



AMR in South Africa

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Presidential Advisory Council on Combating Antibiotic-Resistant Bacteria (PACCARB)

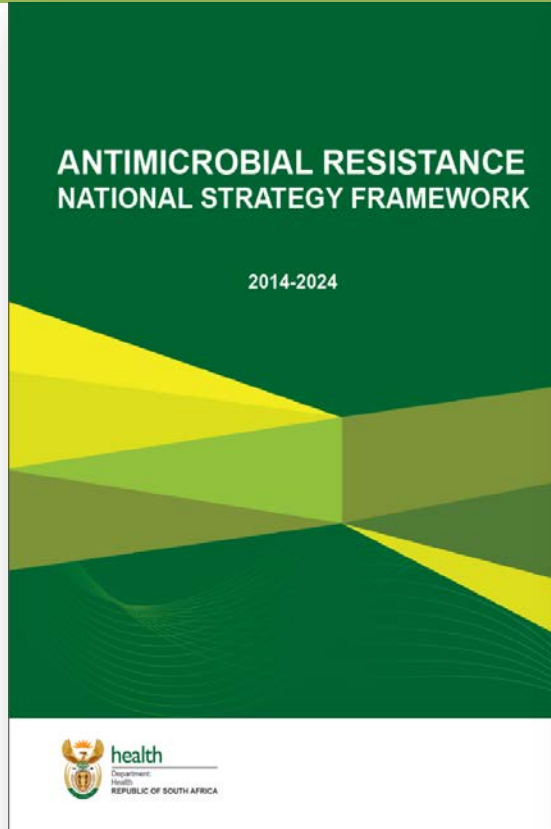
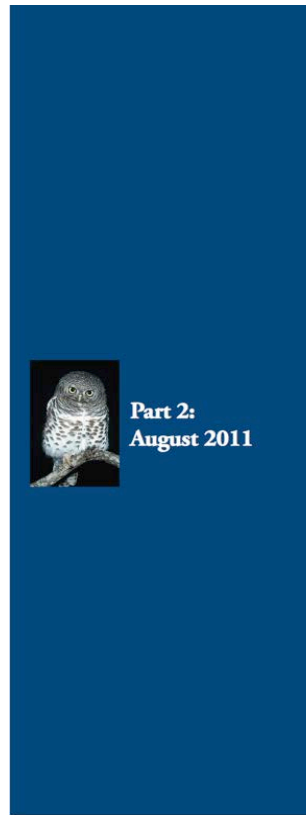


**NATIONAL INSTITUTE FOR
COMMUNICABLE DISEASES**

Division of the National Health Laboratory Service

South African National Action Plan development and implementation in stepwise processes

The first step for developing NAP was situational analysis on AMR in 2011; next was AMR National Strategy Framework in 2014 and in 2016 establishment of National Ministerial Advisory Committee (MAC)



