

AWaRe classification of antibiotics



Phumzile Skosana
phumzile.skosana@smu.ac.za



Background

- » Improving use of antibiotics through stewardship (AMS) is one of the key interventions to curb the emergence and spread of antimicrobial resistance (AMR).
- » Access to quality, safe and affordable medicines and health products is a key contribution to Universal Health Coverage (UHC)

40% to 60%

In selected low- and middle-income countries, the proportion of resistant infections ranges from 40–60% compared to an average of 17% for OECD countries (OECD)

671 689

In 2015, there were 671 689 infections with antibiotic-resistant bacteria recorded in the EU (The Lancet)

2.4 m

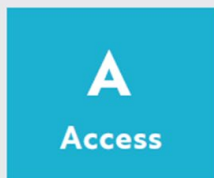
Superbug infections could cost the lives of around 2.4 million people in Australia, Europe and North America over the next 30 years if no action is taken (OECD)



AWaRe – the right antibiotic at the right time



As part of the update of the WHO Model List of Essential Medicines in 2017, WHO carried out a comprehensive review of antibiotics and introduced a new categorization to guide prescriptions and treatment while monitoring consumption. The three categories are:



- » AWaRe was developed in 2017 by the WHO Expert Committee on Selection and Use of Essential Medicines
- » To support AMS efforts at local, national and global levels
- » Committee reviewed 21 common infective syndromes, and selected the most appropriate first and second-choice antibiotics

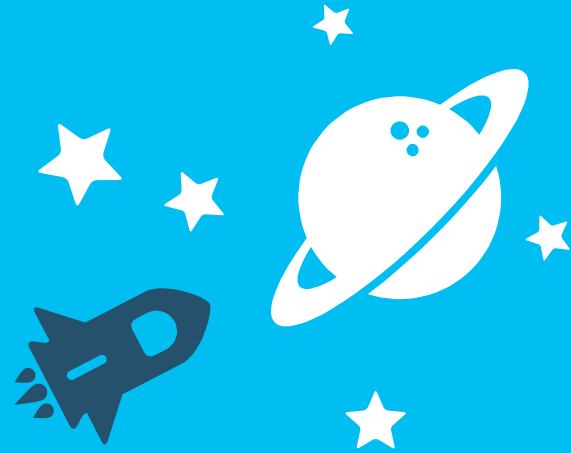
- » The 2019, revision of the EML included 26 common and severe clinical infections, focusing on low-income and middle-income settings
- » 180 antibiotics included, their pharmacological classes and Anatomical Therapeutic Chemical (ATC) codes
- » Further update in 2021 + **78** antibiotics not previously classified, bringing the total to **258 classified antibiotics**



Explanatory examples

	Ear infection (otitis media)	Sore throat (pharyngitis)	Kidney infection (pyelonephritis)
First line treatment	No antibiotic therapy		Antibiotic therapy
1 First choice	<p>ACCESS e.g. Amoxicillin</p>	<p>ACCESS e.g. Amoxicillin</p>	<p>WATCH e.g. Ciprofloxacin</p>
2 Second choice	<p>ACCESS e.g. Amoxicillin + clavulanic acid</p>	<p>WATCH e.g. Clarithromycin</p>	<p>WATCH e.g. Cefotaxime</p>

Breakdown Classifications



- » Activity against a wide range of commonly encountered susceptible pathogens
- » Show lower resistance potential than antibiotics in the other groups
- » First- or second -choice empiric treatment options for specified infectious syndromes
- » Part of EML core list, therefore should be widely available in all settings

