinary Professions Act (Act 19 of 1982)** makes provision for the compounding and or dispensing of any medicine which is prescribed by the veterinarian for use in the treatment of an animal which is under his or her professional care

## VII. STRATEGIC OBJECTIVES OF THE ANTIMICROBIAL RESISTANCE NATIONAL STRATEGY FRAMEWORK

### 1. Purpose of the strategy

The purpose of the Antimicrobial Resistance National Strategy framework is to provide a structure for managing AMR, to limit further increases in resistant microbial infections, and improve patient outcomes.

### 2. Goals of the strategy

The goals of the strategy are:

- to define the principles and short to medium term interventions needed to preserve the effectiveness of antimicrobials for future generations
- to improve the appropriate use of antibiotics in human and animal health
- to improve the effective management of antibiotic resistant organisms and to prevent their transmission
- to create an enabling environment for the successful and sustainable implementation of the strategic objectives

### 3. Strategic framework

The strategic framework consists of four (4) strategic objectives that are underpinned by 4 key enablers as described in figure 1. The strategic objectives are:

- Strategic objective 1: Strengthen, coordinate and institutionalize interdisciplinary efforts** through national and Health Establishment level governance structures
- Strategic objective 2: Optimise surveillance and early detection of antimicrobial resistance** to enable reporting of local, regional, and national resistance patterns to optimise empiric and targeted antibiotic choice.
- Strategic objective 3: Enhance infection prevention and control** of the spread of resistant microbes to patients in healthcare settings, focusing on improvement in hand hygiene and the identification and isolation of patients with resistant organisms. Community measures include preventing infection through wide-reaching vaccination programmes and improvements in water and sanitation.
- Strategic objective 4: Promote appropriate use of antimicrobials in human and animal health** through antimicrobial stewardship

The key enablers of these strategic objectives are:

- Legislative and policy reform for health systems strengthening** to support the quality of antimicrobials in the country and to enable control over prescribing of antimicrobials in the animal health sector
- Education** of all levels of health providers in human health and agriculture in the critical concepts of antimicrobial stewardship, infection control, infectious diseases, microbiology and pharmacology.
- Communication** to educate the public, create awareness and enhance patient advocacy of the dangers of inappropriate antimicrobial use.
- Research** into novel diagnostics such as point of care testing and clinical trials of treatment duration, antimicrobial consumption, and new antimicrobials.



**Figure 1: Strategic framework for the AMR national strategy**

<b>Strategic objectives</b>	<b>Governance</b> National Intersectoral Committee Health establishment and district AMS committees and teams		
	<b>Surveillance</b> National surveillance system for: <ul style="list-style-type: none"> <li>• resistant bacteria</li> <li>• Antimicrobial usage</li> <li>• Medication error reporting structures</li> <li>• Antimicrobial quality</li> </ul>	<b>Prevention &amp; Control</b> IPC activities in the community and hospitals Immunisation against preventable infections IPC strengthening in public health (water & sanitation etc)	<b>Antimicrobial Stewardship</b> <u>Policies &amp; Protocols</u> Formulary restrictions Pre-authorisation Antimicrobial prescription forms National prescribing guidelines <u>Stewardship at point-of-care</u> Diagnosis of infection Appropriate antibiotic choice Dose optimization, de-escalation and discontinuation
<b>Strategic enablers</b>	<b>Legislative and policy reform for health systems strengthening</b> Control of use and prescribing of antimicrobials in animal health Minimum standards and norms for health care quality systems and process (National Core Standards)		
	<b>Education</b> Incorporate AMR strategies into medical, nursing and allied health student curricula AMR/AMS CPD programmes for healthcare professions Sustained public health campaigns		
	<b>Communication</b> Patient advocacy as part of a patient-centered care approach Partnership with media, industry and other relevant stakeholders		
	<b>Research – IPC, AMS interventions, diagnostics</b>		

## VIII. STRATEGIC OBJECTIVES OF THE ANTIMICROBIAL RESISTANCE NATIONAL STRATEGIC FRAMEWORK

### 1. Strategic objective 1: Strengthen, coordinate and institutionalize interdisciplinary efforts

#### Sub-objective 1.1: Establish an interdisciplinary national advisory committee

Antimicrobial stewardship, being cross-cutting within departments, programmes, hospitals and districts, should be positioned at a high level within the National Department of Health, where leadership can be provided to influence policy development and implementation. Therefore a multi-disciplinary intersectoral Ministerial Advisory Committee is to be established, funded and mandated to coordinate intersectoral efforts nationally, provide advocacy and awareness as well as monitoring and evaluation of the implementation of this strategy framework.