Situational Analysis of the status of AMR in SA 2011

AMR Strategy Framework
Approved in October 2014

WHO endorses Global Action Plan on AMR in
May 2015

AMR Implementation
plan
Approved in June 2015

Our Journey to date

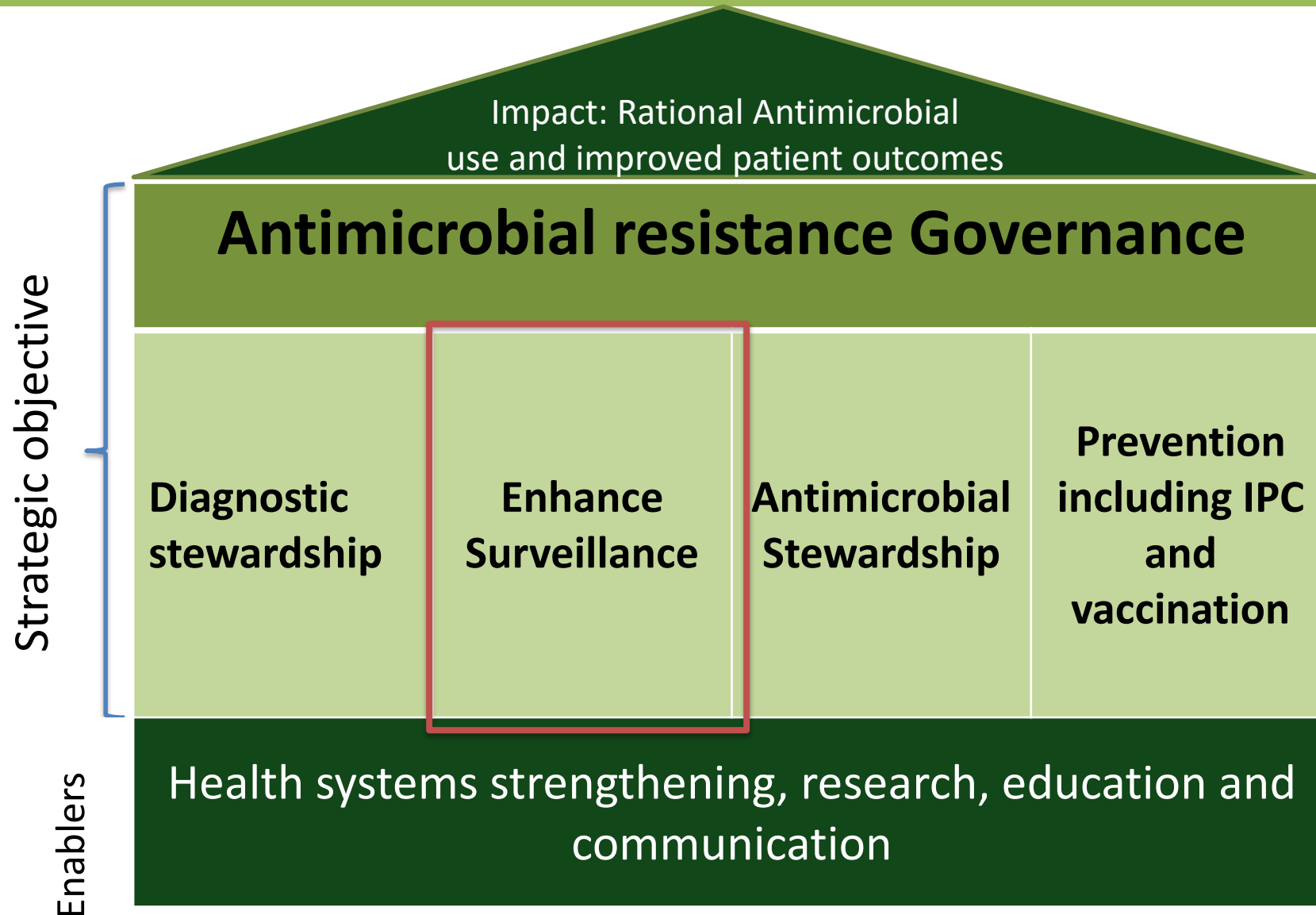
Our journey on AMR started in 2011 with the publication of the Situation Analysis highlighting that South Africa has a quadruple burden of resistant infectious diseases – MDR TB, Drug resistant HIV, Resistant Malaria and antimicrobial resistance (AMR). In October 2014, the Minister of Health launched the National AMR Strategy Framework. The framework spans 10 years (2014-2024), and outlines the country's plan for the management of AMR and the improvement of patient outcomes.

Following on closely to the World Health Assembly endorsing the Global Action Plan in 2015, South Africa developed and published an Implementation Plan for the AMR Strategy Framework to guide the implementation of the strategy.

Since then we have been working actively with our animal health and environmental colleagues to update the AMR Strategy Framework, and incorporate more relevant interventions from these sectors and this will be published in the near future.

MAC received support from professional societies and organizations from and outside South Africa such as GARP.

