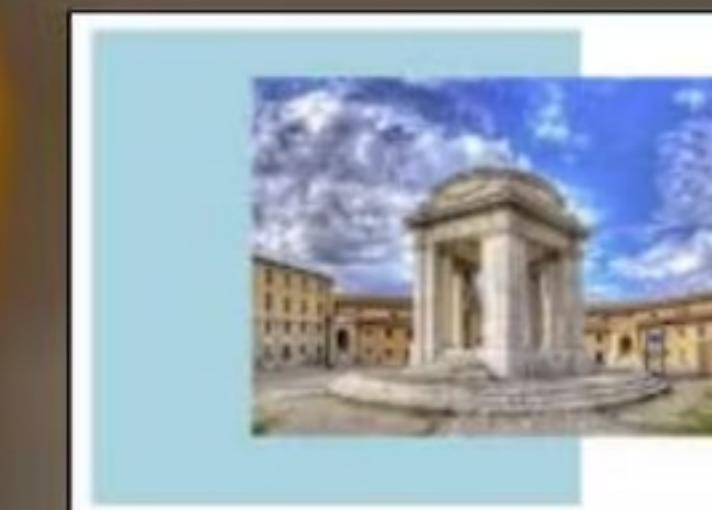


Una visione globale per favorire il buon uso degli antibiotici essenziali

27.09.2022 - Sessione 8

Le politiche sul buon uso degli antibiotici

Benedikt Huttner
bhuttner@who.int



26-28 SETTEMBRE 2022
10° CONGRESSO NAZIONALE
SIMPIOS

SIMPIOS

Società Italiana Multidisciplinare per la Prevenzione
delle Infezioni nelle Organizzazioni Sanitarie

Disclaimer 1

I am full-time staff member of WHO

The views and opinions expressed in this presentation are those of the presenter do not purport to reflect the opinions of WHO or its members

Disclaimer 2

Il mio italiano è un
po' «arrugginito»...



This is supposed to
be an interactive
presentation

Who would you have rather dinner with?



Didier PITTEL



Roger FEDERER



Antibiotics are among the most commonly prescribed medicines

- Globally: 40·1 (95% UI 37·2–43·7) billion DDD in 2018 for a population of 7.6 billion
 - = about **5 DDD for every person in the world per year**
- In some LMICs children **receive 25 antibiotic prescriptions** for respiratory tract infection or fever **during their first 5 years of life**
 - Most of them inappropriate



Browne et al. Lancet Planet Health. 2021 Dec;5(12):e893-e904.

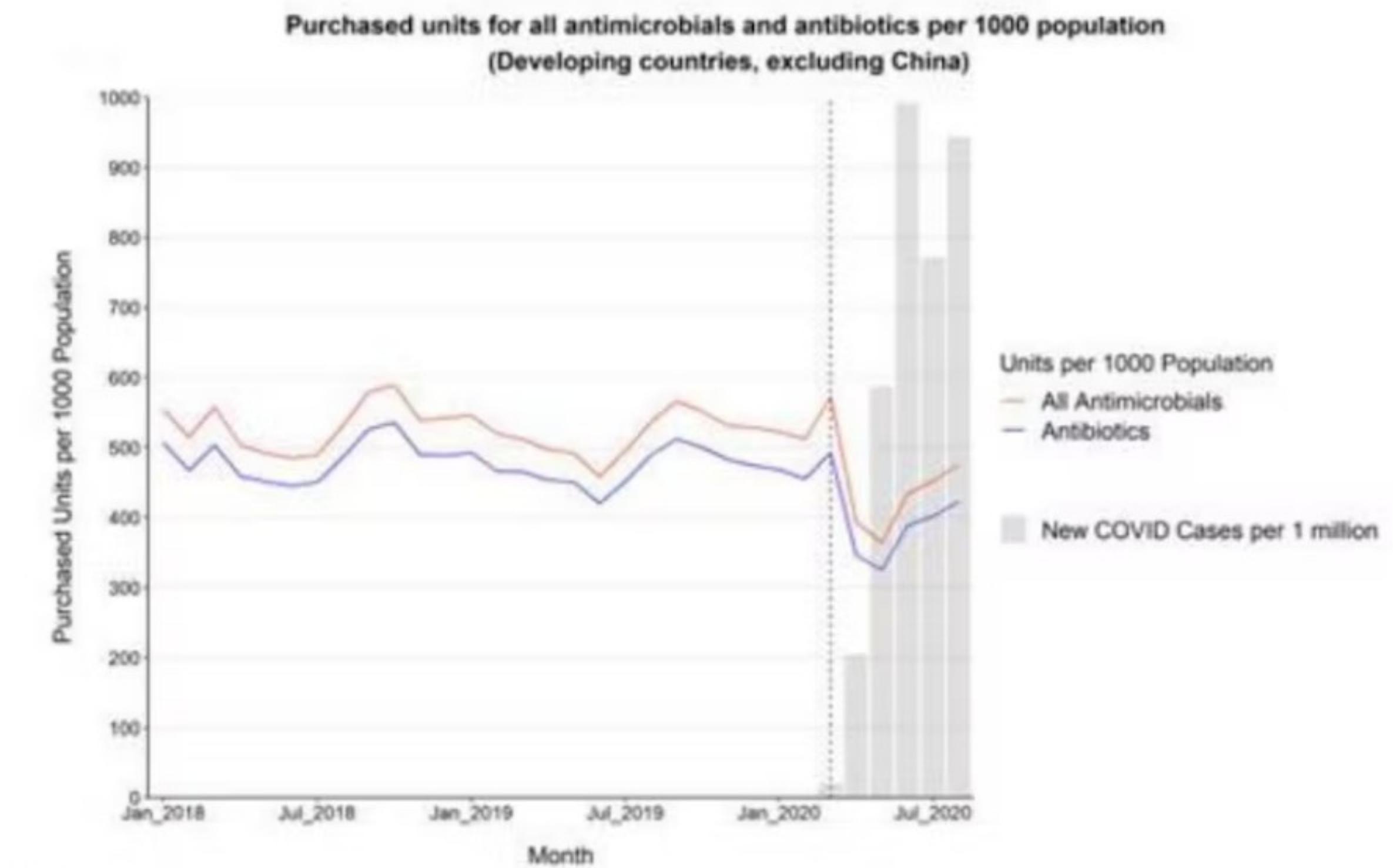
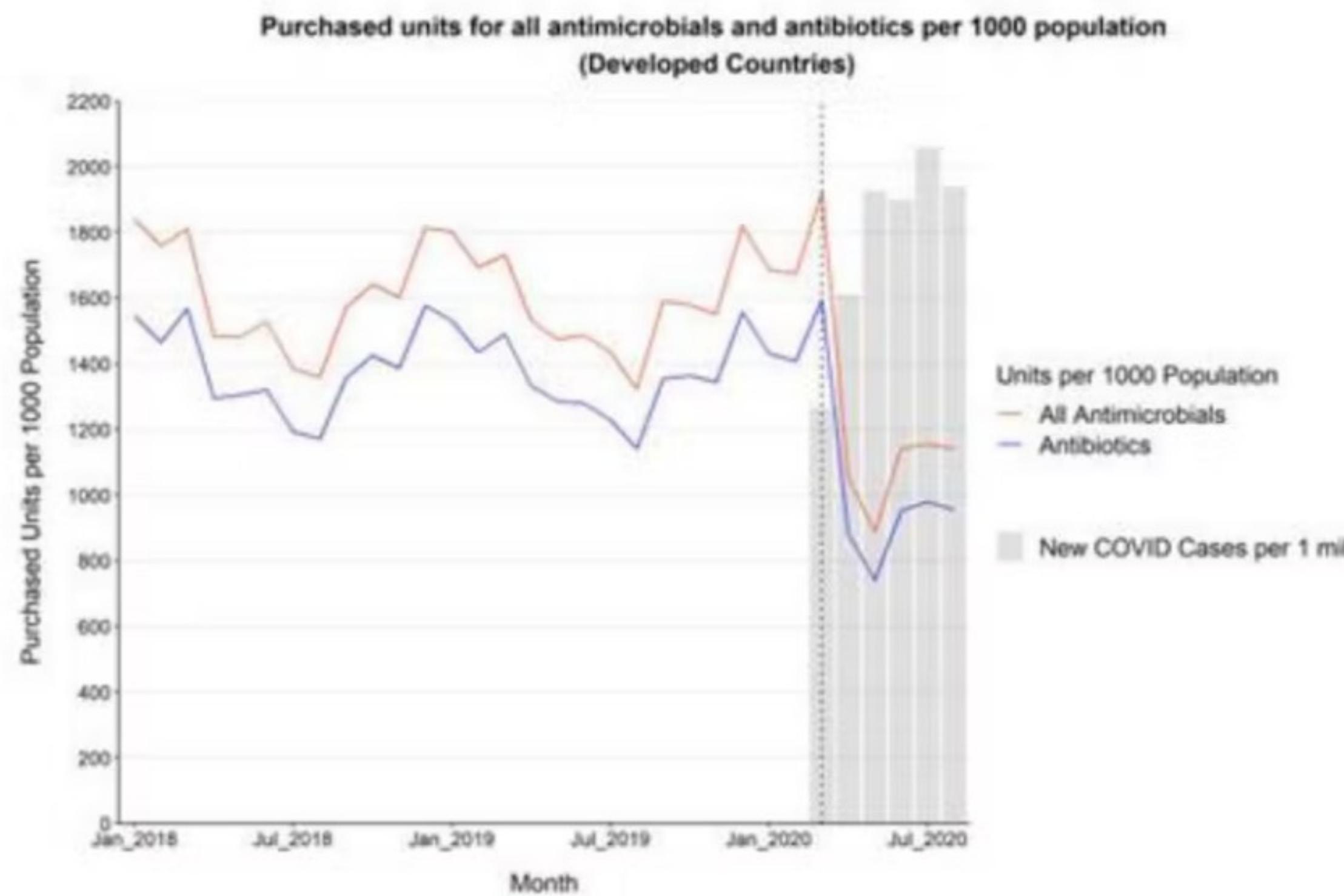
Fink et al. Lancet Infect Dis. 2020 Feb;20(2):179-187.

Inappropriate use of antibiotics is common everywhere

- Two recent stories from my family
- 55-year-old female, COVID (PCR +), sore throat
 - => physician performs rapid streptococcal antigen test => positive
 - Amoxicillin / clavulanate at pediatric dose for 10 days
 - **Wrong indication, wrong antibiotic, wrong dose, wrong duration**
- 30-year-old otherwise healthy female
 - Fever, mild sore throat, headache
 - Prescription of amoxicillin / clavulanate by telephone
 - Duration not specified
 - **Wrong indication, wrong antibiotic, wrong dose, wrong duration**