The role of the Ministerial Advisory Committee is to:

- Enhance national surveillance and reporting systems for antimicrobial resistance in the human health and agriculture sectors;
- Guide the selection of antimicrobials in the Essential Medicine List based on resistance patterns;
- Provide leadership and guidance to implement effective systems of antimicrobial stewardship at national, provincial, institutional level and private sector;
- Define improvements in prevention strategies focusing on infection prevention and control and enhanced vaccination programmes

- Advise on core curricula for AMR, patient advocacy and awareness campaigns to reduce the inappropriate use of antimicrobials in human and animal health.

The following stakeholders will be represented in or consulted by the committee: public and private sectors, academia and universities from both human and animal health, as well as role players from other Departments such as the Agriculture, Forestry and Fisheries (DAFF), Trade and Industry (DTI), Science and Technology (DST) and Education (DE). Additional stakeholders include relevant clinical societies, laboratory networks, the pharmaceutical industry, military, medical aids, legal services, diagnostics companies and civil society. Existing committees involved with HIV, TB and malaria drug resistance should also form part of the MAC.

### Sub-objective 1.2: Establish governance structures at operational level

Governance of AMR falls within the clinical leadership functions of the heads of provincial and district departments of health. Depending on the resources and capacity constraints, 3 critical governance functions are to be performed:

- Pharmaceutical and Therapeutics monitoring (PTC)
- Antimicrobial Stewardship and
- Infection Prevention and Control monitoring.

An overarching structure at the provincial or district level may need to provide oversight and co-ordinate between these 3 functions ensuring the AMR strategy is effectively implemented within the health facilities in the region.

Where resources are scarce, some regions may draw on outreach and support services from AMR leaders at larger local institutions to provide technical support to their own structures for all of the above functions.

## **2. Strategic objective 2: Optimise surveillance and early detection of antimicrobial resistance**

### Sub-objective 2.1: Strengthen surveillance of local and national resistance patterns and antimicrobial use

AMR surveillance encompasses the on-going, systematic collection, analysis and interpretation of antimicrobial resistance, antimicrobial use, medicine quality and medication error data to assist in the planning, implementation and evaluation of AMR interventions both nationally and locally.

The existing national surveillance systems to be strengthened through collaboration with local and international partners to ensure timely sharing of data to improve diagnosis of trends and resistance patterns across the country in both animal and human health. This would be coordinated through a central national body which can warehouse all laboratory surveillance data into a central repository from which combined reporting on antimicrobial resistance can occur.

A system to incorporate clinical data with the laboratory data for enhanced surveillance will also be investigated and piloted.

In animal health, the re-introduction of national longitudinal antimicrobial surveillance and reporting of resistance rates in feed and companion animals from public and private laboratories will be developed in partnership with the Department of Agriculture, Forestry and Fisheries.

Similarly, institutional surveillance systems need to be strengthened through implementation of a clearly defined set of surveillance data elements, relevant antimicrobial resistance information and pharmaceutical use data to highlight risk areas and inform planning, local treatment guideline modification and decision making at a facility level.

### Sub-objective 2.2: Develop early warning systems of sentinel organisms

The central national body shall develop an early warning reporting system for sentinel MDR organisms that will assist to institute appropriate interventions to effectively contain resistance or outbreaks.

## **3. Strategic objective 3: Enhance infection prevention and control**

### Sub-objective 3.1: Prevent new infections

Prevention of infection through wide-reaching vaccination programmes and improvements in water and sanitation are also key prevention strategies to reduce AMR. Optimising vaccine uptake to prevent infection and therefore the need for antibiotics is an important tool in preventing resistance. This will be implemented through primary prevention and promotion activities within the public District Health System and private health systems.

