MDsnapshot Prescribing

MD Snapshot-Prescribing Educational Resource

MD Snapshot-Prescribing: Are you aware of AWaRe?

Why is antimicrobial resistance one of the World Health Organization's areas of focus?

Antimicrobial resistance (AMR) is a threat to global public health, estimated to contribute to more than five million deaths globally each year (Antimicrobial Resistance Collaborators, 2022). The misuse and excessive use of antibiotics are leading to a worldwide rise in AMR, which in turn severely undermines the efficacy of these essential drugs. Additionally, the inadequate investment into the research and development of new antimicrobials has prompted the World Health Organization (WHO) to identify AMR as one of the 10 most significant global public health challenges (World Health Organization, 2023a).

What is WHO doing to address AMR?

The WHO supports antimicrobial stewardship programs to improve the surveillance of AMR and reduce inappropriate antibiotic consumption. For this reason, they developed the AWaRe classification of antibiotics, categorizing them into three groups—Access, Watch and Reserve—to curb AMR and aid in creating tools for antibiotic stewardship at local, national, and global levels (World Health Organization, 2023b).

This classification emphasizes the appropriate use of antibiotics based on their clinical importance and the risk of their use promoting resistance. In 2019, the WHO Expert Committee on Selection and Use of Essential Medicines recommended that the AWaRe classification be applied to all commonly used antibiotics globally (World Health Organization, 2019).

What antibiotics are included in the three categories?

ACCESS Group

The ACCESS Group includes antibiotics with activity against a wide range of commonly encountered susceptible pathogens, while also showing lower resistance potential than antibiotics in the other groups. Selected ACCESS Group antibiotics are recommended as essential first or second-choice empiric treatment options for infectious syndromes reviewed by the EML Expert Committee. They are listed as individual medicines on the Model Lists of Essential Medicines, to improve access and promote appropriate use (World Health Organization, 2024a).

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The **ACCESS Group antibiotics** marketed in Canada (for human use) are:

Amikacin
Amoxicillin
Amoxicillin-clavulanic acid
Ampicillin
Benzathine-benzylpenicillin
Benzylpenicillin (penicillin G)
Cefadroxil
Cephalexin (cefalexin)
Cefazolin
Chloramphenicol
Clindamycin
Cloxacillin
Doxycycline
Gentamicin
Metronidazole IV
Metronidazole Oral
Nitrofurantoin
Phenoxymethylpenicillin (penicillin V)
Sulfadiazine topical only (e.g., Flamazine)
Sulfamethoxazole/trimethoprim
Tetracycline
Trimethoprim

WATCH Group

The WATCH Group includes antibiotic classes that have higher resistance potential than the ACCESS Group. It includes most of the highest-priority agents among the critically important antimicrobials for human medicine, and/or antibiotics that are at relatively high risk of selection of bacterial resistance (World Health Organization, 2019). Stewardship programs and surveillance efforts should give precedence to these medications. Selected WATCH Group antibiotics are recommended as essential first or second-choice empiric treatment options for a limited number of specific infectious syndromes and are listed as individual medicines on the WHO Model Lists of Essential Medicines (World Health Organization, 2019).

The **WATCH Group antibiotics** marketed in Canada (for human use) are:

Azithromycin
Cefepime
Cefixime
Cefotaxime
Cefoxitin
Cefprozil
Ceftazidime
Ceftriaxone
Cefuroxime
Ciprofloxacin
Clarithromycin
Enoxacin (topical only)
Ertapenem
Erythromycin
Fidaxomicin
Fosfomycin Oral
Fusidic acid (topical only)
Gatifloxacin (eye solution only)
Imipenem/cilastin
Levofloxacin
Meropenem
Minocycline Oral
Moxifloxacin
Norfloxacin
Piperacillin/tazobactam
Rifabutin
Rifaximin
Tobramycin
Vancomycin IV
Vancomycin Oral

RESERVE Group

The RESERVE Group includes antibiotics and antibiotic classes that should be reserved for the treatment of confirmed or suspected infections due to multi-drug-resistant organisms. Reserve group antibiotics should be treated as "last resort" options.

Selected RESERVE Group antibiotics are listed as individual medicines on the WHO Model Lists of Essential Medicines when they have a favourable risk-benefit profile and proven activity against "Critical Priority" or "High Priority" pathogens identified by the WHO Priority Pathogens List, notably carbapenem-resistant Enterobacteriaceae (World Health Organization,2024a). Healthcare providers should make these antibiotics available yet restrict their use to specific patients and situations where alternatives are unsuitable or have proven ineffective.