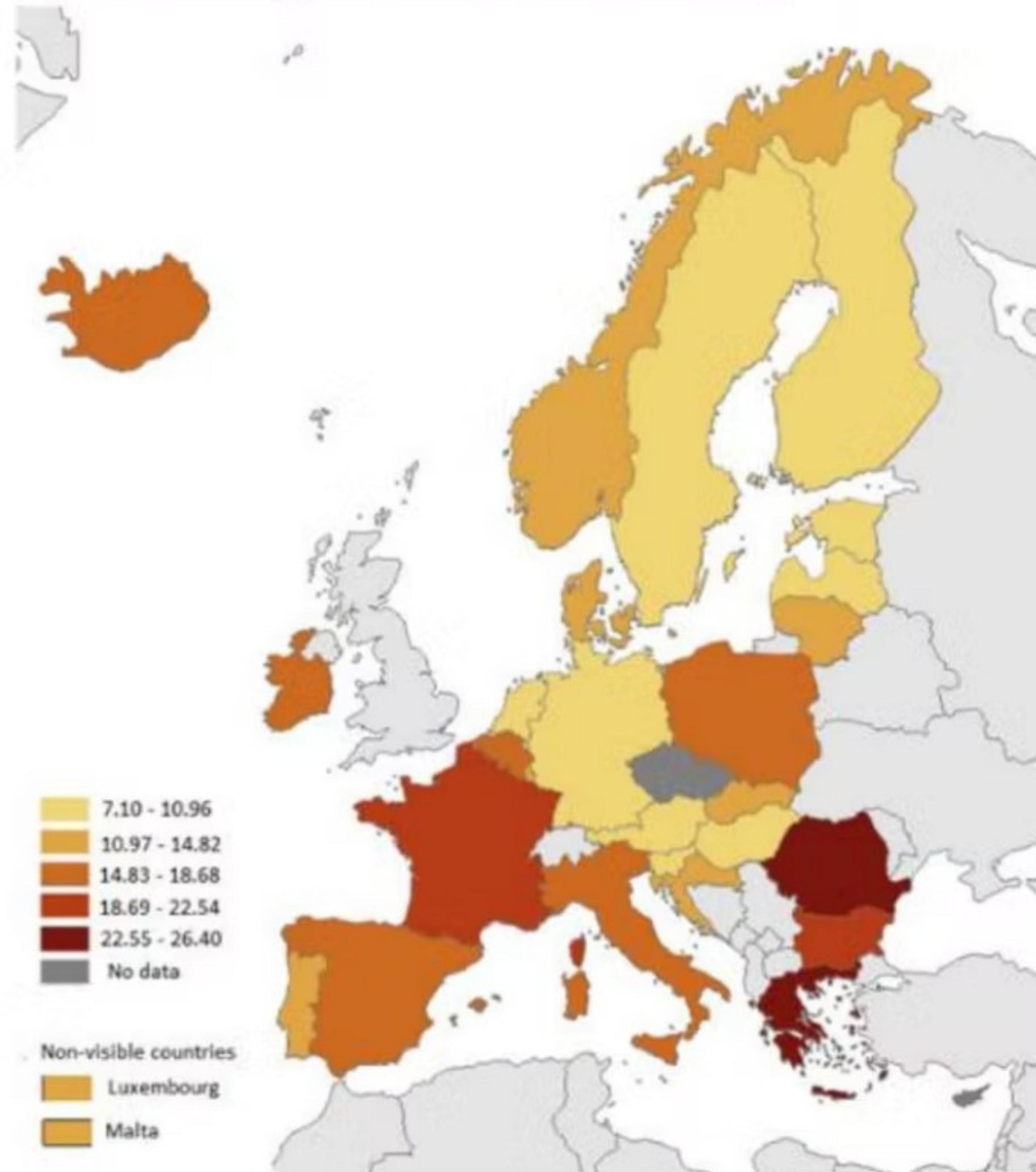
2020 was a “special” year when it comes to antibiotics



From April to August 2020, antimicrobial consumption decreased worldwide by 18.7% ($P < 0.001$) compared with the previous year

Antimicrobial consumption in the EU/EEA (ESAC-Net) 2020

Figure 1. Community consumption of antibacterials for systemic use (ATC group J01), by country, EU/EEA countries, 2020 (expressed as DDD per 1 000 inhabitants per day)



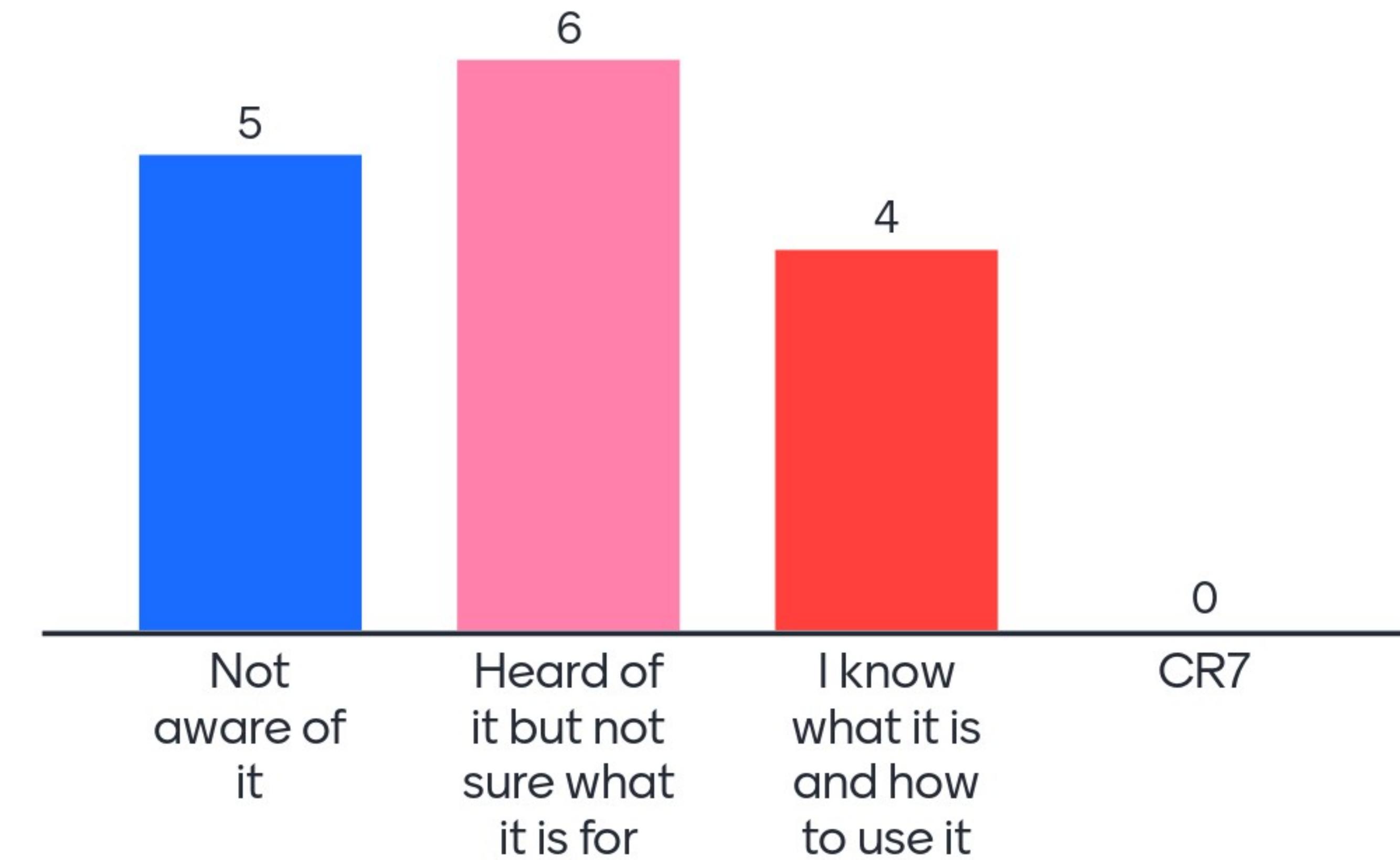
- Mean consumption of antibacterials for systemic use*: **16.4 DDD** per 1000 inhabitants per day
- Country range: 8.5–28.9
 - Variation by a factor of 3.4
- Italy: 18.4 DID



But what
about
quality of
use ?



The AWaRe classification of antibiotics



The WHO Model List of Essential Medicines (EML)

- Updated every two years by the Expert Committee on Selection and Use of Essential Medicines
 - Next Expert Committee Meeting April 2023
- First EML published in 1977
 - First EML for children published in 2007
- Since 2017 extensive update / review of antibiotics on the EML
 - In the context of WHO's global action plan on antimicrobial resistance

1977

First EML

- 16 antibiotics
(of 240 medicines ≈ 7%)

In a report¹ to the Twenty-eighth World Health Assembly in 1975, the Director-General reviewed the main drug problems facing the developing countries and outlined possible new drug policies. The Director-General also referred to the experience gained in some countries where schemes of basic or essential drugs had been implemented. Such schemes were intended to extend the accessibility of the most necessary drugs to those populations whose basic health needs could not be met by the existing supply system. The Director-General pointed out that the selection of these essential drugs would depend on the health needs and on the structure and development of health services of each country, and that lists of essential drugs should be drawn up locally, and periodically updated, with the advice of experts in public health, medicine, pharmacology, pharmacy and drug management. He also considered that adequate information on the properties, indications and use of the drugs listed should be provided. By resolution WHA28.66, the Health Assembly requested the Director-General to implement the proposals contained in his report and, in particular, to advise Member States on the selection and procurement, at reasonable cost, of essential drugs of established quality corresponding to their national health needs.

The selection of essential drugs

Report of a
WHO Expert Committee

Technical Report Series
615



World Health Organization, Geneva 1977

Antibacterial drugs

ampicillin (1) *
benzathine benzylpenicillin (5) *
benzylpenicillin *

chloramphenicol (7) * *
cloxacillin (penicillinase-resistant, 1)
erythromycin *
gentamicin (4) *
phenoxyethylpenicillin *
salazosulfapyridine
sulfadimidine (1)
sulfamethoxazole + trimethoprim *
tetracycline (1, 4) *

Complementary

amikacin (1, 4, 10) *
doxycycline (6, 5) *
procaine benzyl- *
penicillin (7)
sulfadiazine (7, 8) *

* On 2021 EML/c

2021

World Health Organization
Model List of Essential Medicines

22nd List
(2021)



- 22nd EML
- 39 antibiotics
(EMLc 36)
(of 479 medicines ≈ 8%)

SIXTY-EIGHTH WORLD HEALTH ASSEMBLY

Agenda item 15.1

WHA68.7

26 May 2015

Global action plan on antimicrobial resistance

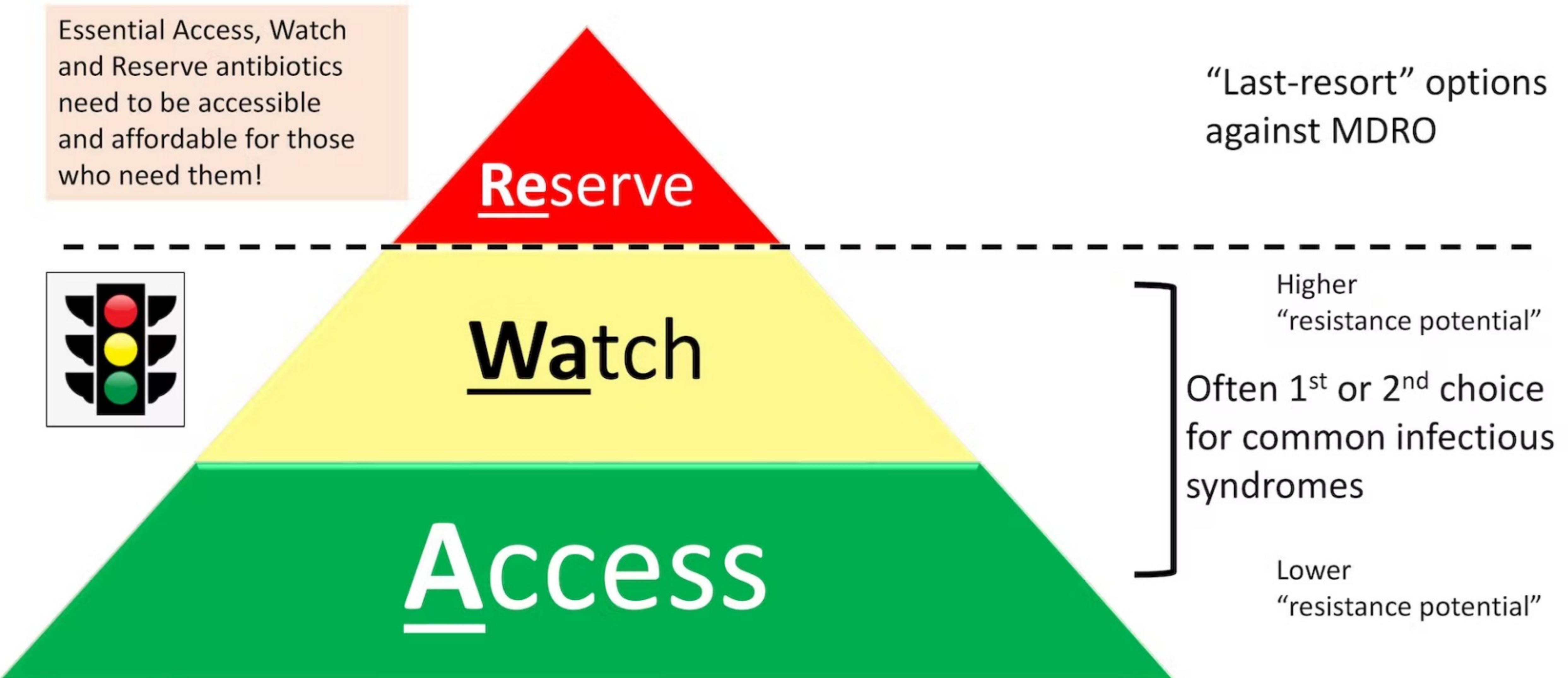
The Sixty-eighth World Health Assembly,

Having considered the summary report on progress made in implementing resolution WHA67.25 on antimicrobial resistance and the report on the draft global action plan on antimicrobial resistance;¹