### Sub-objective 3.2: Prevent and control the spread of resistant microorganisms

Infection Prevention and Control (IPC) in the Health care facility is a core component of overall quality improvement, which if strengthened holistically will directly and indirectly address the current problem of AMR. Controlling the spread of resistant microbes to patients and the workforce involves rapid identification and isolation of patients with resistant organisms, access to personal protective equipment, and most importantly, improvement in hand hygiene. The multi-modal WHO intervention 'Five Moments for Hand Hygiene' will be adopted in all South African healthcare facilities as the gold standard for hand hygiene and the implementation of sustained campaigns.

A key enabler to effective infection control includes sufficient, suitably qualified and competent IPC practitioners with defined core skills and responsibilities for supporting the implementation of control measures in the facility.

Similarly, although more difficult to implement, interventions focused on community awareness of basic infection prevention and hand hygiene measures may provide long term benefits and will require a national awareness campaign and reinforcement through the direct community engagement of Community Healthcare Workers.

## **4. Strategic objective 4: Promote appropriate use of antimicrobials in human and animal health**

### Sub-objective 4.1: Ensure access to safe, effective and affordable antimicrobials

The availability of antimicrobials according to the national standard treatment guidelines and essential medicine list needs to be sustainable. Robust regulatory and medicine management systems, including procurement, distribution and dispensing systems are needed to support regulated access to safe, effective and affordable antimicrobials.

The quality of medicines will be strengthened through the use of laboratory systems to monitor quality assays and pharmacovigilance reporting systems monitored by regulators such as the Medicines Control Council and should include veterinary medicines.

### Sub-objective 4.2: Institutionalise antimicrobial stewardship

Antimicrobial stewardship (AMS) describes the multi-disciplinary, systematic approach to optimising the appropriate use of all antimicrobials to improve patient outcome and limit emergence of resistant pathogens whilst ensuring patient safety.

AMScan help correct inappropriate use through protocols, structures and interventions required to optimise AMS include:

1. AMS Committee or structure to function in every Health Establishment and district aligned within the overarching clinical leadership functions
2. AMS Teams in every institution to actively oversee appropriate prescribing and optimise antimicrobial use. Composition of an AMS team will vary depending on setting and availability of expertise. A prescribing physician and pharmacist are the ideal core members of an AMS team. Outreach and support of experts may be sought to advise and train teams.
3. Provision, use and monitoring of protocols such a formulary restrictions, pre-authorisation of antimicrobials, monitoring the use of national prescribing guidelines such as the Essential Medicine List and Standard Treatment Guidelines, and development of local treatment guidelines based on facility resistance data;
4. Expenditure on antimicrobials and laboratory testing is monitored and controlled without adversely impacting quality of care
5. Optimizing the use of diagnostic tests to supportAMS. Clinical algorithms to guide prescribers on optimal use of diagnostic tests will be developed. The National Health Laboratory Service and private laboratories will ensure quality management systems provide consistent diagnostic standards. These measures will enable early diagnosis of infection, recognition of MDR bacteria and the appropriate antibiotic choice to be made

### Sub-objective 4.3: Address the use of antimicrobials in animal health and crop production

The contributory role that antimicrobial feed additives (AFAs) play in the development of resistance to antimicrobial drugs is unquestionable. In addition, the influence that residues of AFAs in food of animal origin may have on export and import policies of trading partners makes a review process of currently registered AFAs in South Africa, an imperative.

There is a clear need for a review process (risk assessment) for registered AFAs in South Africa. It should ideally be focused on an active ingredient basis rather than on a product basis as all evidence points towards the fact that antimicrobial agents should not be used for growth promotion if they are known to select for cross-resistance to antimicrobial drugs used in human medicine. To be able to achieve this objective, resistance data is critically important. It is therefore imperative that this review process in South Africa goes hand in hand with a national veterinary surveillance and monitoring programme.

With the assistance of an expert medical clinical group,WHO compiled, a list of antimicrobial drugs that are considered *critically important* in humans. The ultimate objective is to use this list for reviewing antimicrobial drugs for non-human use.

## **5. Strategic enabler 1: Legislative and policy reform for health systems strengthening**

Antimicrobial Stewardship interventions at facility level are to be incorporated as standards within the National Core Standards<sup>5</sup> and prescribed as regulated standards that accompany the National Health Act and the promulgation of the Office of Health Standards Compliance (OHSC). This will see inspectors of the OHSC assessing all Health Establishments in the country for their compliance with the basic minimum requirements for the effective implementation of the strategic objectives of this AMR National Strategic Framework.