National Action Plan - AMR strategy 2014-2024



Surveillance forms one of the 4 key pillars of the AMR strategy framework for South Africa. Without a measurement of how extensive antimicrobial resistance is in the country, we would be unable to guide policies and strategies to limit the development of further resistance and determine our progress towards impacting on AMR.

It sits next to improved methods of taking specimens and making a diagnosis of infection and then stewardship interventions that ensure antibiotics are used and prescribed correctly based on the organisms that is causing the infection.

Adherence to appropriate specimen collection practices and transportation are fundamental for diagnostic and antimicrobial stewardships. Prevention of diseases including vaccination programs, infection prevention and control policies at healthcare facilities are the part of strategic objectives of importance for patients outcome and public health.

Implementation of national action plan

Landscape of AMR activities at national level in South Africa by Ministerial Advisory Committee

<p>Surveillance for AMR in human health providing: good quality, trustful, sustainable and cost effective reports, including reporting on notifiable medical condition (NMC) on MDRO in HAIs.</p> <p>Participation to the Global Antimicrobial Resistance Surveillance System (GLASS)</p>	<p>Infection Prevention and Control (IPC)</p> <p>The prevention of infections through the practice of effective hand hygiene, use of standard precautions and others.</p>	<p>Hospital Antimicrobial stewardship programme (AMS) Committee for:</p> <p>use of local guidelines for prescribing; authorisation at patient-level; process compliance measures and others.</p>	<p>AMR deliveries including research by:</p> <p>Identifying long-term goals</p> <p>Explaining why these goals are necessary and sufficient.</p> <p>Identifying the interventions that initiative will perform.</p> <p>Developing indicators to measure outcomes to assess the performance initiative.</p> <p>Writing narratives.</p>	<p>Pharmacy Department Antimicrobial use in human and animals</p>
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Further on, National Department of Health developed implementation plan and allocated surveillance activities to National Institute for Communicable Diseases including reporting to GLASS. Also, AMS Committee from each provinces becomes responsible for antimicrobial stewardship programs at provincial, district and facility levels. Research activities are included and underway with planning of short terms and long terms goals. Department of pharmacy is responsible for reports on antimicrobial use in human and animal sectors.

What we do for surveillance? Two tiers surveillance for AMR at National Reference Laboratory at National Institute for Communicable Diseases in Johannesburg

Laboratory based antimicrobial surveillance (LARS) for AMR in 2010 at GERMS

- Selection of sentinel sites (as population-based surveillance was not feasible)
- National reference laboratory: confirm AST, detect unusual resistance and outbreak, implement national laboratory standards
- Laboratories networking

Electronic surveillance since 2013

- Collection of national data from LIS according case definition exclusion and inclusion criteria and defining denominator data-CDW
- Data quality reporting depends on laboratory standardization.
- Notifiable Medical Condition (NMC) system from laboratory information system compiled through corporate data warehouse (CDW) on monthly bases for MDROs.

Objectives of NICD surveillance program for AMR

1. To support national surveillance for policy decision making and awareness of AMR; and to identify needs and gaps in data presentation.
2. To determine, consolidate and monitor trends in AMR over the 5 years and evaluate the impact of the AMR strategy.
3. To support research into AMR within the public health
4. To establish a “One Health” approach of collaborative scientific, programmatic and policy-making components that incorporate human and veterinary medicine, and other disciplines.

At National Institute for Communicable Diseases stepwise approach was implemented for AMR surveillance, starting with sentinel sites laboratory based surveillance as part of GERMS program established at NICD at the beginning 2010. Few years later in 2013 reporting of routine national laboratory data from laboratory information system was performed and included in routine reporting to NDOH. NICD complies to the NAP objectives in stepwise process and there is planning for collaborations with animal surveillance for AMR under “One Health”.