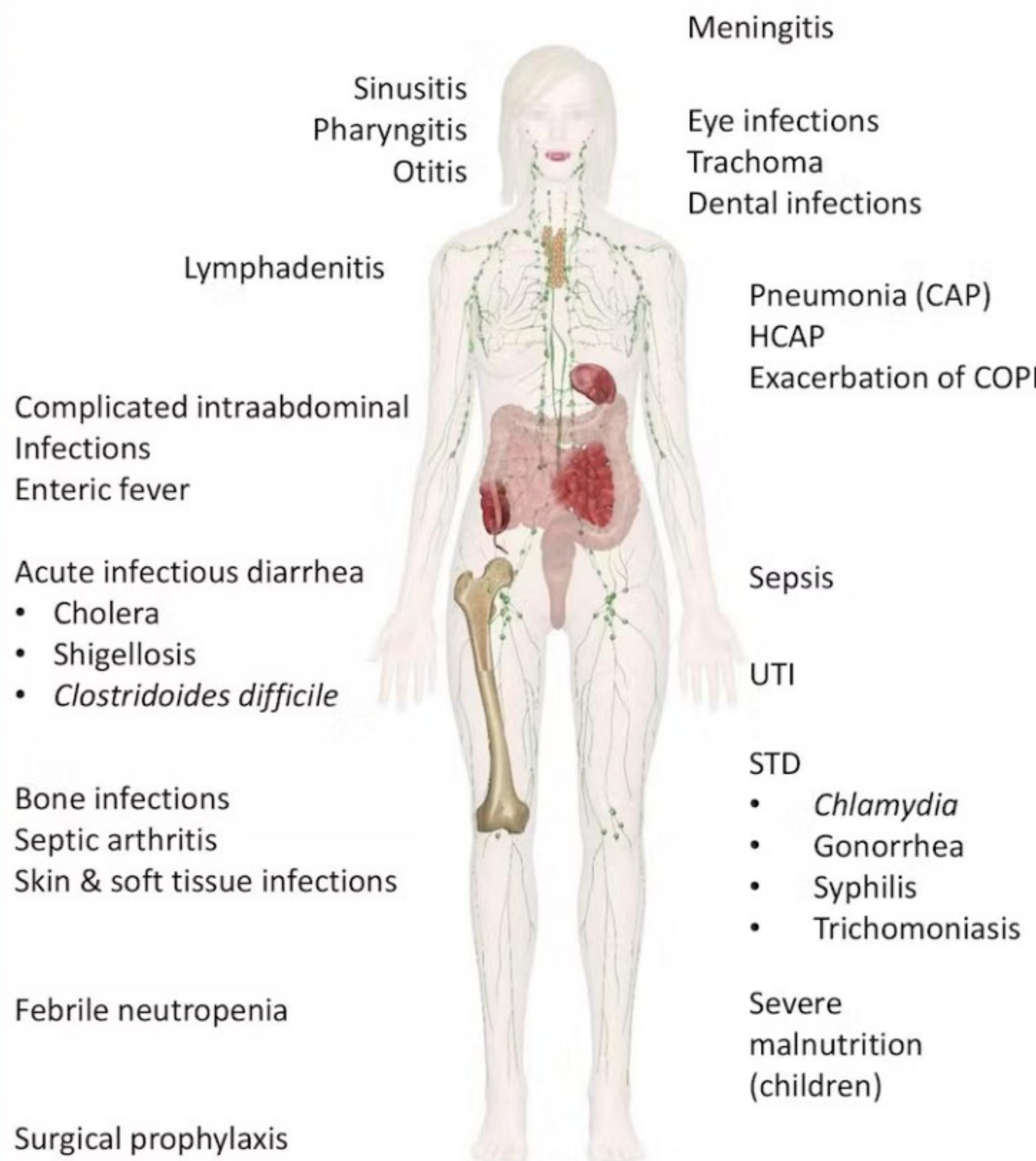
Recalling resolutions WHA39.27 and WHA47.13 on the rational use of drugs, resolution WHA51.17 on emerging and other communicable diseases: antimicrobial resistance, resolution WHA54.14 on global health security: epidemic alert and response, resolution WHA58.27 on improving the containment of antimicrobial resistance, resolution WHA60.16 on progress in the rational use of medicines and resolution WHA66.22 on follow up of the report of the Consultative Expert Working Group on Research and Development: Financing and Coordination and WHA67.25 on antimicrobial resistance;

ACCESS GROUP	WATCH GROUP	RESERVE GROUP
Amikacin Amoxicillin Amoxicillin/clavulanic-acid Ampicillin Benzathine-benzylpenicillin Benzylpenicillin Cefalexin Cefazolin Chloramphenicol Clindamycin Cloxacillin Doxycycline Gentamicin Metronidazole Nitrofurantoin Phenoxymethylpenicillin Procaine-benzylpenicillin Spectinomycin Sulfamethoxazole/TMP Trimethoprim	Azithromycin Cefixime Cefotaxime Ceftazidime Ceftriaxone Cefuroxime Ciprofloxacin Clarithromycin Meropenem Piperacillin/tazobactam Vancomycin (IV) Vancomycin (oral) Cefiderocol Ceftazidime/avibactam Colistin (IV) Fosfomycin (IV) Linezolid Meropenem/vaborbactam Plazomicin Polymyxin B (IV)	

Antibiotics are categorized into three groups

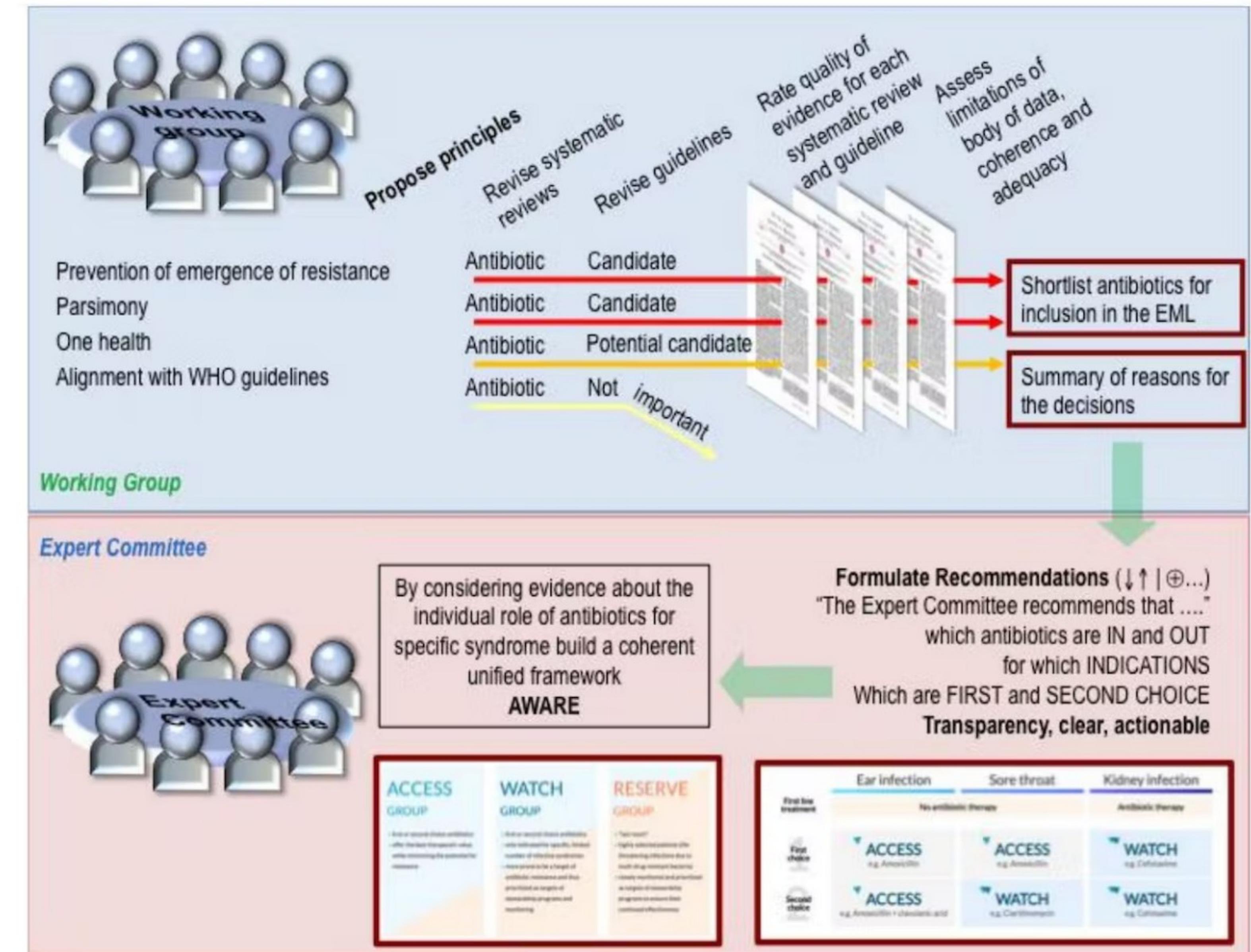


Review of infections



- **Frequent infections**
 - ✓ Mostly community-acquired infections
 - ✓ Mostly empiric use
- **Certain infections by specific pathogens**
 - ✓ Syphilis, cholera, gonorrhea, shigellosis,...
- **Review of systematic reviews and guidelines**

Process for the selection of essential antibiotics



Selection of 1st and 2nd choice antibiotics

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



Initial WHO AWaRe Classification (2017)

Access

Amoxicillin
 Amoxicillin and clavulanic acid
 Ampicillin
 Benzathine benzylpenicillin
 Benzylpenicillin
 Cefalexin or cefazolin
 Chloramphenicol
 Clindamycin
 Cloxacillin
 Doxycycline
 Gentamicin or amikacin
 Metronidazole
 Nitrofurantoin
 Phenoxycephalothin
 Procaine benzylpenicillin
 Spectinomycin
 Sulfamethoxazole and trimethoprim

Core access antibiotics

Watch

Azithromycin
 Cefixime
 Cefotaxime
 Ceftriaxone
 Ciprofloxacin
 Clarithromycin
 Piperacillin and tazobactam
 Meropenem
 Vancomycin

* Antibiotics that are also in the Watch group



Watch

Anti-pseudomonal penicillins with beta-lactamase inhibitor (eg, piperacillin and tazobactam)
 Carbapenems or penems (eg, faropenem, imipenem and cilastatin, meropenem)
 Cephalosporins, third generation (with or without beta-lactamase inhibitor; eg, cefixime, cefotaxime, ceftazidime, ceftriaxone)
 Glycopeptides (eg, teicoplanin, vancomycin)
 Macrolides (eg, azithromycin, clarithromycin, erythromycin)
 Quinolones and fluoroquinolones (eg, ciprofloxacin, levofloxacin, moxifloxacin, norfloxacin)

Reserve

Aztreonam
 Cephalosporins, fourth generation (eg, cefepime)
 Cephalosporins, fifth generation (eg, ceftaroline)
 Daptomycin
 Fosfomycin (intravenous)
 Oxazolidinones (eg, linezolid)
 Polymyxins (eg, colistin, polymyxin B)
 Tigecycline

WHO AWaRe Classification (2019)

- Separation of AWaRe from the EML
- Listing of specific molecules (not classes)
- Classification of most antibiotics classified as “Other” before
- Introduction of a “not recommended” group (e.g. antibiotic combinations without clear indication)
- A further few minor changes in 2021
 - Cefiderocol added as Reserve antibiotic on EML (not EMLc)

Access	
• Amikacin	• Cloxacillin
• Amoxicillin	• Doxycycline
• Ampicillin	• Gentamicin
• Amoxicillin-clavulanic acid	• Metronidazole
• Benzathine benzylpenicillin	• Nitrofurantoin
• Benzylpenicillin	• Phenoxyethyl penicillin
• Cefazolin	• Procaine penicillin
• Chloramphenicol	• Spectinomycin
• Clindamycin	• Sulfamethoxazole-trimethoprim
Watch	
• Azithromycin	• Vancomycin (intravenous* and oral)
• Cefixime	• Ciprofloxacin
• Ceftriaxone	• Clarithromycin
• Cefotaxime	• Meropenem*
• Ceftazidime*	• Piperacillin-tazobactam
• Cefuroxime	
Reserve*	
• Fosfomycin (intravenous)	• Ceftazidime-avibactam
• Linezolid	• Meropenem-vaborbactam
• Colistin	• Plazomicin
• Polymyxin B	

Figure: Antibiotics included in 2019 WHO Essential Medicines List by AWaRe group

*Antibiotics listed in the complementary list of the 2019 WHO Essential Medicines List, indicating the need for specialist supervision.