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<sup>5</sup>National Core Standards for Health Establishment , NDOH, 2011

Current legislation and national guidelines regarding health care facility infrastructure to be updated to include provision for core infection control infrastructure requirements and facilities for improved hand hygiene practice.

Certain legislations need to be changed to improve the control of prescribing and use of antimicrobials in the animal health sector. This includes:

- a) A comprehensive review of Stock Remedies Act 36 of 1947 regulating the use of antimicrobials for animal growth promotion and prevention of diseases in animal husbandry. A risk assessment should be performed prior to approval of antimicrobials for use as AFAs. Such a risk assessment will review all aspects of the approval of the active ingredient, registration of all products containing it, and labels of all such products, and will therefore be the task of a multi-person panel of experts.
- b) However first, expedited research is to be conducted into the impact of proposed changes to prescribing practices in the animal feed sector and that of food security and production before changes are made to this sector.
- c) The use of antimicrobials in food production will need to be aligned with international norms and standards, the outcome being the development of a prescribed timeline for removing antimicrobials used in agriculture that are also used in human health, as per *WHO global principles for containment of antimicrobial resistance in animals intended for food*<sup>6</sup>.
- d) In animal health, changes to the scope of practice of some para-veterinary professionals is required in order to provide them with training and prescribing privileges for better control of antimicrobials use in animals.
- e) Annual reporting of the use of antimicrobial drugs in animal health will be instituted under the direction of DAFF, using applications under Acts 36 and 101 in addition to data from the South African Revenue Service, which compiles data on imports.

## **6. Strategic enabler 2: Education and workforce development**

These enablers will be focused on building expertise in AMR through education, continuous training and building resource capacity for AMR through workforce development.

### *Building expertise in AMR*

To build expertise, a new emphasis will need to be placed on incorporating the interventions to tackle AMR in the curricula of undergraduate and postgraduate healthcare professionals. These AMR modules are to be included in the medical, nursing, allied health professionals and pharmaceutical curricula as well as with the veterinary and para-veterinary professionals. This will be done in collaboration with the various health professional councils and training institutions.

The development and accreditation of training modules is a medium term goal, therefore supporting continuous in-service training on AMR of health care professionals already in the workplace is a short-term achievable goal. This may be effected through the orientation and in-service programs of all Health Establishments, as part of the setting up of AMR committees or structure in Health Establishments or regions, and through AMR continuous professional development (CPD) activities being incorporated into existing CPD requirements for healthcare professionals.

### *Workforce development*

Workforce development on the other hand requires a view on sustainability and therefore co-ordination between the various health professional councils, the clinical societies, deans of medical and nursing schools and the NDoH is needed. The correct staffing norm and skill mix of healthcare professional to effectively,

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<sup>6</sup> [http://whqlibdoc.who.int/hq/2000/WHO\\_CDS\\_CSRAPH\\_2000.4.pdf?ua=1](http://whqlibdoc.who.int/hq/2000/WHO_CDS_CSRAPH_2000.4.pdf?ua=1)

efficiently and sustainably provide IPC and AMS expertise to all required Health Establishments in the country will be determined.

The number of Infection Prevention and Control Practitioners (IPCPs), microbiologists and Infectious Diseases experts available per Health Establishment or district should be carefully discussed and agreed between the stakeholders with the objective to build up to the required norm over a short period of time.

## **7. Strategy enabler 3: Communication**

Targeted campaigns will be developed to increase community awareness on infectious diseases, their causes and how to prevent them including general infection and prevention measures. The risks of AMR linked to inappropriate antimicrobial use should be addressed and the need for appropriate use of antibiotics reinforced. Depending on the targeted population, the most appropriate media of communication will be chosen among the broad range of media available, (e.g. radio, posters, advertisement campaigns, social media), and the use of community health workers to ensure that the right message is delivered to the right community. Existing successful models of community awareness should be emulated and adapted to convey the AMR messages to all.

