

Antibiotic Insights

As part of **European Antibiotic Awareness Week**, we would like to take this opportunity to address a number of apparent misconceptions regarding antibiotic prescribing practices that emerged from a recent survey conducted by the National AMR Committee (NAC) among local general practitioners.

1. Amoxicillin Remains the Gold Standard for Treating Common Bacterial Respiratory Infections

The survey attempted to clarify why broad-spectrum antibiotic use in Malta is among the highest in Europe. It revealed a concerning **misconception** that amoxicillin is no longer effective for treating respiratory tract infections in the community. Indeed, 55% of GPs stated their reluctance to prescribe this antibiotic, with the most common belief being that local strains of respiratory bacterial pathogens were now resistant to it (Figure 1).

However, **local resistance to amoxicillin in the two most important respiratory bacteria - *Streptococcus pneumoniae* and *Streptococcus pyogenes* - remains minimal** at <5%. In fact, our situation in this respect is better than that in many other European countries.

Evidence shows:

- Amoxicillin is still **highly effective** against bacterial respiratory infections. This includes **pharyngitis and tonsillitis** caused by *S. pyogenes* as well as **pulmonary infections**, for which *S. pneumoniae* is the most important pathogen. In addition, the literature clearly shows that, in a background of sensitive streptococci, amoxicillin is the treatment of choice for other upper respiratory tract infections (URTIs) such as **sinusitis and otitis media**, when antibiotic treatment is justified. This is in line with the national antibiotic guidelines. They can be found on the NAC antibiotic app and which be downloaded from the [NAC website](#).
- The local situation confirms that, for most uncomplicated respiratory infections, amoxicillin

should, remain the **first-line treatment** due to its well-established efficacy, low resistance rates, and relatively safe profile.

- The local **widespread use of broad-spectrum antibiotics** - including newer macrolides and fluoroquinolones - for mild to moderate respiratory infections is, in most instances unnecessary and not evidence-based. It has been linked to the rise of antimicrobial resistance (AMR), making it more difficult to treat bacterial infections in the future.

What you can do:

- Keep in mind that the vast majority of respiratory infections in the community, especially in non-elderly adults, are caused by viruses. **Utilise tools** such as the [Centor scale](#) and Strep diagnostic kits, to better identify presentations which are likely to be viral in aetiology.
- Use amoxicillin as first-line therapy for appropriate bacterial respiratory infections, as per national guidelines, especially when

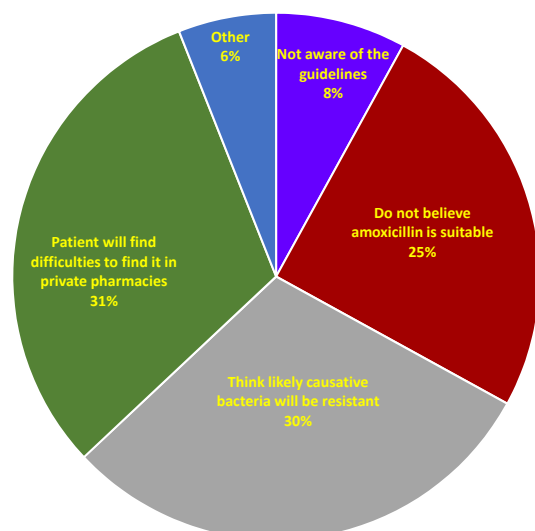


Figure 1: Reasons why Maltese GPs feel reluctant to follow national guidelines and prescribe amoxicillin for respiratory infections

dealing with infections likely to be caused by streptococci, where resistance is minimal.

- **Prescribe narrow-spectrum antibiotics** whenever possible, and save broad-spectrum options for more complex cases, ideally after discussing with a specialist in microbiology or infectious diseases.

2. Amoxicillin is Available in Private Pharmacies

Another common misconception among general practitioners, as revealed by the survey, is that amoxicillin is not widely available. This concern may have arisen due to temporary supply issues over stock levels, especially during COVID-19.