Examples of Access antibiotics

9

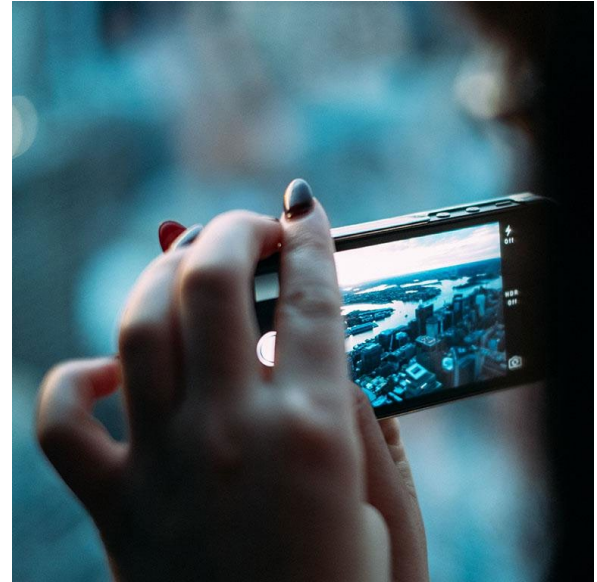
Access

- Amikacin
- Amoxicillin
- Ampicillin
- Amoxicillin–clavulanic acid
- Benzathine benzylpenicillin
- Benzylpenicillin
- Cefazolin
- Chloramphenicol
- Clindamycin
- Cloxacillin
- Doxycycline
- Gentamicin
- Metronidazole
- Nitrofurantoin
- Phenoxymethyl penicillin
- Procaine penicillin
- Spectinomycin
- Sulfamethoxazole–trimethoprim

Watch

10

- » Have higher AMR potential
- » Highest priority among the Critically Important Antimicrobials for Human Medicine
- » Should be prioritized as key targets of stewardship programs and monitoring



Examples of Watch antibiotics

11

Watch

- Azithromycin
- Cefixime
- Ceftriaxone
- Cefotaxime
- Ceftazidime*
- Cefuroxime
- Vancomycin (intravenous* and oral)
- Ciprofloxacin
- Clarithromycin
- Meropenem*
- Piperacillin-tazobactam

Reserve

12

- » Should be used for treatment of confirmed or suspected infections due to multi-drug-resistant (MDR) organisms e.g CRE, MRSA, A. baumani etc
- » Treated as “**last resort**” options
- » Should be accessible, but use should be tailored to highly specific patients and settings, when all alternatives have failed or are not suitable
- » Must be protected and prioritized as key targets of national and international stewardship programs involving monitoring and utilization reporting, to preserve their effectiveness

Examples of Reserve antibiotics

13

Reserve*

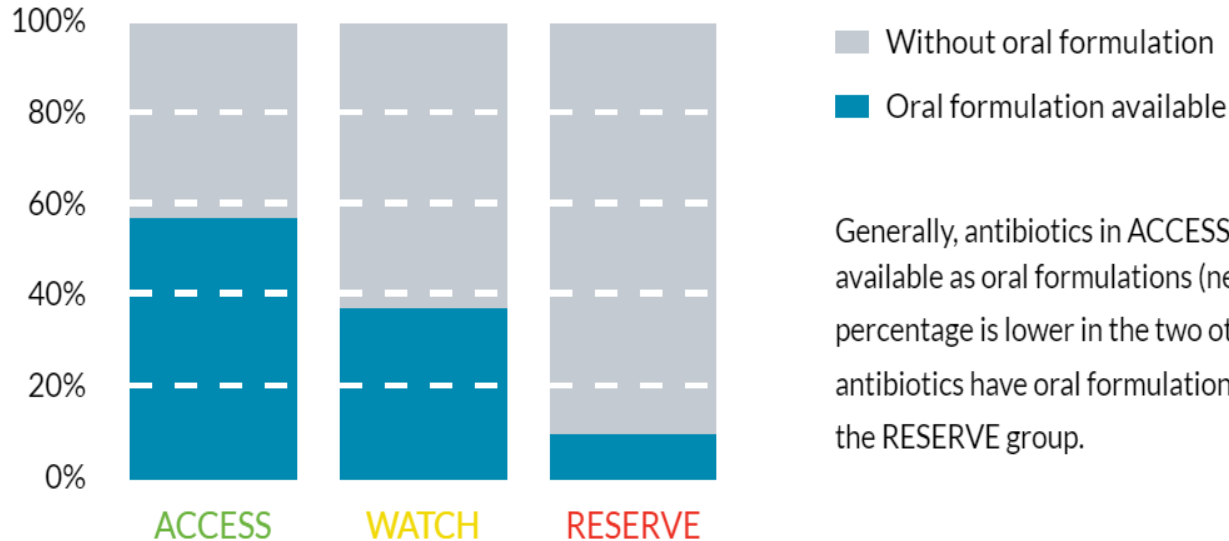
- Fosfomycin (intravenous)
- Linezolid
- Colistin
- Polymyxin B
- Ceftazidime-avibactam
- Meropenem-vaborbactam
- Plazomicin

Newer drugs:

- » Ceftolozane/tazobactam
– fifth generation
- » Tigecycline
- » And many more...