ACCESS on the 2021 EML

EML Access group antibiotics

- Core set of **20 antibiotics**
 - 1st or 2nd line choice for *empirical* treatment of the priority clinical infection syndromes
- Generally characterized by **narrow-spectrum** (with limited risk of resistance) and/or low toxicity
- Prioritized for use over Watch and Reserve antibiotics
- Should be available everywhere
 - at an appropriate quantity, dose, and formulation

Amikacin
Amoxicillin
Amoxicillin/clavulanic-acid
Ampicillin
Benzathine-benzylpenicillin
Benzylpenicillin
Cefalexin
Cefazolin
Chloramphenicol
Clindamycin
Cloxacillin
Doxycycline
Gentamicin
Metronidazole
Nitrofurantoin
Phenoxymethylenicillin
Procaine-benzylpenicillin
Spectinomycin
Sulfamethoxazole(trimethoprim
Trimethoprim

EML Watch group antibiotics

WATCH on the 2021 EML

- Recommended only for a limited number of specific syndromes – **11 antibiotics**
- AB classes that have a **higher potential to drive bacterial resistance**
 - e.g. fluoroquinolones and macrolides
- These antibiotics are also highest priority agents of CIA List
 - (critically important antimicrobials for human medicine)
- Active stewardship important for optimal (specific) uses
- Active monitoring of Watch antibiotics is encouraged
 - e.g., through point-prevalence surveys as a stewardship tool

Azithromycin
Cefixime
Cefotaxime
Ceftazidime
Ceftriaxone
Cefuroxime
Ciprofloxacin
Clarithromycin (or Erythromycin)
Meropenem (or Imipenem)
Piperacillin + tazobactam
Vancomycin (IV & PO)

EML Reserve group antibiotics

- Currently **8 “last-resort” antibiotics** on EML
 - proven activity against critical and high priority pathogens (according to WHO PPL)
- Restricted to use in specific patients and clinical settings
 - such as life-threatening infections with MDR- or XDR-resistant bacteria
 - when all Access or Watch group alternatives have failed or not suitable
- Key targets of high intensity national and international stewardship programs
- New antibiotics are likely (but not automatically) to be placed in this group

RESERVE on the 2021 EML

Cefiderocol
Ceftazidime/avibactam
Colistin (IV)
Fosfomycin (IV)
Linezolid
Meropenem/vaborbactam
Plazomicin
Polymyxin-B (IV)

Not-recommended antibiotics (Fixed-dose combinations)

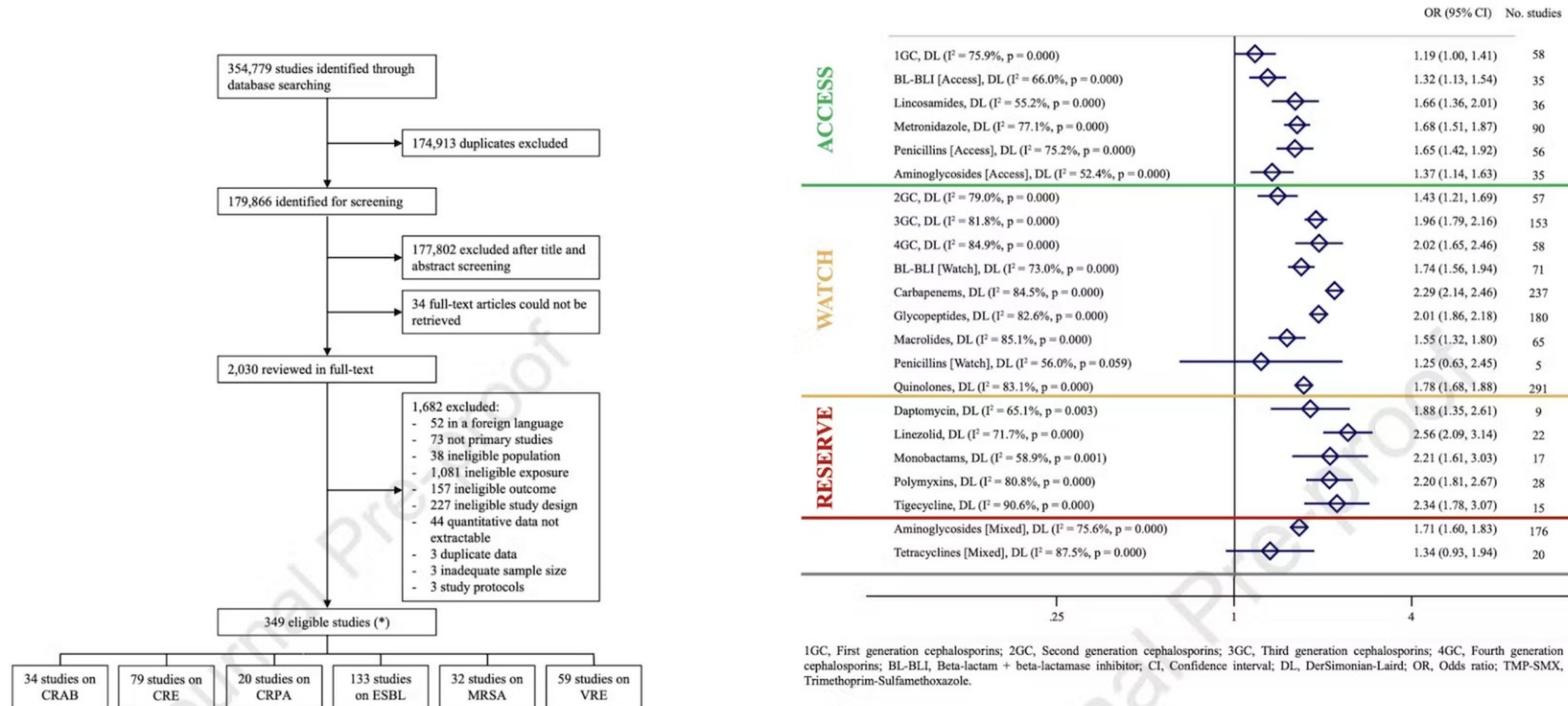
Table 1. Categories of antibiotic Fixed Dose Combinations (FDCs).

FDC types	Standard Unite sold	Number of FDCs
Aminopenicillin /β-lactamase inhibitor // other agents	8.60 x 10 ⁹	8
Sulphonamides/trimethoprim+/- other agents	3.62 x 10 ⁹	9
Aminopenicillin / β-lactamase resistant penicillin +/- other agents	1.54 x 10 ⁹	21
Antipseudomonal penicillin /β-lactamase inhibitor	0.95 x 10 ⁹	4
3 rd -4 th -5 th gen. cephalosporins /β-lactamase inhibitor +/- other agents	0.55 x 10 ⁹	15
Cephalosporins / fluoroquinolones	0.40 x 10 ⁹	6
1 st -2 nd gen. cephalosporins / β-lactamase inhibitor +/- other agents	0.26 x 10 ⁹	8
Macrolide/ 5-nitroimidazole	0.24 x 10 ⁹	3
Macrolide/cephalosporin+/-other agents	0.21 x 10 ⁹	3
Cephalosporin/ β-lactamase resistant penicillin +/- other agents	0.10 x 10 ⁹	7
Cephalosporin/trimethoprim	0.09 x 10 ⁹	2
Cephalosporin/oxazolidinone	0.04 x 10 ⁹	2
Fluoroquinolone/ 5-nitroimidazole	0.04 x 10 ⁹	8
Macrolide / fluoroquinolone +/- other agents	0.04 x 10 ⁹	2
Cephalosporin/5-nitroimidazole	0.03 x 10 ⁹	1
Other combinations	0.01 x 10 ⁹	20

- Analysis of IQVIA-MIDAS® data for antibiotic FDCs from 75 countries in 2015
- 22% of total antibiotic consumption in 2015
- 92% (110/119) were not approved by the US FDA
- >80% not compatible with EML

What is the
evidence base for
AWaRe ?

Risk of resistance by AWaRe category: results from a systematic review



* Eight studies reported on two different pathogens

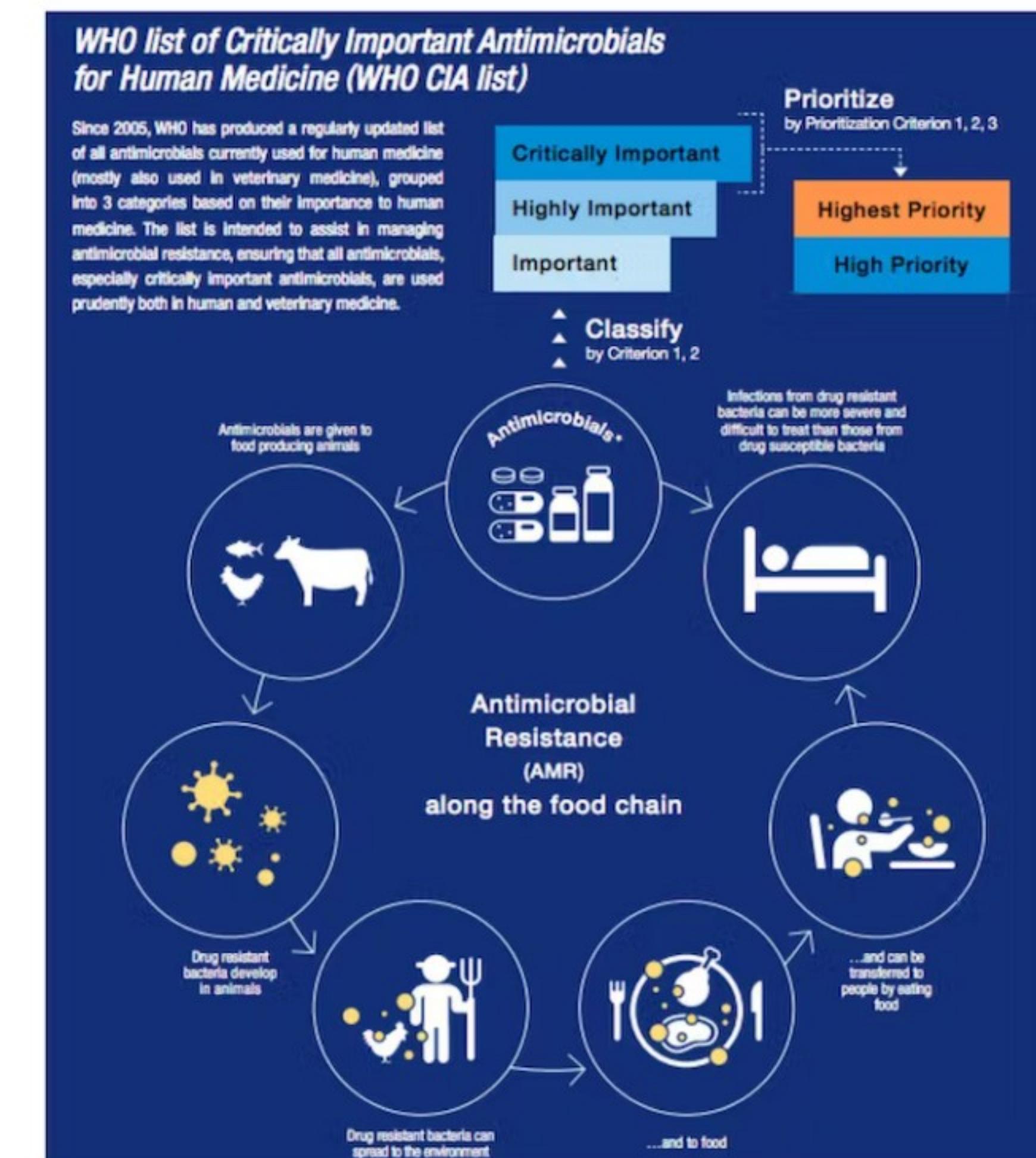
One Health



Overlap with critically important antibiotics

Critically Important

Antimicrobial class	Criterion (Yes = ●)				
	C1	C2	P1	P2	P3
CRITICALLY IMPORTANT ANTIMICROBIALS					
<i>HIGHEST PRIORITY</i>					
Cephalosporins (3 rd , 4 th and 5 th generation)	●	●	●	●	●
Glycopeptides	●	●	●	●	●
Macrolides and Ketolides	●	●	●	●	●
Polymyxins	●	●	●	●	●
Quinolones	●	●	●	●	●
<i>HIGH PRIORITY</i>					
Aminoglycosides	●	●		●	●
Ansamycins	●	●	●	●	
Carbapenems and other penems	●	●	●	●	
Glycylcyclines	●	●	●		
Lipopeptides	●	●	●		
Monobactams	●	●	●		
Oxazolidinones	●	●	●		
Penicillins (natural, aminopenicillins, and antipseudomonal)	●	●		●	●
Phosphonic acid derivatives	●	●	●	●	
Drugs used solely to treat tuberculosis or other mycobacterial diseases					