Evidence shows:

- The results of another NAC survey among private pharmacies, confirm that **amoxicillin is widely available** within most private pharmacies across Malta, in both tablet and syrup forms (Figure 2).

What you can do:

- Encourage pharmacies in your consulting region to **stock** amoxicillin tablets and syrup.
- If supply issues do arise, consider **alternative narrow-spectrum options** with the pharmacist, especially first generation cephalosporins such as cephalexin. Do not prescribe second generation (e.g. cefuroxime) or – worse – third generation cephalosporins (e.g. cefixime) as alternatives, since these broad-spectrum formulations are strong drivers of ESBL resistance, especially in *E. coli*.

3. Use extreme care when prescribing macrolides empirically for respiratory tract infections

In last year's [European Antibiotic Awareness Week communication](#), we highlighted a growing concern about high local prescribing levels of **macrolide antibiotics** (especially **azithromycin** and **clarithromycin**). Overuse of macrolides has been shown to contribute to macrolide **resistance**, which not only affects the treatment of respiratory infections but also increases the risk of resistance to other classes of antibiotics.

Evidence shows:

- **Macrolide resistance is a major issue** in Malta, especially among key respiratory pathogens like *Streptococcus pneumoniae* and *Streptococcus pyogenes*, where almost 25% of strains of *S. pyogenes* and >50% of *S. pneumoniae* have now become resistant to macrolides. This is illustrated in Table 1. In other words, **it is now dangerous to treat bacterial respiratory infections empirically with macrolides, unless guided by culture and sensitivity**.
- The inappropriate use of macrolides for viral infections or non-bacterial causes of URTIs accelerates resistance patterns and undermines their effectiveness when they are truly needed. Indeed, repeated studies have shown that more than **half of antibiotics in Malta are prescribed for predominantly viral conditions like colds, flu and sore throat**.

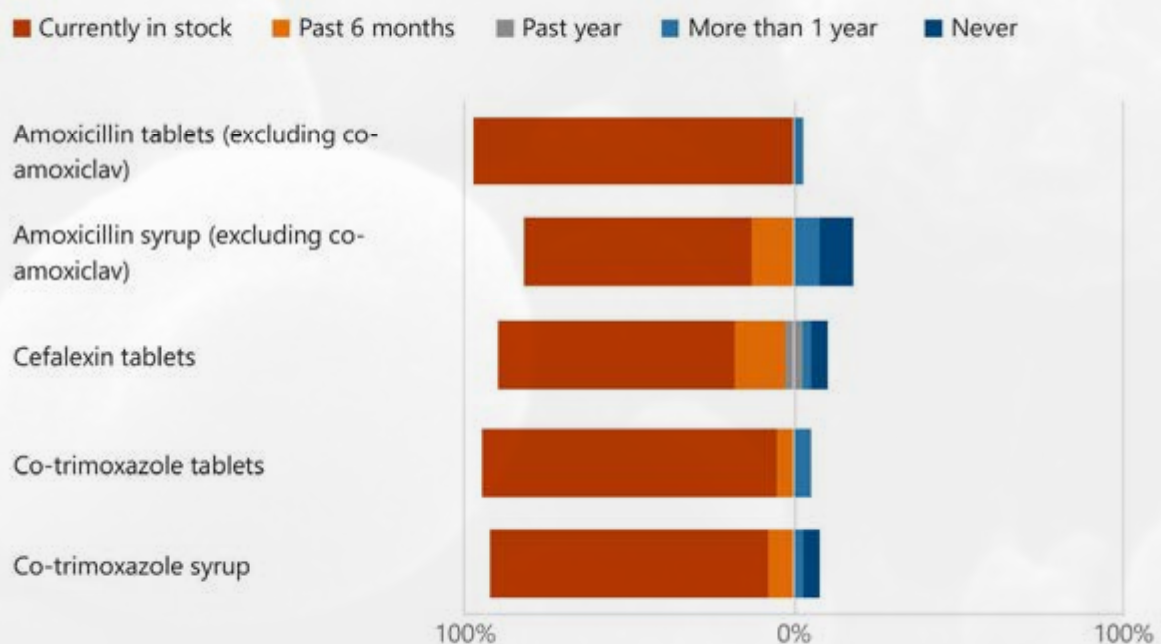


Figure 2: Feedback from private pharmacies on the availability of older/narrower spectrum antibiotics