<https://www.who.int/publications/i/item/2021-aware-classification>

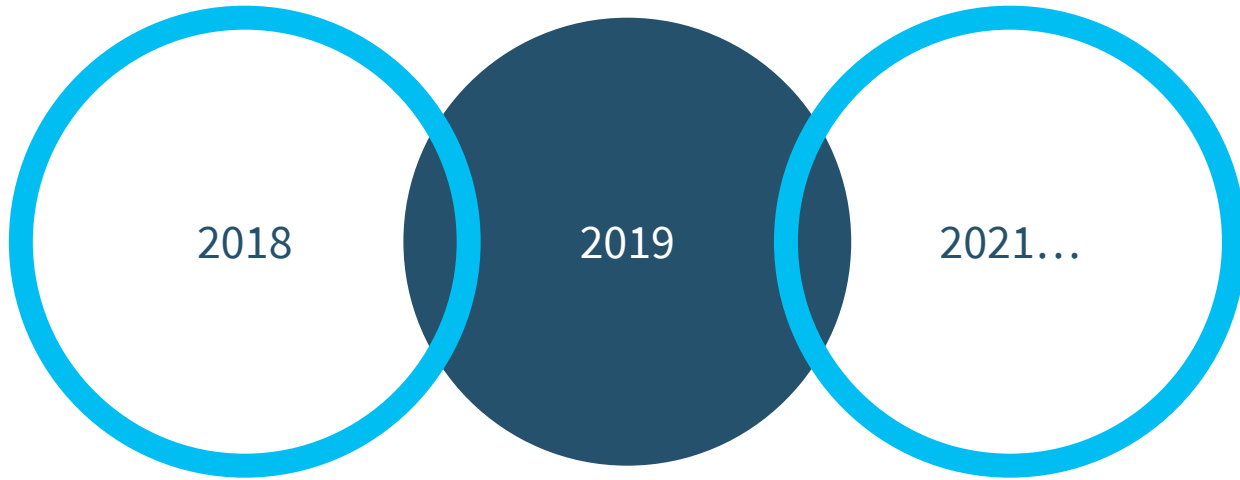
Are there differences in how antibiotics from the different groups are administered?



Generally, antibiotics in ACCESS group are more often available as oral formulations (nearly 60% of them), while this percentage is lower in the two other groups. 40% of WATCH antibiotics have oral formulations; the number is only 10% in the RESERVE group.

Where are we?

15



- » Measuring antibiotic consumption using AWaRe categories allows some input about the overall quality of antibiotic use
- » Country-level target according to WHO 13th General Programme of Work **2019–2023** = **at least 60%** of antibiotic consumption must be in the Access Group
- » This aims to help prescribers, pharmacists, antibiotic stewards and policy makers to address the AMR challenge

Use of the WHO Access, Watch, and Reserve classification to define patterns of hospital antibiotic use (AWaRe): an analysis of paediatric survey data from 56 countries



Yingfen Hsia, Brian R Lee, Ann Versporten, Yonghong Yang, Julia Bielicki, Charlotte Jackson, Jason Newland, Herman Goossens, Nicola Magrini, Mike Sharland on behalf of the GARPEC and Global-PPS networks*



Summary

Background Improving the quality of hospital antibiotic use is a major goal of WHO's global action plan to combat antimicrobial resistance. The WHO Essential Medicines List Access, Watch, and Reserve (AWaRe) classification

Lancet Glob Health 2019;
7: e861-71

2018 - In Africa, the use of Access antibiotics was low in South Africa (33.3%) and high in Nigeria(52.9%)

