



PIC QUESTION OF THE WEEK: 3/10/08

Q: Why is hypersensitivity to neomycin a contraindication to administration of some vaccines?

A: During the manufacturing process of some vaccines, compounds such as streptomycin, polymyxin B, chlortetracycline, neomycin, and amphotericin B may be added as antimicrobial preservatives. In most cases, these substances are not detectable in the final preparation, but the vaccines identified below are exceptions. The amounts of neomycin in these products range from approximately 5 ng to < 0.15 mg. Neomycin is present in measles (Attenuvax), mumps (Mumpsvox), rubella (Meruvax II), and combination (MMR II) vaccines in quantities < 0.025 mg per single-dose vial. Rabies vaccines such as Imovax and RabAvert contain < 0.15 mg and < 0.1mg of neomycin respectively. Varicella-zoster vaccine (Zostavax) also contains trace amounts of neomycin; however, the specific quantity is not actually included in the product labeling. Inactivated polio vaccine (IPV) contains 5 ng of neomycin as well as trace amounts of polymixin B and streptomycin. Although these are extremely small quantities, they could theoretically produce anaphylaxis in neomycin-sensitive individuals. Contraindications to most vaccines include sensitivity to the specific antigen(s) or *any component* of the vaccine. This would also include previous systemic reactions to other allergens such as eggs and gelatin. The estimated frequency of anaphylactic reactions to vaccines is 1:500,000 doses administered. Neomycin is often implicated as a cause of delayed hypersensitivity reactions (contact dermatitis) when used in *topical* formulations. This type of reaction to neomycin is *not* a contraindication to the use of any vaccine. Anaphylaxis is the only reaction that would contraindicate the use of a vaccine containing neomycin. Significant adverse reactions to vaccines should be reported to the Vaccine Adverse Event Reporting System (VAERS). This post-marketing surveillance program is co-sponsored by the Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration (FDA). The reports can be submitted on-line (<http://vaers.hhs.gov/default.htm>) or by downloading, completing, and mailing the VAERS form. Two of the most comprehensive sources of information on immunization and vaccines are the *Vaccines and Immunization* site from the CDC (<http://www.cdc.gov/vaccines>) and the *Immunization Action Coalition* (IAC) (<http://www.immunize.org>).

References:

- Offit PA, Jew RK. Addressing parents' concerns: Do vaccines contain harmful preservative, adjuvants, additives, or residuals? *Pediatrics* 2003;112:1394-7.
- CDC. Guide to contraindications to vaccination. http://www.cdc.gov/vaccines/recs/vac-admin/downloads/contraindications_guide.pdf. Accessed March 4, 2008.
- Neomycin. Dermatitis. 2005; 16(3):115-120. <http://www.medscape.com>. Accessed March 4, 2008.
- Patja A, Makinen-Kiljunen S, Davidkin I. Allergic reactions to measles-mumps-rubella vaccination. *Pediatrics* 2001;107(2):e27. Accessed March 4, 2008.

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