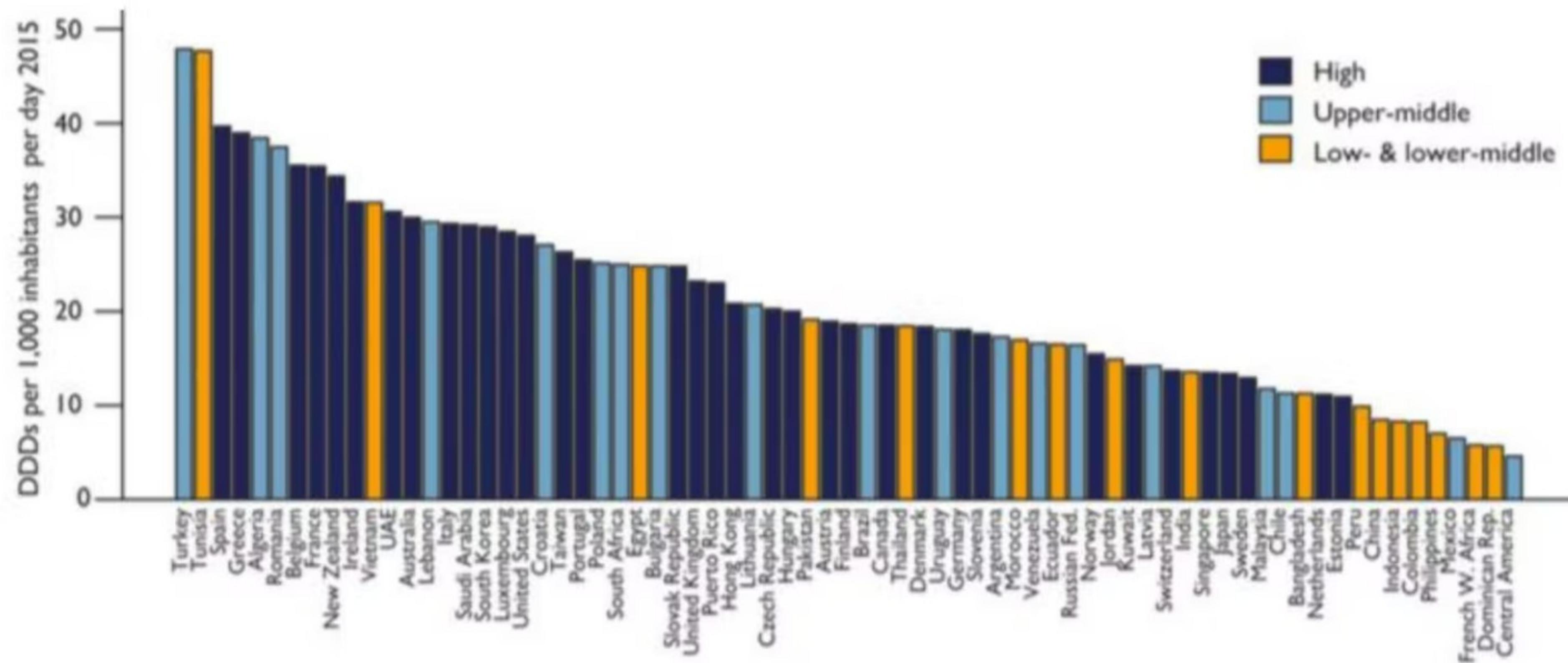


Adopt AWaRe:
Handle antibiotics
with care.

How to adopt AWaRE

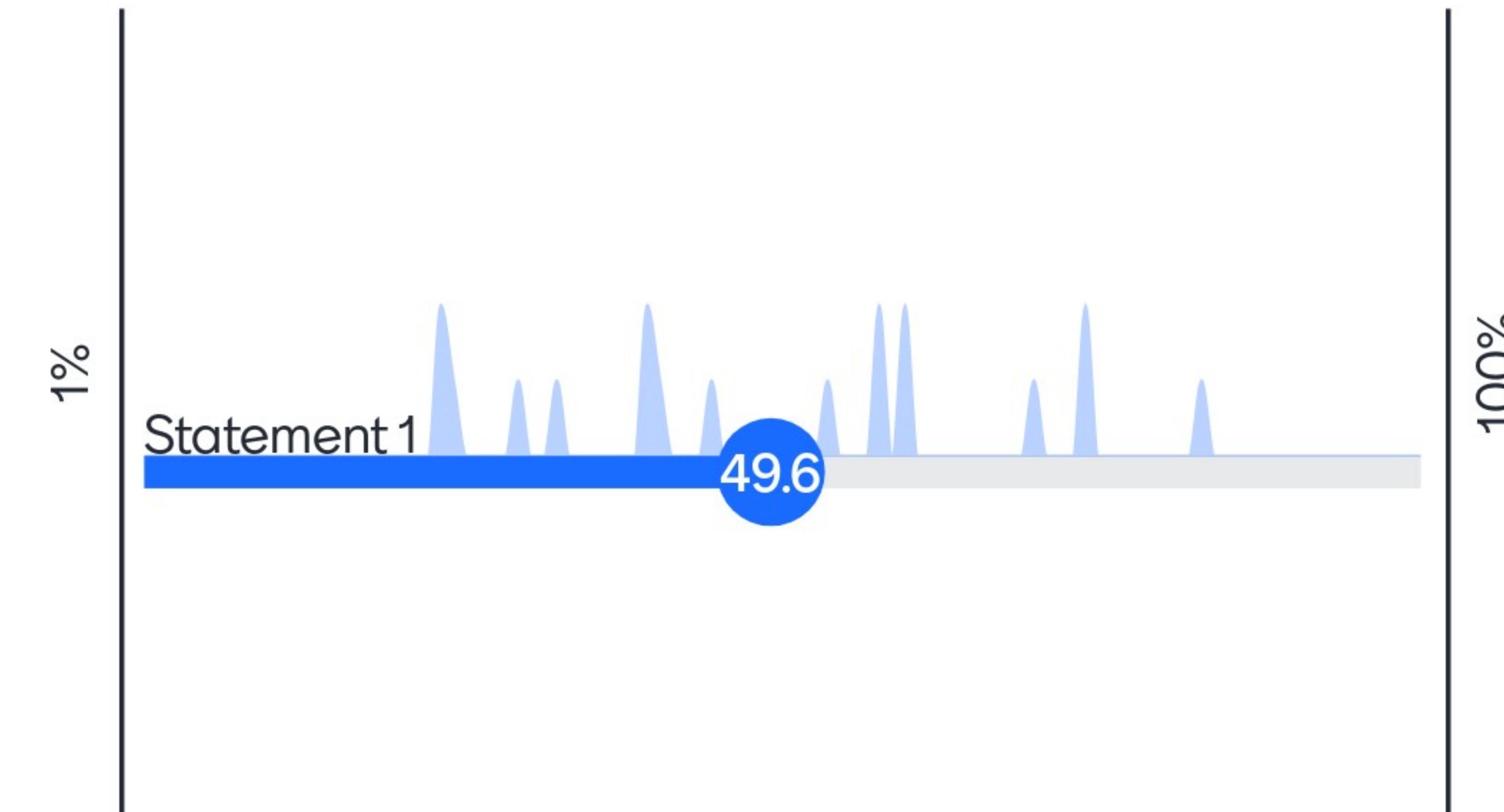
AWaRe for monitoring antibiotic use

- AWaRe is a relatively “easy” tool that offers more than overall antibiotic use or more conventional classifications (such as broad- vs. narrow-spectrum antibiotics)



GOOD HEALTH AND WELL-BEING

What would you consider a "reasonable" target for Access antibiotic use (as % of overall antibiotic use)



WHO's 13th General Program of Work antibiotic use indicator

- **Access** group antibiotics at **≥60%** of overall antibiotic consumption

ACCESS GROUP	WATCH GROUP	RESERVE GROUP
Amikacin Amoxicillin Amoxicillin/clavulanic-acid Ampicillin Benzathine-benzylpenicillin Benzylpenicillin Cefalexin Cefazolin Chloramphenicol Clindamycin Cloxacillin Doxycycline Gentamicin Metronidazole Nitrofurantoin Phenoxycephalosporin Procaine-benzylpenicillin Spectinomycin Sulfamethoxazole/TMP Trimethoprim	Azithromycin Cefixime Cefotaxime Ceftazidime Ceftriaxone Cefuroxime Ciprofloxacin Clarithromycin Meropenem Piperacillin/tazobactam Vancomycin (IV) Vancomycin (oral) Cefiderocol Ceftazidime/avibactam Colistin (IV) Fosfomycin (IV) Linezolid Meropenem/vaborbactam Plazomicin Polymyxin B (IV)	Antibiotics on the WHO model list of essential medicines - 22nd list, 2021

Variations in the Consumption of Antimicrobial Medicines in the European Region, 2014-2018: Findings and Implications from ESAC-Net and WHO Europe

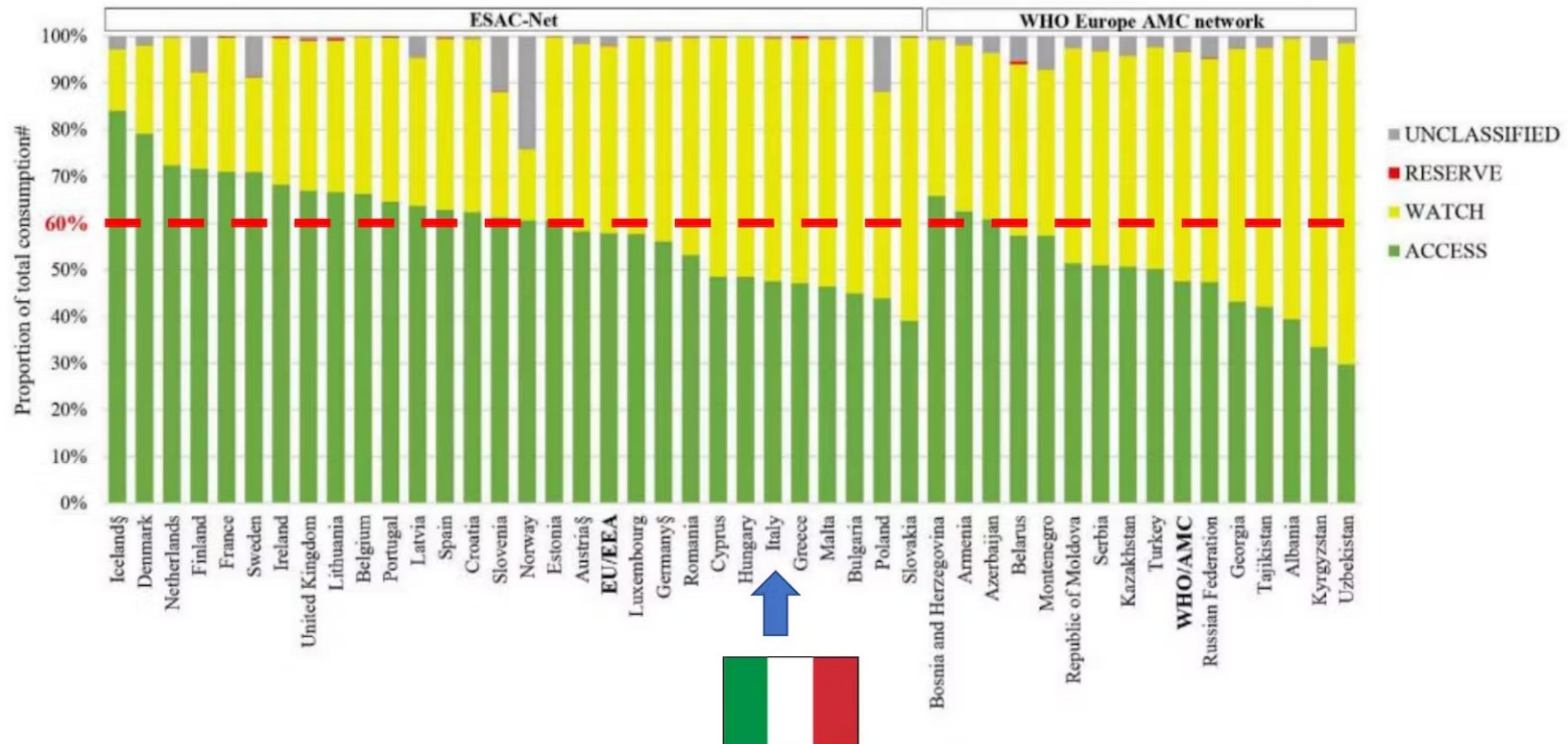


FIGURE 3 | Patterns of consumption of antibacterials according to the AWaRe classification of antimicrobial agents, 2018.
AWaRe: Access, Watch and Reserve classification of antimicrobials (World Health Organization 2019).