Hospital antibiotic prescribing patterns in adult patients according to the WHO Access, Watch and Reserve classification (AWaRe): results from a worldwide point prevalence survey in 69 countries

Ines Pauwels , Ann Versporten, Nico Drapier, Erika Vlieghe, Herman Goossens, the Global-PPS network [Author Notes](#)

Journal of Antimicrobial Chemotherapy, Volume 76, Issue 6, June 2021, Pages 1614–1624, <https://doi.org/10.1093/jac/dkab050>

Published: 05 April 2021 **Artic**

Proportional AWaRe use by country



The highest Access percentages at country level were observed in sub-Saharan countries such as Guinea (66.7%), **South Africa** (61.9%) and Togo (59.8%) (Figure 3). Access prescribing was lowest in Armenia (12.1%), Jordan (12.2%) and China (15.1%). The percentage of Watch prescribing was high in Armenia (87.9%) and Jordan (84.4%), whereas Guinea (32.1%), **South Africa** (37.7%) and the UK (39.5%) reported the lowest Watch percentages. Reserve prescribing was highest in Argentina (12.6%), India (7.8%) and Brazil (7.1%). For a number of participating countries, such as Nigeria, Guinea, Togo, Laos, Kosovo, Kyrgyzstan and Armenia, no Reserve prescriptions were reported.

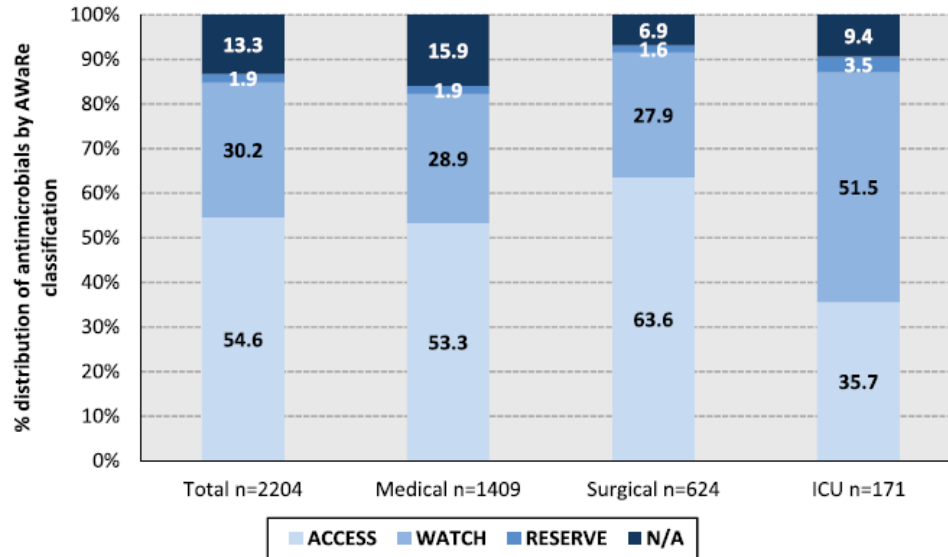
A point prevalence survey of antimicrobial utilisation patterns and quality indices amongst hospitals and Community healthcare centers (CHCs) in South Africa; findings and implications (2021-2022 published)

