

Q9 Resistant *Mycoplasma Pneumoniae* in Children

Which *one* of the following statements about macrolide resistant *M. pneumoniae* in children is *false*?

- 1. *M. pneumoniae* resistance to macrolide therapy is prevalent in China and Japan.
- 2. Antibiotics in the tetracycline class are effective.
- 3. Fluoroquinolones are not indicated.
- 4. Doxycycline may be used for 21 days or less in children younger than 8 years old when indicated.

Educational Point: *M. pneumoniae* resistance to macrolides was first reported in Japan in 2000 and is increasingly reported worldwide, with resistance rates as high as 79% in China. In areas of China where macrolide-resistant *M. pneumoniae* (MRMP) has grown over decades, so has the incidence of severe *M. pneumoniae* pneumonia. While resistance rates in Canada are not well described, clinicians should suspect resistance in patients returning from countries such as **China, Japan, and Taiwan, where resistance is prevalent**, or for whom fever persists beyond 48 to 72 hours of macrolide therapy.

Providers should consider the tetracycline class, including doxycycline and minocycline, as an alternative in the treatment of MRMP. **Tetracyclines inhibit bacterial protein synthesis and have demonstrated efficacy against MRMP.**

The literature supporting the use of fluoroquinolones for MRMP in children is less robust than the literature supporting the use of tetracyclines for MRMP, in children, with most of these studies in adults. One case series of 6 children in China who were treated for MRMP for 10 days used 8 to 10 mg/kg of oral levofloxacin twice daily for children less than 5 years old and once daily for children 5 years old or older. Time to defervescence was 1 to 2 days for patients treated with levofloxacin.

Fluoroquinolones are typically avoided in younger children due to concerns about antibiotic resistance in gram-negative organisms, and serious adverse effects, including cartilage toxicity. **Fluoroquinolones are reserved for cases where tetracyclines are not indicated.**

Both tetracyclines and fluoroquinolones are associated with safety concerns when used in children. While tetracycline is known to bind to calcium in developing teeth and bones and can cause permanent staining of the teeth, leading to concerns for children younger than 8 years, doxycycline's lower affinity for

calcium suggests a lower risk of this side effect. In a retrospective study of 58 children receiving doxycycline for Rocky Mountain spotted fever, no cases of doxycycline-induced teeth staining, or enamel hypoplasia, were reported. **Other retrospective studies of doxycycline use in children found no association with teeth staining, leading guidelines from the Canadian Pediatric Society and the American Academy of Pediatrics to support its use for courses less than 21 days in children younger than 8 years when indicated.**

The correct answer is 3.

Reference: Smith C, Ng K, Sih K, Mcalpine A, Goldman RD. Resistant *Mycoplasma pneumoniae* in children. *Can Fam Physician*. 2025 Jul-Aug;71(7-8):487-489.

Link: <https://www.cfp.ca/content/71/7-8/487.long>

PMID: 40730436