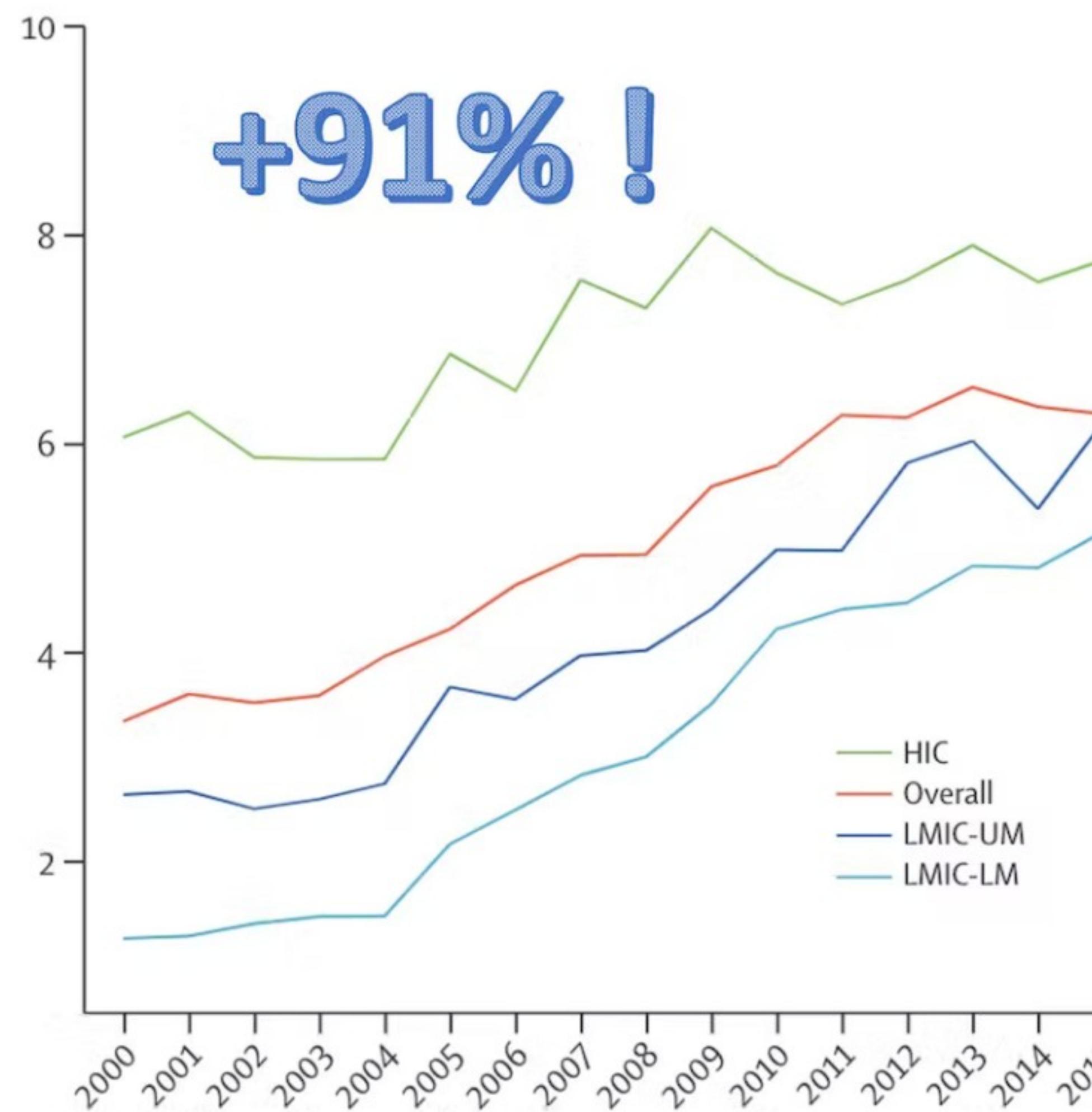
The 60% target is conservative!

Variations in the Consumption of Antimicrobial Medicines in the European Region, 2014-2018:
Findings and Implications from ESAC-Net and WHO

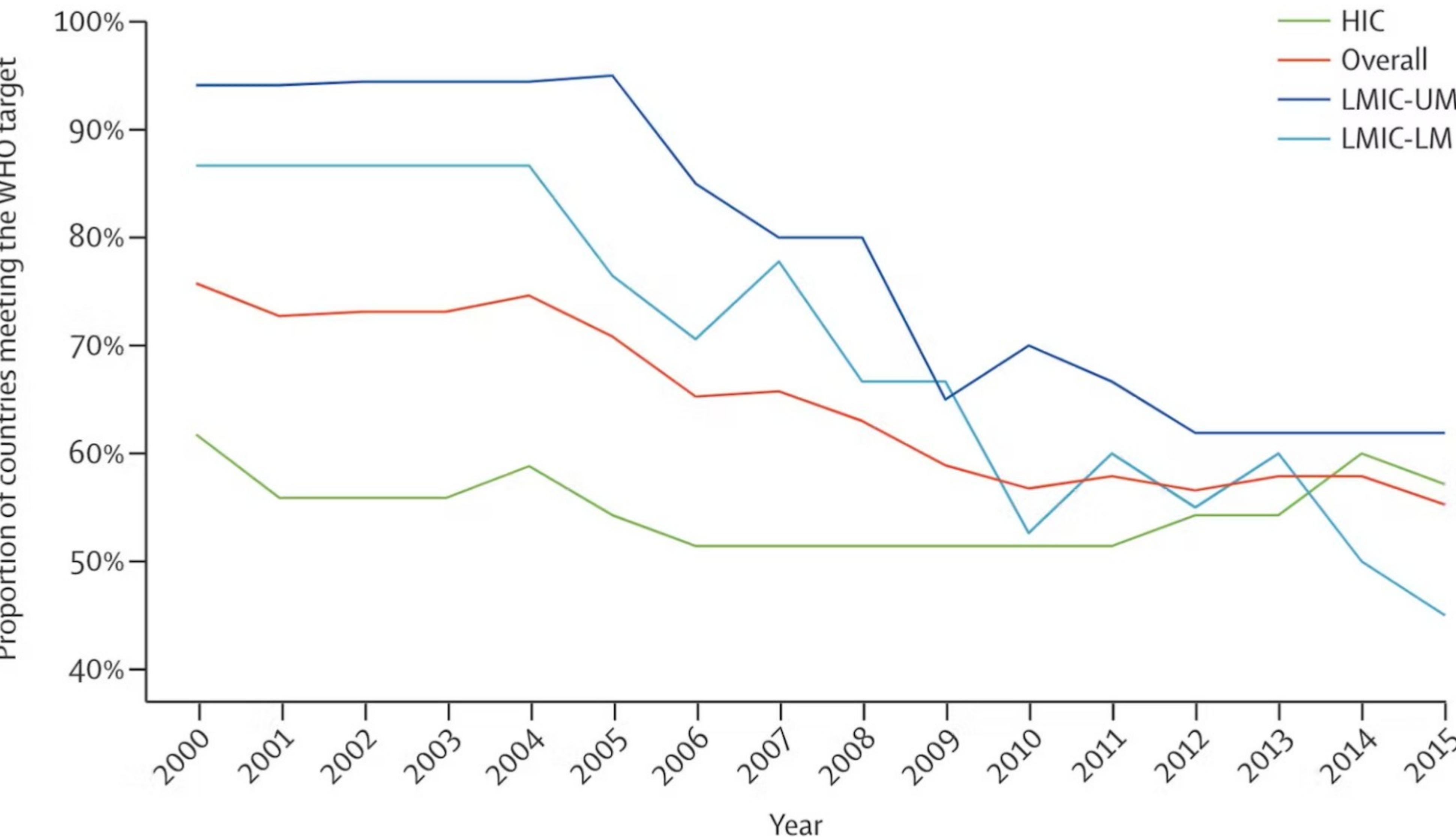
Country	Access agents as proportion (%) of total consumption ^a				
	2014	2015	2016	2017	2018
ESAC-Net					
Austria	57	57	58	58	58
Belgium	57	57	58	61	66
Bulgaria	49	46	44	45	45
Croatia	61	63	65	63	62
Cyprus	55	52	48	49	49
Czechia	61	60			
Denmark	78	79	79	79	79
Estonia	59	58	60	59	61
Finland	71	72	72	73	72
France	66	68	70	71	71
Germany	52	51	52	54	56
Greece	40	44	48	46	47
Hungary	49	48	48	48	49
Iceland	84	83	82	83	84
Ireland	62	66	65	65	68
Italy	46	47	48	48	48
Latvia	69	68	68	65	64
Lithuania	70	70	69	68	67
Luxembourg	53	54	53	47	58
Malta	43	43	46	49	46
Netherlands	71	72	71	71	72
Norway	63	63	62	61	61
Poland	64	63	61	59	44
Portugal	60	59	60	64	65
Romania	56	58	56	54	53
Slovakia	47	43	46	42	39
Slovenia	60	63	63	61	61
Spain	63	63	63	63	63
Sweden	71	70	71	71	71
United Kingdom	65	65	66	66	67

Infection (in alphabetical order)	Can it be safely treated without antibiotics?	Type of antibiotic (if indicated)
Bronchitis	Yes	
COPD exacerbations	Yes, in most mild cases	Access
Dental infections	Yes, in most mild cases	Access
Otitis media	Yes, in most mild cases	Access
Pharyngitis	Yes, in most mild cases	Access
Sinusitis	Yes, in most mild cases	Access
Skin and soft tissue infections (mild)	Only for certain conditions and in certain patients	Access
Urinary tract infection (lower)	Only in a few patients with no risk factors for complicated infections	Access

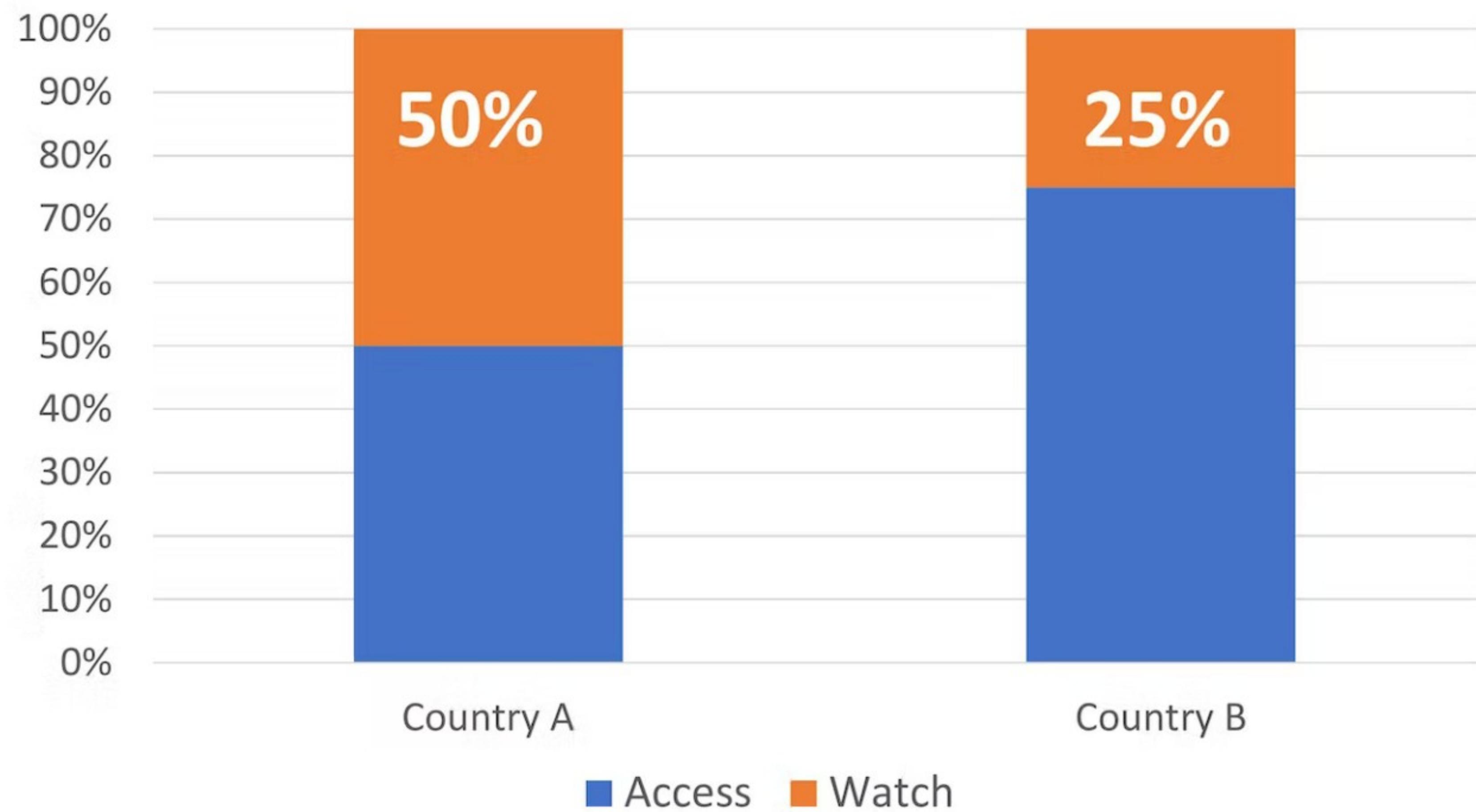
Absolute consumption of Watch antibiotics, 2000–15



