

- Between 1% and 10% of beta-lactam courses result in manifestations interpreted as due to hypersensitivity.
- Most reactions are late, non-IgE mediated and involve skin rash.
- Other later manifestations include fever, haemolysis and serum sickness-like reactions.
  - The minority of reactions are immediate hypersensitivity reactions. Anaphylactic responses to penicillin occur approximately once every 10 000 courses administered, with 10% of these reactions being fatal, most often associated with parenteral rather than oral administration.
  - Most of these reactions occur in people without a history of prior penicillin allergy.
  - Notwithstanding this, a detailed history of penicillin reaction should always be sought before a course of penicillin is commenced.
- A history of an immediate hypersensitivity reaction (urticaria, angioedema, bronchospasm, or anaphylaxis within one hour of drug administration) or other life-threatening reactions (eg Stevens-Johnson syndrome) contraindicates further exposure to penicillin and other beta lactams apart from aztreonam.
- Between 3% and 10% of patients hypersensitive to penicillin exhibit cross-reactivity with cephalosporins and carbapenems.
- A patient with a known beta-lactam hypersensitivity should be encouraged to wear an alert bracelet or necklace containing this information.
  - Late manifestations are only a relative contraindication. Rashes, especially with amoxy/ampicillin, are much less predictive of future reactions and repeat exposure to beta-lactam drugs is not necessarily contraindicated.
- In the unusual circumstance that it is necessary to use a penicillin, expert advice should be sought on desensitisation, or a test dose of penicillin should be given under controlled conditions to reduce the risk in this situation.

## penicillin hypersensitivity

antibiotic allergy  
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## general

- Antibiotic hypersensitivity is common, and most frequently involves beta lactams.
- While many nonspecific reactions are labelled as 'allergic', true type I (IgE-mediated) antibiotic hypersensitivity is strongly suggested by the development of urticaria, angioedema, bronchospasm, or anaphylaxis (with objectively demonstrated hypotension, hypoxia or tryptase elevation) within one hour of drug administration.
- Some instances of 'pseudo-allergy' (eg anaphylactoid responses to vancomycin infusions such as 'red-man syndrome') involve direct release of vasoactive mediators by non-IgE mechanisms. While not truly allergic, these latter responses may be ameliorated by preventive antihistamines, in combination with slowing of the infusion rate.
- Drug allergy is more commonly seen with certain infections, particularly with HIV and Epstein-Barr virus infections, and allergic reactions are more likely to be severe in individuals receiving beta-blocker therapy.

## diagnosis

- Antibiotic hypersensitivity is usually diagnosed on the basis of clinical history, with oral challenging judiciously employed where skin tests (if performed) are negative, or in circumstances where alternative drugs are clearly inferior.
- In these cases, the degree of suspicion surrounding possible life-threatening reactivity will dictate whether a desensitisation protocol is preferable to oral challenge.
- The confirmation of antibiotic hypersensitivity is difficult, as no currently available skin or blood test offers 100% negative predictive value for drug allergy.
- Due to changing availability of penicillin skin test reagent mixes, skin testing has a significant false negative rate (3% to 20%) even in the setting of true penicillin allergy.
- In cases of suspected drug allergy, elevation of mast cell tryptase measured on a serum sample collected between 1 and 6 hours after a clinical reaction is highly specific for an episode of mast cell degranulation.