Guidance on Antibiotic Choice in Penicillin Allergy

Clinical judgement MUST be used if adequate information about a patient's history of penicillin allergy is difficult to obtain.

Background

Penicillin allergy is often over-reported. A significant percentage of patients (up to 90%) labelled as penicillin allergic are **not** truly allergic (i.e. report adverse effects, such as gastrointestinal upset). This results in patients receiving alternative antibiotics which may be less effective, or are broad-spectrum, or have less favourable side-effect profiles. This increases risk of adverse outcomes, healthcare costs, and the risk of antimicrobial resistance. Therefore, it is essential to clarify and define the nature of the reaction.

NHS Lanarkshire Empirical Antimicrobial guidance provides alternative choices for patients who have a confirmed penicillin allergy.

The Scottish Antimicrobial Prescribing Group (SAPG) have produced guidance on how/ when to consider: Penicillin Allergy De-Labelling.

Contraindicated Use:

Advice for True/ Severe Penicillin Allergy

Definition: A history of immediate hypersensitivity including anaphylaxis, or urticarial pruritic rash immediately after administration (within 1 hour), Stevens-Johnson syndrome (SJS)/ Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS),
or diffuse erythema laryngeal oedema, bronchospasm, hypotension, or local swelling within 72 hours after penicillin or cephalosporin administration.

- Only between 1 and 10% of exposed patients develop general hypersensitivity reactions
- True anaphylaxis only occurs in less than 0.05% of treated patients
- Hypersensitivity gives rise to immediate reactions including anaphylaxis, angioedema, urticaria and some maculopapular rashes
- Late reactions may include serum sickness like reactions and haemolytic anaemia

The following antibiotics are **contra-indicated** in true/ severe penicillin allergy – **DO NOT** administer penicillins or cephalosporins.

Examples of antibiotics to be avoided:

Penicillins		
Amoxicillin	Temocillin	Amoxicillin/ Clavulanic acid (Co-amoxiclav)
Flucloxacillin	Benzylpenicillin (Penicillin G)	Piperacillin/ Tazobactam (Tazocin)
Pivmecillinam	Phenoxymethlpenicillin (Penicillin V)	*This list is not exhaustive, see BNF*

Cephalosporins		
Cefalexin	Ceftriaxone	Ceftazidime
Cefixime	Cefuroxime	*This list is not exhaustive, see BNF*

Use with Caution in Severe Infections:

Advice for Non-Severe Penicillin Allergy/ Intolerance

Definition: Minor rash (non-confluent or non-pruritic rash restricted to a small area) or rash occurring after 72 hours.

In patients with **non-severe** allergy – penicillins and related antibiotics should not be withheld unnecessarily in **severe infection** but the patient **must be monitored closely after administration**.

Cross-sensitivity between penicillins and cephalosporins has been widely quoted as being up to 10%. However, there has been some evidence to suggest cross-sensitivity can be as low as between 0.5-6.5%. First and early second-generation cephalosporins have a higher risk of cross-sensitivity, compared to other second and third-generation cephalosporins where the risk is lower. The lower risk is thought to be due to differences in chemical structure side chains compared to penicillins and early cephalosporins.

Cross-sensitivity with carbapenems and monobactams is approximately 1%.

Examples of antibiotics to be **used with caution in severe infections, in patients with non-severe penicillin allergy**:

Cephalosporins	
1st generation	Cefalexin, Cefradine, Cefadroxil
2nd and 3rd generation	Cefuroxime, Cefotaxime, Ceftriaxone, Ceftazidime, Cefixime
	This list is not exhaustive, see BNF

Other beta-lactam antibiotics	
Carbapenems	Ertapenem, Imipenem, Meropenem
Monobactams	Aztreonam

Advice for Severe Penicillin Allergy – for certain indications where benefit > risk

In patients with **severe** penicillin allergy who also have **severe, life-threatening infection** e.g. neutropenic sepsis, other beta-lactam antibiotics may be used with caution where the benefit outweighs risk, as there is low risk of cross-sensitivity (1%). **Careful monitoring of these patients is essential – particularly in first dose.** Seek advice from senior colleagues or Infection Specialists if in any doubt.

Examples of other beta-lactam antibiotics: Aztreonam, Ertapenem, Imipenem, Meropenem.

Antibiotics safe to use in Penicillin Allergy

Tetracyclines (e.g. doxycycline)	Aminoglycosides (e.g. gentamicin)	Macrolides (e.g. clarithromycin)
Quinolones (e.g. ciprofloxacin)	Glycopeptides (e.g. vancomycin, teicoplanin)	Trimethoprim
Metronidazole	Co-trimoxazole	Clindamycin

This list is not exhaustive, see BNF

References: British National Formulary (BNF), Specialist Pharmacy Service UK Medicines Information Q&As "Is there a 10% cross-sensitivity between penicillins and cephalosporins?" Oct 2018, with thanks to NHS Tayside and NHS GGC policies.

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