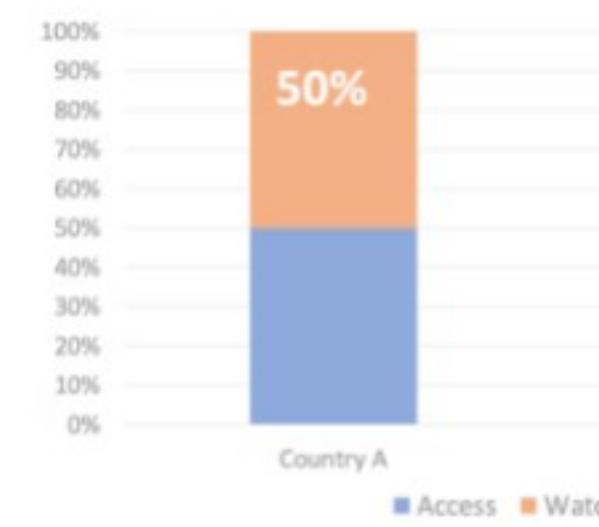
Proportion of countries that met the WHO target of at least 60% Access antibiotics in total antibiotic consumption, stratified by income level, 2000–15



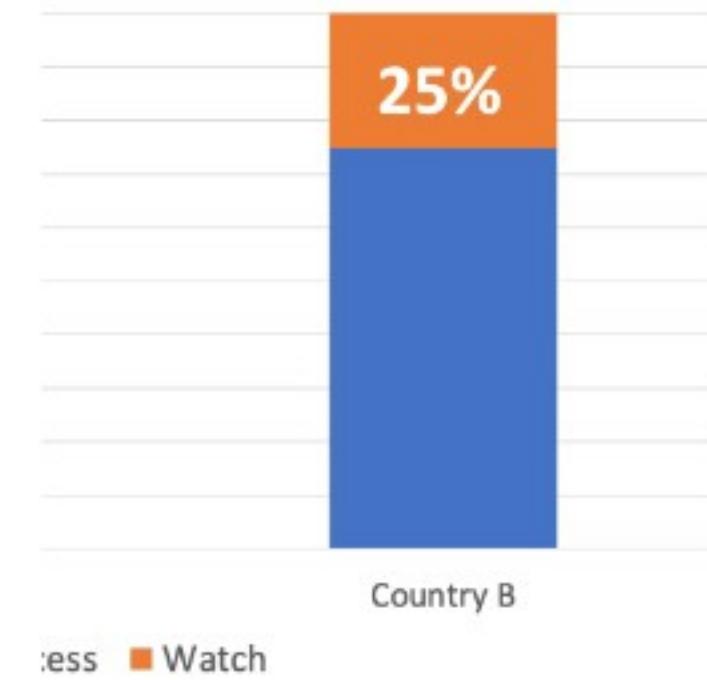
Relative use



Which country has the "better" antibiotic use ?



Country A



Country B



Overall use also needs to be considered

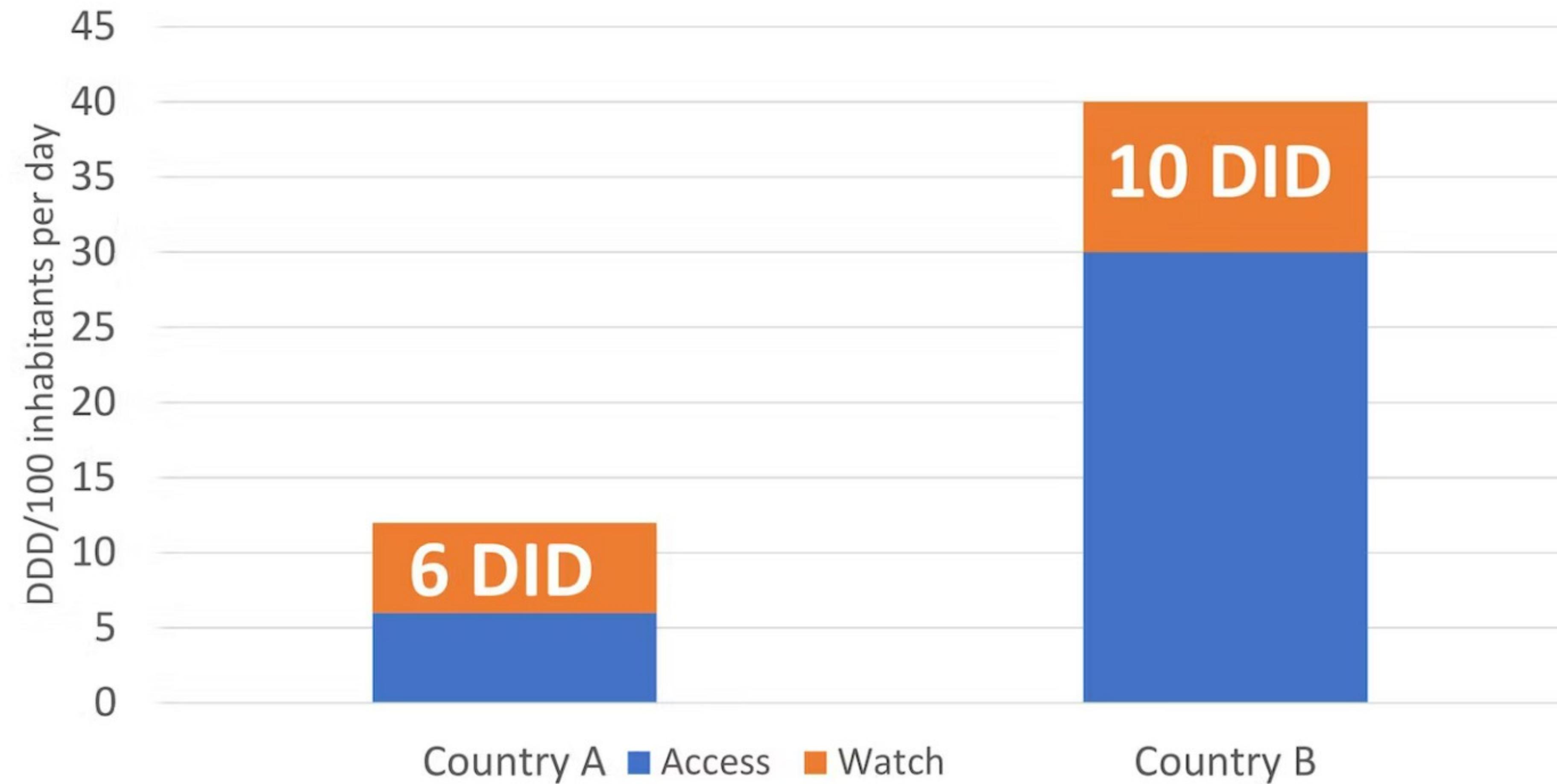


Table 1. Recategorization of antibiotics within the AWaRe index for use in English national stewardship policy

ATC name	ATC code	AWaRe WHO	AWaRe England	Rationale for movement
Amikacin	J01GB06	Access	Watch	antibiotic used for resistant Gram-negative infections
Amoxicillin and enzyme inhibitor	J01CR02	Access	Watch	to avoid overuse as resistance increasing and associated with increased risk of <i>C. difficile</i> infections
Ampicillin combinations	J01CA51	Other	Access	similar category as amoxicillin; rare use
Cefaclor	J01DC04	Other	Watch	associated with increased risk of <i>C. difficile</i> infections
Cefadroxil	J01DB05	Other	Watch	associated with increased risk of <i>C. difficile</i> infections
Cefalexin	J01DB01	Access	Watch	associated with increased risk of <i>C. difficile</i> infections
Cefamandole	J01DC03	Other	Watch	associated with increased risk of <i>C. difficile</i> infections
Cefazolin	J01DB04	Access	Watch	associated with increased risk of <i>C. difficile</i> infections
Cefoxitin	J01DC01	Other	Watch	associated with increased risk of <i>C. difficile</i> infections
Cefprozil	J01DC10	Other	Watch	associated with increased risk of <i>C. difficile</i> infections
Cefradine	J01DB09	Other	Watch	associated with increased risk of <i>C. difficile</i> infections
Cefuroxime	J01DC02	Other	Watch	associated with increased risk of <i>C. difficile</i> infections
Ceftazidime and enzyme inhibitor	J01DD52	Watch	Reserve	novel combination reserved for treatment failures
Chloramphenicol	J01BA01	Access	Watch	second-line antibiotic, use in penicillin allergy
Clindamycin	J01FF01	Access	Watch	associated with increased risk of <i>C. difficile</i> infections
Dalbavancin	J01XA04	Watch	Reserve	novel antibiotic reserved for treatment failures and OPAT
Doripenem	J01DH04	Watch	Reserve	reserved to conserve use for resistant Gram-negative infections
Ertapenem	J01DH03	Watch	Reserve	reserved to conserve use for resistant Gram-negative infections
Fosfomycin (oral)	J01XX01	Other	Access	narrow spectrum, recommended for uncomplicated UTI
Fusidic acid	J01XC01	Other	Access	narrow spectrum
Imipenem	J01DH51	Watch	Reserve	reserved to conserve use for resistant Gram-negative infections
Lymecycline	J01AA04	Other	Watch	used for acne, alternative non-antimicrobial drugs available
Meropenem	J01DH02	Watch	Reserve	reserved to conserve use for resistant Gram-negative infections
Minocycline	J01AA08	Other	Watch	used for acne, alternative non-antimicrobial drugs available
Neomycin	J01GB05	Other	Access	not routinely used in England, monitor carefully for change in use
Oxytetracycline	J01AA06	Other	Watch	used for acne, alternative non-antimicrobial drugs available
Piperacillin	J01CA12	Other	Watch	avoid overuse as resistance increasing
Pivmecillinam	J01CA08	Other	Access	narrow spectrum, recommended for uncomplicated UTI
Pristinamycin	J01FG01	Other	Watch	not routinely used in England, monitor carefully for change in use
Quinupristin	J01FG02	Other	Watch	not routinely used in England, monitor carefully for change in use
Telavancin	J01XA03	Watch	Reserve	not routinely used in England, monitor carefully for change in use
Temocillin	J01CA17	Other	Watch	antibiotic used for resistant Gram-negative infections
Tetracycline	J01AA07	Other	Access	narrow spectrum, recommended in treatment guidelines
Ticarcillin	J01CA13	Other	Watch	not routinely used in England, monitor carefully for change in use
Tobramycin	J01GB01	Other	Watch	antibiotic used for resistant Gram-negative infections
Tetracycline combinations	J01AA20	Other	Watch	used for acne, alternative non-antimicrobial drugs available

Any antibiotics categorized as both Access and Watch within the WHO AWaRe index were automatically classified as Watch antibiotics for UK stewardship purposes. The rationale for all other reclassifications is presented in this table. OPAT, outpatient parenteral antimicrobial therapy.

Some countries adapted AWaRe

International comparison goodbye?



Appropriate use is about more than the choice of the antibiotic

 **Model List of Essential Medicines**

Found 26 recommendations for 2 medicines and 0 therapeutic equivalents
Removed medicines and rejected applications are not shown. [Show them](#).

