

Patient has a penicillin allergy label in their chart

The patient must be (all should apply):

- in a stable condition
- able to provide an allergy history (or parent)
- NOT currently experiencing rash, wheezing, supplemental oxygen beyond baseline, ongoing emesis or inability to take oral medications

Take the history:

- What were the symptoms concerning for reaction?
- Did the patient require emergency care, hospitalization or receive epinephrine?
- Any penicillin exposure since?

Timing of challenge: If patient is stable in room air and tolerating PO meds, can perform 1 step challenge at any point in hospitalization

Risk Assessment

History inconsistent with allergy:

- Family history of PCN allergy
- Known adverse effect of antibiotics such as GI symptoms
- Non-allergy symptoms i.e. headache
- Fear of penicillins
- Tolerance of a penicillin in the time since possible reaction

Educate patient/family and remove allergy label

**if not amenable, offer oral challenge

Low risk history:

- Benign rash only (including urticaria, maculopapular exanthem, pruritus)
- Remote reaction with limited details

Offer an oral challenge

Medium or high-risk history:

- Anaphylaxis: multiple organ involvement
- Severe cutaneous adverse drug reaction (SJS/TEN, DRESS, AGEP, FDE): severe systemic symptoms such as mucous membrane involvement, blistering, skin sooughing, fever, organ involvement
- Immune-mediated organ injury or cytopenia

Do NOT Challenge!

Amoxicillin oral challenge

1. Discuss with the patient and his family the risk of the penicillin label and the benefits of removal of the label, as seen in the attached "points for discussion with the patient's family"
2. Provide and sign a consent form
 - Found in MedEx under "Consent for Amoxicillin Oral Challenge for Low-Risk Penicillin Allergy"
3. In EPIC, go to the order set "amoxicillin challenge".
4. Inform and discuss your plan with the nursing staff.
5. Orders: Amoxicillin 250mg PO (capsule, tablet, or suspension) for all patients >10kg (under 10kg dose: 25 mg/kg), cetirizine as needed if concern for reaction.
6. Vital signs at baseline before amoxicillin (can use routine VS, if obtained in the last 2 hours before) and at 1 hour post administration.
7. Monitoring and adverse effect management: Monitor for signs and symptoms of allergic reaction during the 1 hour challenge, and encourage reporting of any rashes that develop within the first 24 hours. Monitor and document any reported symptoms and notify the provider if identified.
8. Documentation: After successful performance of an amoxicillin challenge in a low risk penicillin allergy patient, or a failed challenge, documentation of the outcome should be performed as follows.

The following dot phrase should be used in a procedure note: amoxchallresult. A passed challenge vs. a failed challenge can be selected.

- A passed challenge will result in standardized templated language, and the note can be saved.
- A passed challenge should also be documented in the patient's discharge summary with the same templated language and dot phrase.
- A failed challenge should include relevant details about the symptoms experienced, how long after the dose of amoxicillin they began, any treatments that were given, and how long the symptoms took to resolve.

Allergy Label Removal: following a successful amoxicillin challenge, the penicillin allergy label should be removed from the allergy box

- Select the penicillin allergy and push the delete button
- Select "entry determined to be clinically insignificant" as the reason
- In the text field, use the .pcnalrem dotphrase and fill in the date of the passed challenge

References:

- Roberts H, Soller L, Ng K, Chan ES, Roberts A, Kang K, Hildebrandt KJ, Wong T. First pediatric electronic algorithm to stratify risk of penicillin allergy. *Allergy Asthma Clin Immunol.* 2020 Dec 4;16(1):103. doi: 10.1186/s13223-020-00501-6. PMID: 33292528; PMCID: PMC7716490.
- Lim PPC, Moore LN, Minich NM, Wessell KR, Desai AP. Inpatient allergy delabeling of pediatric patients with low-risk penicillin allergy status through direct oral amoxicillin challenge. *Allergy Asthma Proc.* 2024 Jan 1;45(1):61-69. doi: 10.2500/aap.2024.45.230069. PMID: 38151739.
- Koo G, Sundar A, Woodward KB, Stone CA Jr, Norton AE. Do not wait to challenge children: Results of a standard operating procedure for low-risk antibiotic challenges. *Ann Allergy Asthma Immunol.* 2025 Jun;134(6):736-738. doi: 10.1016/j.anai.2025.03.006. Epub 2025 Mar 13. PMID: 40088947.
- Vyles D, Antoon JW, Norton A, Stone CA Jr, Trubiano J, Radowicz A, Phillips EJ. Children with reported penicillin allergy: Public health impact and safety of delabeling. *Ann Allergy Asthma Immunol.* 2020 Jun;124(6):558-565. doi: 10.1016/j.anai.2020.03.012. Epub 2020 Mar 26. PMID: 32224207; PMCID: PMC7255916

Points to discuss with the patient's family:

- Penicillin allergy labels are common in children – about 10-15% carry them. However, less than 1% are truly allergic.
- It is easy for children to accumulate these labels because children rash more frequently with infection than adults. This can be mistaken for a drug reaction.
- Many studies support the safety of children receiving the antibiotic again when they report low-risk symptoms, such as rash only. Only 2-5% of these rashes will recur in subsequent antibiotic courses and are highly unlikely to progress to more dangerous symptoms like anaphylaxis or a severe allergic reaction.
- Drug allergy labels cause children to not receive first line antibiotics for common infections (AOM, PNA). Alternative are often broad-spectrum with more side effects. They may even lead to resistance.
- These allergy labels are also associated with a higher likelihood to be hospitalized with more serious infections, and if hospitalized, longer hospital stays.
- Children who are assessed as having a low-risk penicillin allergy based on history have a <1% chance of a rash when they are given a dose to test their allergy. Even if a reaction occurs, it is most often mild (similar to the first reaction the child had).