What you can do:

- **Reserve macrolides** for cases where **specific indications** exist (e.g. Mycoplasma and other atypical infections) or where laboratory culture and sensitivity is available.
- **Otherwise avoid prescribing macrolides** since resistance levels now far exceed the safe threshold for empiric use.
- Be mindful of the **increased risk of resistance** with macrolide prescriptions, and do not use in cases of likely viral or minor bacterial infections.

Table 1: Resistance in *S. pneumoniae* and *S. pyogenes* to amoxicillin and macrolides

Antibiotic	% Resistance (2023/2024 isolates)	
	<i>Streptococcus pneumoniae</i>	<i>Streptococcus pyogenes</i>
Penicillin	4.2%	0%
Amoxicillin	4.2%	0%
Macrolides (e.g. clari/ azithromycin)	57.3%	23.4%

Conclusion and Call to Action

As we observe **European Antibiotic Awareness Day**, we urge all GPs to reconsider their prescribing practices, particularly with respect to **amoxicillin** and **macrolides**

- We can continue to rely on **amoxicillin** for a wide range of respiratory infections in the community, reducing the need for broader-spectrum, resistance-driving antibiotics.
- We can help minimize **macrolide resistance** by using these drugs only when absolutely necessary and focusing on narrow-spectrum alternatives where appropriate.
- We can contribute to the **long-term preservation of antibiotic efficacy**, safeguarding the health of our patients and the broader population.

Thank you for your attention to this important issue and for your ongoing commitment to **antibiotic stewardship**. Let's work together to combat antimicrobial resistance, one prescription at a time.








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Malta

	Target achieved	Progress	Regress
 <p>Reduce by 18% the total consumption of antibiotics in humans</p> <p>Defined daily doses (DDDs) per 1 000 inhabitants per day</p>	2019 baseline	20.7	-
	2023	22.9	+10.7%
	2030 TARGET	17.0	-18%
 <p>At least 65% of the total consumption of antibiotics in humans belongs to the 'Access' group of antibiotics</p> <p>As defined in the AWaRe classification of the WHO</p> <p><small>*Percentage point difference from 2019.</small></p>	2019 baseline	49.9%	-
	2023	56.0%	+6.1%*
	2030 TARGET	65%	+15.1%*
 <p>Reduce by 10% the total incidence of bloodstream infections with meticillin-resistant <i>Staphylococcus aureus</i> (MRSA)</p> <p>Number per 100 000 population</p>	2019 baseline	3.8	-
	2023	3.1	-19.0%
	2030 TARGET	3.5	-10%
 <p>Reduce by 12% the total incidence of bloodstream infections with third-generation cephalosporin-resistant <i>Escherichia coli</i></p> <p>Number per 100 000 population</p>	2019 baseline	12.4	-
	2023	9.1	-26.2%
	2030 TARGET	10.9	-12%
 <p>Reduce by 4% the total incidence of bloodstream infections with carbapenem-resistant <i>Klebsiella pneumoniae</i></p> <p>Number per 100 000 population</p>	2019 baseline	2.1	-
	2023	1.0	-54.5%
	2030 TARGET	2.0	-4%

i- Council Recommendation targets on stepping up EU actions to combat antimicrobial resistance in a One Health approach (2023/C 220/01)

ii- Full data available in [ECDC Annual Epidemiological Reports](#) on antimicrobial resistance and antimicrobial consumption