To preserve their effectiveness, these medicines could be protected and prioritized as key targets of national and international stewardship programs involving monitoring and utilization reporting.

The **RESERVE Group antibiotics** marketed in Canada (for human use) are:

Aztreonam
Ceftolozane/tazobactam
Colistin IV
Dalbavancin
Daptomycin
Fosfomycin IV
Linezolid
Tigecycline

What does this mean for me?

The AWaRe classification is intended as a tool for monitoring antibiotic consumption, defining targets and monitoring the effects of stewardship policies to optimize antibiotic use and curb AMR. The WHO 13th General Programme of Work 2019–2023 includes a country-level target of *at least 60% of total antibiotic consumption being Access group antibiotics* (World Health Organization, 2024b).

Therefore, you can strive to:

1. Prescribe antibiotics included in the ACCESS Group preferentially, when appropriate.
2. Limit prescribing of antibiotics in the WATCH Group to specific infections, supported by guidelines and recognized resources.
3. Treat RESERVE Group antibiotics as a "last resort" option, using them only for treatment of confirmed or suspected infections due to multi-drug-resistant organisms.
4. Be aware of antibiotic prescribing/dispensing in Alberta, e.g., via the TPP Alberta Drug Utilization Atlas (tppanalytics.ca).

How can I use this information?

Use MD Snapshot-Prescribing to review your antibiotic prescribing through the AWaRe lens. Consider using your data and this lens to complete a Physician Practice Improvement Program (PPIP) practice-driven quality improvement activity.

What are some uses for some of the WATCH Group of antibiotics?

Note: Only examples for mild to moderate bacterial infections are provided. Treatment regimens are not included (Reference: Bugs and Drugs).

Antibiotic	Condition
Azithromycin	**Adults** Recurrent cellulitis (i.e., > 3 episodes/year), prophylaxis in penicillin-allergic patients Community-acquired pneumonia (CAP)(outpatient), alternative to amoxicillin or doxycycline (penicillin/amoxicillin allergy) **Children** Whooping cough, empiric treatment CAP, empiric treatment for children (> 3 months to ≤ 8 years old) with mild-to-moderate beta lactam allergy
Cefixime	**Adults** Cystitis (men or women) first episode, empiric treatment
Ceftriaxone	**Adults** Pelvic Inflammatory Disease (PID), empiric treatment for mild-to-moderate, non-hospitalized patients (combined with doxycycline and metronidazole)
Cefuroxime	**Adults** Cellulitis: Erysipelas, in patients with no or mild systemic symptoms and a penicillin/amoxicillin allergy Facial, mild and if a penicillin or cephalexin allergy) Skin abscess +/- cellulitis, in patients with a cephalexin allergy Mastitis postpartum, mild, in penicillin and cephalexin allergy

Antibiotic	Condition
	Animal bites from cats or dogs, prophylaxis (as per criteria), if patient has a penicillin/amoxicillin allergy. Otitis media, after failure of first line agenda in patients with a non-severe penicillin allergy **Children** Animal bites from cats or dogs, for prophylaxis or treatment (+/- metronidazole) as an alternative to amoxicillin/clavulanate
Ciprofloxacin	**Adults** Diverticulitis, acute uncomplicated with risk factors, as empiric treatment option Prostatitis, empiric therapy for acute mild-moderate and chronic bacterial prostatitis Cystitis (female/male), empiric treatment for first time cystitis with no antibiotic exposure in the last 6 months (as an alternative to cephalexin or TMP/SMX) and as an alternative to cefixime in other patients
Erythromycin	**Adults** Impetigo, for patients with a penicillin or cephalexin allergy, if infection is unresponsive to topical therapy or there is an indication for a systemic antibiotic
Fusidic acid (topical)	**Adults and children** Impetigo Folliculitis/Furunculosis, second line after unresponsiveness to hot compresses and antiseptic cleaner topical agents (alternative to mupirocin)
Levofloxacin	**Adults** Otitis media, after failure of first line agents and in patients with a severe penicillin allergy or cephalosporin allergy Pelvic inflammatory disease (PID), mild-moderate, non-hospitalized, empiric treatment (with or without metronidazole) in patients with a ceftriaxone allergy

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