Section	Indications
Access group antibiotics	First choice
Oral > Liquid: 125 mg per 5 mL (as trihydrate) powder for oral liquid; 250 mg per 5 mL (as trihydrate) powder for oral liquid	Acute malnutrition in infants, children or adolescents (uncomplicated) [children]
Oral > Solid: 250 mg (as trihydrate); 500 mg (as trihydrate)	Acute malnutrition in infants, children or adolescents (complicated) [children]
PARENTERAL > General injections > unspecified: 250 mg in vial (as sodium) powder for injection; 500 mg in vial (as sodium) powder for injection; 1 g in vial (as sodium) powder for injection	Bacterial pneumonia (Community-acquired pneumonia - mild to moderate)
	Infectious cystitis
	Acute otitis media
	Periapical abscess without sinus

Diagnosis ?
Dose ?
Duration ?

The WHO AWARE Antibiotic Book



Community-Acquired Pneumonia

Page 1 of 2

Definition

An acute illness affecting the lungs usually presenting with cough, and rapid and difficult breathing with a new or worsening pulmonary infiltrate on a chest radiograph.

Most Likely Pathogens

- "Typical" Bacteria:**
 - Streptococcus pneumoniae* (most common cause of CAP beyond the 1st week of life)
 - Haemophilus influenzae*
 - Moraxella catarrhalis*
 - Staphylococcus aureus*
 - Enterobacteriales*
- "Atypical" Pathogens (more frequent in children >5 years compared to younger children):**
 - Mycoplasma pneumoniae*
 - Chlamydia pneumoniae*
- Respiratory Viruses:**
 - Influenza viruses (A and B)
 - Parainfluenza virus
 - Respiratory syncytial virus (RSV)
 - Adenovirus
 - Metapneumovirus
 - Rhinovirus
 - Coronavirus (including SARS-CoV-2)

Investigating for Tuberculosis (TB)

- Consider specific investigations for TB in endemic settings especially in high-risk patients (e.g. HIV)
- A rapid molecular test performed on a single sputum specimen is the preferred first line diagnostic test for pulmonary TB and to detect rifampicin resistance



Community-Acquired Pneumonia



Community-Acquired Pneumonia

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Severity Assessment and Considerations

Children with pneumonia:

- Should be treated with oral amoxicillin at home with home care advice
- Pneumonia is diagnosed on either:
 - Fast breathing (respiratory rate > 50 breaths/minute in children aged 2-11 months; resp rate > 40 breaths/min in children aged 1-5 years)
 - Chest indrawing

Children with **severe pneumonia** (or a child with pneumonia who cannot tolerate oral antibiotics):

- Should be admitted to hospital and treated with intravenous antibiotics
- Severe pneumonia is diagnosed on either:
 - A cough or difficulty in breathing plus one of:
 - Oxygen saturation below 90%
 - Central cyanosis
 - Severe respiratory distress (e.g. grunting or severe chest indrawing)
 - Signs of pneumonia with a general danger sign:
 - Inability to drink or breast feed
 - Persistent vomiting
 - Convulsions
 - Lethargy or unconsciousness
 - Severe respiratory distress

Treatment

Rx Severe Cases

Please see Severity Assessment and Considerations for diagnosis of severe cases
All dosages are for normal renal function

First Choice

Amoxicillin 50 mg/kg/dose IV/IM	<ul style="list-style-type: none"> <1wk of life: q12h >1wk of life: q8h
OR	
Amoxicillin 50 mg/kg/dose IV/IM	<ul style="list-style-type: none"> <1wk of life: q12h >1wk of life: q8h
OR	
Benzylpenicillin 30 mg/kg (50 000 IU/kg) q8h IV	

COMBINED WITH

Gentamicin IV/IM	<ul style="list-style-type: none"> Neonate: 5 mg/kg/dose q24h Children: 7.5 mg/kg/dose q24h
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If HIV POSITIVE AND <1 YR OLD
To treat potential *Pneumocystis jirovecii* pneumonia, ADD

Sulphamethoxazole+trimethoprim 40 mg/kg SMX+8 mg/kg TMP q8h IV/ORAL for 3 weeks	
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Second Choice
If NO Clinical Response to First Choice after 48-72 hours

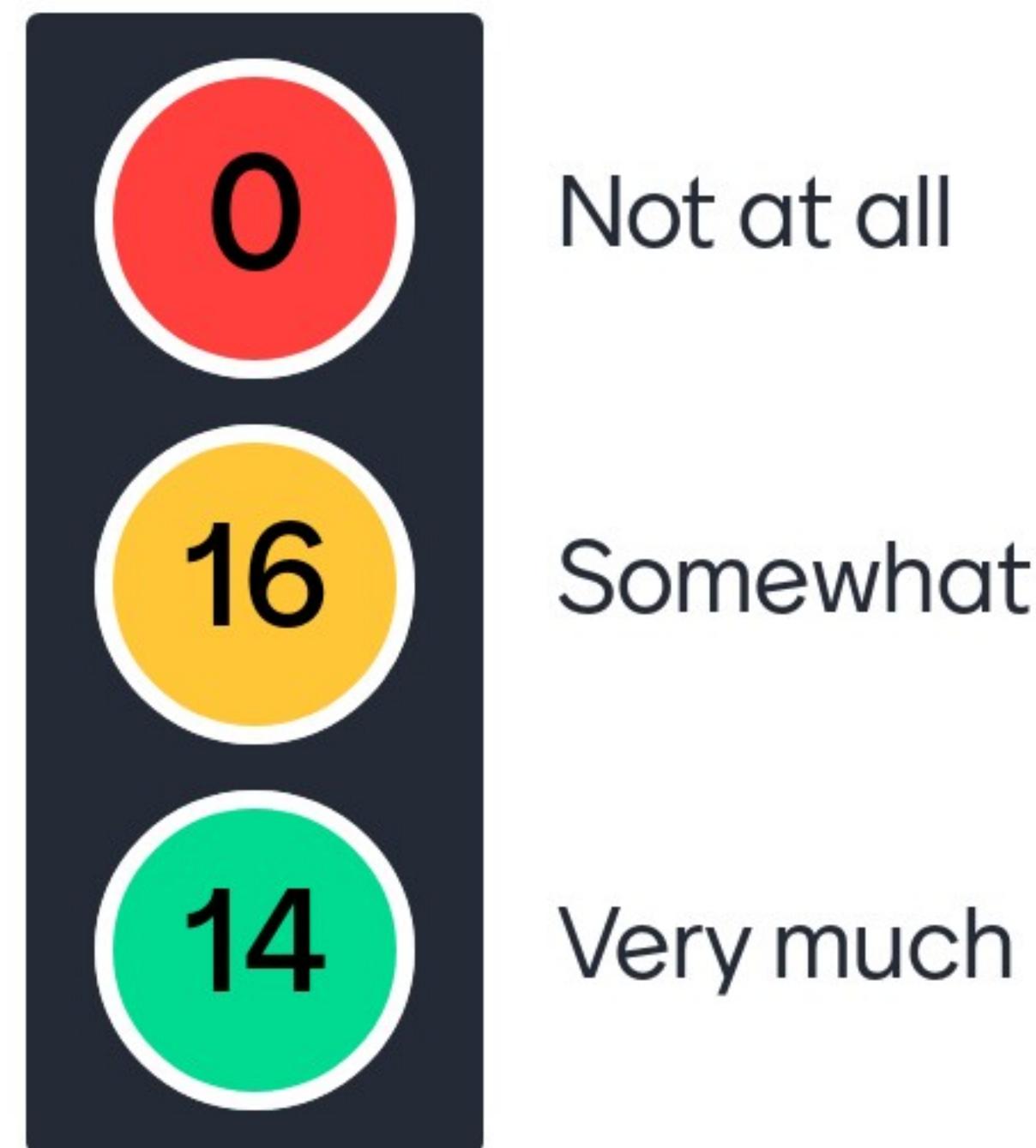
Cefotaxime 50 mg/kg/dose q8h IV/IM	
OR	
Ceftriaxone 80 mg/kg/dose q24h IV/IM	

Rx Mild to Moderate Cases

All dosages are for normal renal function

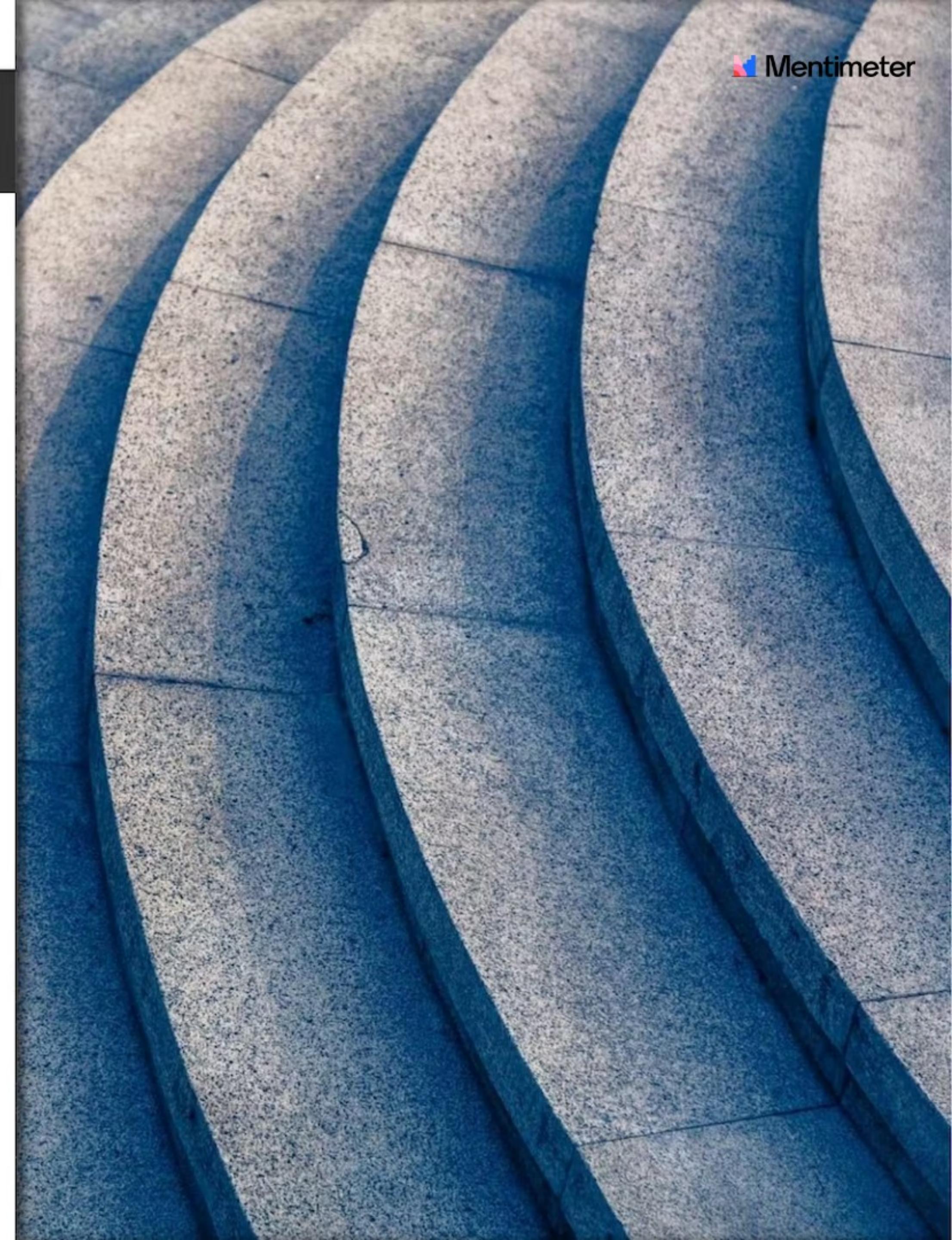
Amoxicillin 40-50 mg/kg/dose q12h ORAL	<ul style="list-style-type: none"> Oral weight bands:
3-<6 kg	125 mg q12h
6-<10 kg	250 mg q12h
10-<15 kg	500 mg q12h
15-<20 kg	750 mg q12h
20-<30 kg	1000 mg q12h
≥30 kg	Use adult dose

How familiar do you feel now with AWaRe?



AWaRe - Next steps

- ✓ Launch of the WHO AWaRe antibiotic book
 - November 2022
- ✓ Further elaboration of implementation plan
 - including research to improve evidence base
 - in close collaboration with WHO regional/country offices, countries, ...
- ✓ Update of AWaRe
 - ✓ Refined definition of Reserve
- ✓ Preparation of potential updates for 2023
- ✓ Development of new indicators
- ✓



Grazie !



Antibiotics
Antivirals
Antifungals
Antiparasitics

Ask me anything

0 questions
0 upvotes