Gaining the buy-in from the media (television, radio, press) on the global threat posed by AMR will help in fostering a good relationship for future positive coverage of the campaigns initiated.

## **8. Strategy enabler 4: Research**

While research continues for new antibiotics and diagnostic tools, research in the field of practice should not be neglected. Mechanisms need to be found to facilitate this research. These include identifying and disseminating funding mechanisms, identifying supervisors, allocating time and resources. Research efforts should be focused on finding new ways to:

- decrease antimicrobial consumption, both in humans and animals;
- diagnose infections promptly and use the right treatment;
- quickly identify trends in antimicrobial susceptibility.

Priority research areas include:

- The impact of proposed changes to prescribing practices in the animal feed sector and that of food security and production before changes are made to this sector.
- Pilots into e-prescribing with a view to enabling greater levels of control and audit on antimicrobial prescribing
- Integration of pharmacy/clinical and laboratory data systems to inform rational antibiotic prescribing

There are a number of research needs related to infection control in South Africa. Examples of some of the operational research needs include:

- Standardised definitions and methodology for collecting surveillance data
- Effective interventions to sustain hand hygiene compliance
- Environmental cleaning practices – what is being done currently and what is best practice

## IX. MONITORING AND EVALUATION

The table below describes the indicators and short, medium and long term targets for the monitoring and evaluation of the implementation of this AMR National Strategic Framework.

Sub-Objective	Indicator	Baseline (2013/14)	Short term target (2014/2015)	Medium term target (2016/2019)	Long term target (2020/24)
<b>Strategic objective 1: Strengthen, coordinate and institutionalize interdisciplinary efforts</b>					
Establish an interdisciplinary national ministerial advisory committee	Interdisciplinary national ministerial advisory committee established	NO	YES		
	Percentage of identified AMR related issues effectively addressed by the interdisciplinary national ministerial advisory committee	0		100%	
Establish governance structures at operational level	Percentage of provinces having a functional AMS committee	To be determined	100%	100%	100%
	Percentage of districts with functional AMS committees or outreach programs from tertiary institutions	To be determined	10%	50%	100%
<b>Strategic objective 2: Optimise surveillance and early detection of antimicrobial resistance</b>					
Strengthen surveillance of local and national resistance patterns and antimicrobial use	A consolidated national surveillance report on AMR for South Africa encompassing public and private data on alert MDR organisms	0	YES		

Sub-Objective	Indicator	Baseline (2013/14)	Short term target (2014/2015)	Medium term target (2016/2019)	Long term target (2020/24)
	Standards for institutional surveillance developed	0	YES		
	Percentage of institutions reporting against the standards for institutional surveillance	0	20%	100%	
Develop early warning systems of sentinel organisms	Set of standard MDR organisms and specimen types for reporting developed	0	YES		
	Percentage of institutions reporting against standards	To be determined	20%	100%	
<b>Strategic objective 3: Enhance infection control and prevention</b>					
Prevent new infections	Percentage coverage of critical immunisations through an effective District Health System	To be determined	100%		
Prevent and control the spread of resistant microorganisms	Ratio of IPC practitioners per 250 acute beds per hospitals	To be determined	100%		
	Percentage of districts having at least one IPC practitioners for the district	To be determined	50%	100%	



Sub-Objective	Indicator	Baseline (2013/14)	Short term target (2014/2015)	Medium term target (2016/2019)	Long term target (2020/24)
	Percentage Health Establishment that have access to all the necessary PPE and Hand hygiene supplies to practice IPC	To be determined NCS	100%		
	Percentage availability of necessary PPE and Hand hygiene supplies to practice IPC	To be determined NCS	100%		
<b>Strategic objective 4: Promote appropriate use of antimicrobials in human and animal health</b>					
Ensure access to safe, effective and affordable antimicrobials	Percentage availability of Antimicrobials according to EML in all Health Establishments	To be determined NCS	100%		
Institutionalise antimicrobial stewardship	Percentage compliance with AMS standards in the NCS	N/A	100%		
Address the use of antimicrobials in animal health	Policy for prescribing and use of Antimicrobials in Animal Health reviewed	0	50%	Completed	
	Revised policy for prescribing and use of Antimicrobials in Animal Health legislated	0			YES
	Review process of antimicrobials in feed additives		Completed		