Partnership between public and private sectors for electronic reporting on AMR

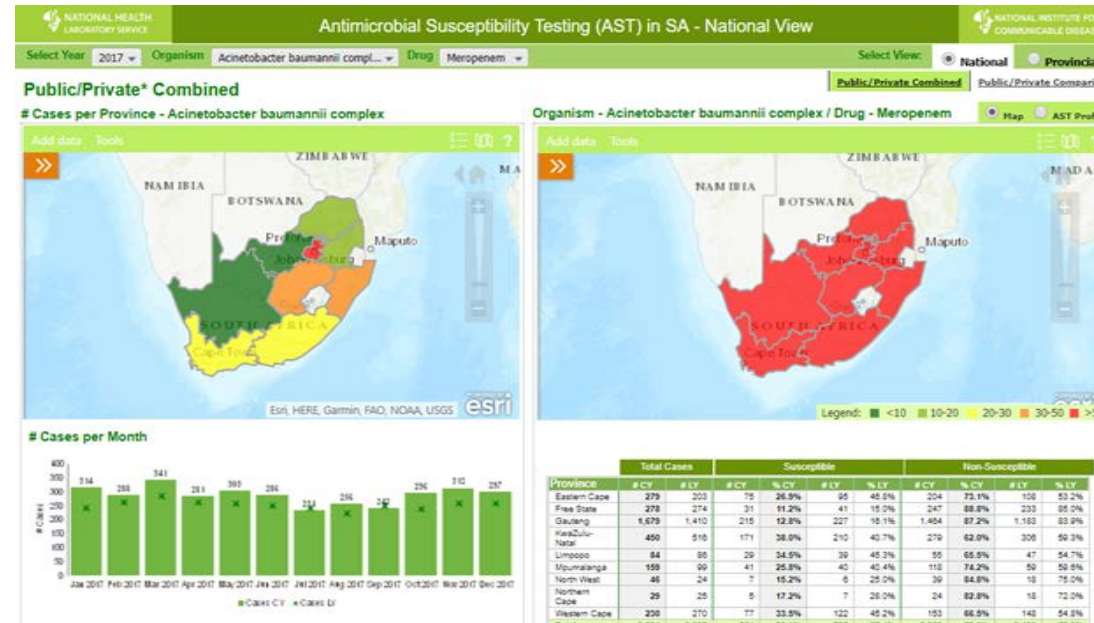
Public sector
NHLS Laboratories across country

South Africa
National Surveillance
System on AMR-
resistance maps

Private sector laboratories:
Ampath, Lancet, PathCare,
Vermaak

Sharing of data in compliance
with POPI act by National
Institute for Communicable
Diseases resources

Collaboration
since 2012



Electronic reporting of surveillance data have given opportunity to present private and public data at national level. Custodian of these report is NICD and enabling data to be presented as resistance maps as national MAPs.

GERMS surveillance program of diverse pathogens

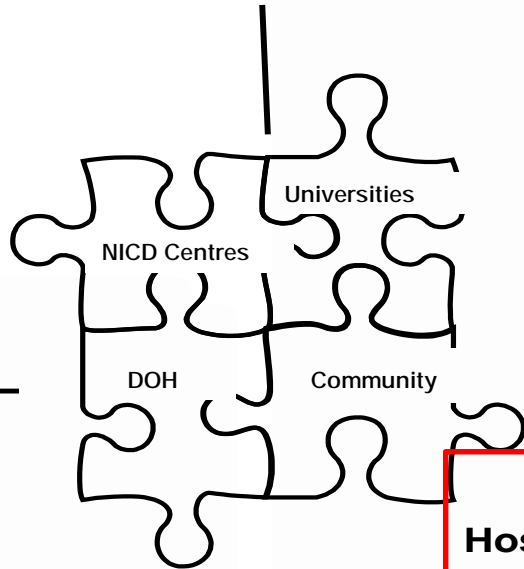
Diseases under surveillance

Provides laboratory-based surveillance platform for NICD Centres



AIDS-related OIs

- Cryptococcosis
- Salmonellosis
- TB (rifampicin resistant)



Epidemic-prone diseases

- Meningococcal disease
- Cholera
- Shigellosis
- Typhoid fever
- Diarrhoeagenic *E. coli* disease