19



Adult in-patients

AWaRe classification



Pediatric in-patients

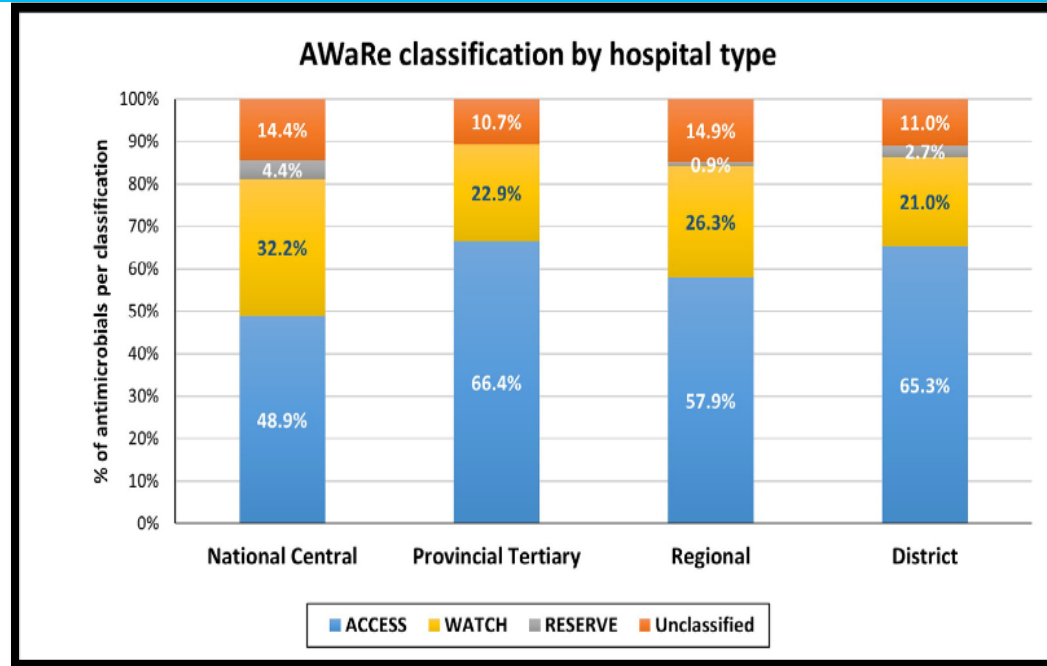
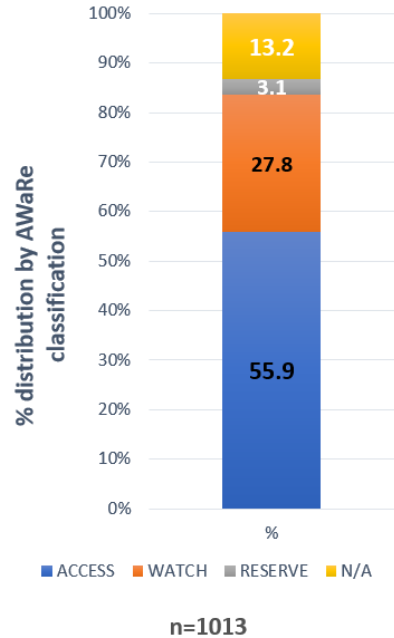


Table 4. Quality indicator summary.

	Number of antimicrobials (n = 486)	Percentage of the total (%)
Route of administration		
Oral	474	97.5
Intravenous	9	1.9
Intramuscular	3	0.6
AWaRe classification^a		
Access	302	62.1
Watch	73	15.0
Reserve	0	0.0
Unclassified	111	22.8

Why should countries adopt AWaRe as a benchmark for optimal use?

- 1 Public health gains** – antibiotics, one of the best inventions of modern medicine, will keep working for human health
- 2 Increased access, reduced costs** – many of the antibiotics in the Access list are among those that are more affordable
- 3 More responsible prescription and use** – by increasing use of the Access list and reducing use of Watch and Reserve
- 4 Preservation of critical antibiotics** – by increasing use of the Access list and reducing use of Watch and Reserve
- 5 Better therapeutic results** – the AWaRe categories specify which antibiotics to use for specific syndromes, including when a laboratory diagnosis is not available



What can countries do to implement AWaRe?

- 1 Monitor and report antibiotic use in community and hospitals using the AWaRe categories for evaluation, benchmarking and setting targets.
- 2 Adopt the AWaRe index as part of national antibiotic stewardship programmes to improve access to essential antibiotics.
- 3 Ensure local and national guidelines consider the WHO Essential Medicines List and apply the AWaRe categories in their recommendations for the optimal use of antibiotics.
- 4 Incorporate the AWaRe categories into pre- and in-service training for health-care professionals.
- 5 Monitor and report antibiotic use in the veterinary and agricultural fields according to the WHO list of medically important antimicrobials and the AWaRe categorization.

Where to get info

WHO website and all the info is there



THANKS!

26

Any questions?

You can find me at:

» phumzile.skosana@smu.ac.za