Hospital infections

- Candidaemia
- *Staphylococcus* bacteraemia
- Other ESKAPE organisms
- CREs

Vaccine-preventable diseases

- *Haemophilus influenzae* disease
- Invasive pneumococcal disease
- Rotavirus

GERMS Annual Report

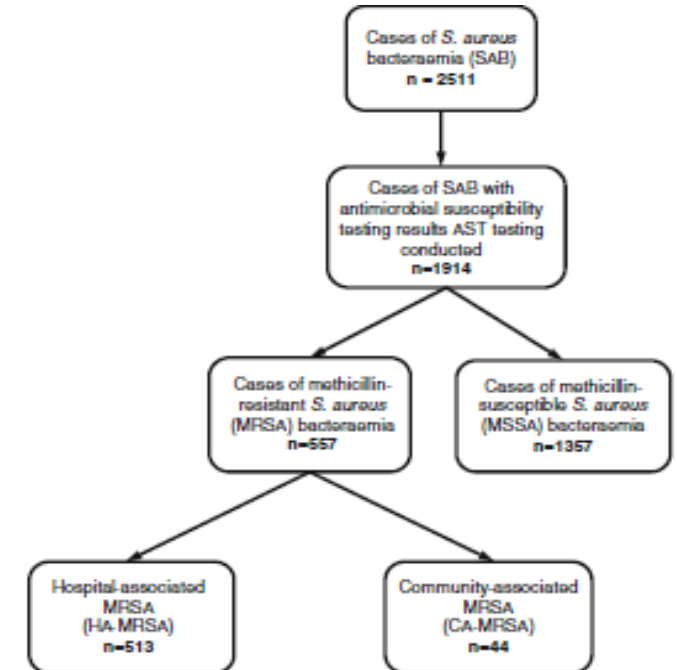


Fig. 1 Flow chart of cases of *Staphylococcus aureus* bacteraemia among patients at five sentinel hospitals in South Africa, January 2013 to January 2016. AST = antimicrobial susceptibility testing

ESKAPE: *Enterococcus faecalis*, *Enterococcus faecium*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*, *Pseudomonas aeruginosa* and *Escherichia coli*.

Periodic laboratory-based surveillance on blood culture isolates, 14 national sentinel sites. Case definition: a three-week inclusion period is applied to avoid duplicate isolates of the same organism from the same patient.

At the Division of Surveillance and Outbreak Response at the NICD, the GERMS surveillance programme consists of a number of diseases under surveillance. Our centre focus on ESKAPE pathogens. This surveillance is a periodic laboratory-based and consists of the screening of blood culture isolates from 14 national sentinel sites within three weeks deduplication of patients isolates. Our surveillance data are published annually in GERMS Annual report. We released our data on MRSA form enhanced surveillance in two provinces and for example community acquired MRSA was 8%.

Antimicrobial Resistance Program in South Africa at National Level

Achievements

- Awareness- accomplished with antibiotic guardian website.
- Standardized AMR training- two academic sites from two provinces provides training for the whole country.
- Consolidated AMR surveillance report for public and private sectors.
- Antimicrobial Stewardship Programs (ASP) at hospital levels including initiative for reduction of neonatal sepsis and deaths rate.
- Ban on colistin use as growth promoters for animal feed.
- Operational WHO Collaborative Centre for AMR in South Africa.

Challenges

- One Health AMR, environmental and animal surveillance integration with human health.
- Infection prevention and control implementation measures at hospital levels.
- WHO Collaborative Centre functioning for the African region.

Where from now? Recommendations for the future

- Integrated AMR surveillance from humans, animals and environmental sectors.
- To support Southern African region with AMR reference activities. Region specific marks on AMR.
- Establish healthcare-associated infections surveillance, particularly on neonatal sepsis caused by resistant organisms in public health hospitals in South Africa.

ACKNOWLEDGEMENTS

NICD
GERMS
AMRL
CHARM
Epi team
NDOH



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