

Penicillin Allergy Testing

Why It Matters for Your Family Medicine Patients

The Problem

- Approximately 10% of patients report penicillin allergies, but **less than 5% are truly allergic**¹
- **Over 90% of patients labeled as "penicillin allergic" can safely tolerate penicillin antibiotics**^{1,2}
- Most pediatric penicillin allergy labels are placed in the **first 2 years of life**—often representing viral rashes, not true allergies³
- Penicillin allergies fade over time—**80% of patients lose sensitivity after 10 years**¹
- These labels follow children into adulthood, creating **lifelong health consequences**⁴

Impact on Common Infections You Treat Every Day

Penicillin allergy labels force you to use second-line antibiotics that lead to worse outcomes for your patients.

Acute Otitis Media (Children)

- Amoxicillin has the **lowest treatment failure rate (1.7%)** compared to alternatives like cefdinir (10.0%) and azithromycin (9.8%)⁵
- Amoxicillin remains the **gold standard first-line treatment** recommended by the American Academy of Pediatrics^{6,7}

Streptococcal Pharyngitis (Adults and Children)

- Penicillin V or amoxicillin are **first-line treatments** to prevent acute rheumatic fever and reduce symptom duration^{8,9}
- Alternative antibiotics provide no additional benefit but increase adverse events¹⁰

Acute Bacterial Sinusitis

- Amoxicillin/clavulanate is **first-line treatment** for both adults and children⁸
- Narrow-spectrum penicillins are more effective than broad-spectrum alternatives⁸

Skin and Soft Tissue Infections

- Penicillins are first-line for most common skin infections^{8,11}
- Amoxicillin-clavulanate is most effective for animal and human bites¹¹

Community-Acquired Pneumonia

- Amoxicillin is recommended first-line for otherwise healthy adults and children^{12,13}
- Beta-lactams combined with macrolides improve outcomes in severe cases¹³

Urinary Tract Infections

- Amoxicillin-clavulanate is a key first-line option for many UTIs⁸

Consequences of Using Alternative Antibiotics

When patients with unverified penicillin allergies receive alternative antibiotics instead of penicillin, they face:^{1,2}

- **Higher treatment failure rates** across multiple infections
- **23-26% increased risk of C. difficile infection**
- **Increased antimicrobial resistance** (MRSA, VRE)
- **Higher mortality rates**, particularly at or after 180 days
- **Longer hospital stays and higher healthcare costs** (estimated \$1,915 more per patient per year)
- **More adverse drug events** overall

Benefits of Penicillin Allergy Testing

- Enables use of **first-line, most effective antibiotics** for common infections
- Reduces treatment failures and need for second-line antibiotics
- Decreases C. difficile infections and antimicrobial resistance
- Prevents lifelong mislabeling that follows children into adulthood
- Improves patient outcomes and reduces healthcare costs
- **Over 95% of tested patients can be safely "de-labeled"**^{1,2,10}

References

1. [Evaluation and Management of Penicillin Allergy: A Review](#). Shenoy ES, Macy E, Rowe T, Blumenthal KG. JAMA. 2019;321(2):188-199. doi:10.1001/jama.2018.19283.
2. [Reaction Risk to Direct Penicillin Challenges: A Systematic Review and Meta-Analysis](#). Blumenthal KG, Smith LR, Mann JTS, et al. JAMA Internal Medicine. 2024;184(11):1374-1383. doi:10.1001/jamainternmed.2024.4606.
3. [The Modern Epidemic of Syphilis](#). Ghanem KG, Ram S, Rice PA. The New England Journal of Medicine. 2020;382(9):845-854. doi:10.1056/NEJMra1901593.
4. [Syphilis](#). Chevalier FJ, Bacon O, Johnson KA, Cohen SE. JAMA. 2025;:2840085. doi:10.1001/jama.2025.17362.
5. [Management of Staphylococcus aureus Bacteremia](#). Tong SYC, Fowler VG, Skalla L, Holland TL. JAMA. 2025;334(9):798-808. doi:10.1001/jama.2025.4288.
6. [The Penicillin Allergy Delabeling Program: A Multicenter Whole-of-Hospital Health Services Intervention and Comparative Effectiveness Study](#). Chua KYL, Vogrin S, Bury S, et al. Clinical Infectious Diseases : An Official Publication of the Infectious Diseases Society of America. 2021;73(3):487-496. doi:10.1093/cid/ciaa653.
7. [Efficacy of a Clinical Decision Rule to Enable Direct Oral Challenge in Patients With Low-Risk Penicillin Allergy: The PALACE Randomized Clinical Trial](#). Copaescu AM, Vogrin S, James F, et al. JAMA Internal Medicine. 2023;183(9):944-952. doi:10.1001/jamainternmed.2023.2986.
8. [Antibiotic Use in Acute Upper Respiratory Tract Infections](#). Sur DKC, Plesa ML. American Family Physician. 2022;106(6):628-636.
9. [Streptococcal Pharyngitis](#). Wessels MR. The New England Journal of Medicine. 2011;364(7):648-55. doi:10.1056/NEJMcp1009126.
10. [Penicillin Allergy](#). Castells M, Khan DA, Phillips EJ. The New England Journal of Medicine. 2019;381(24):2338-2351. doi:10.1056/NEJMra1807761.
11. [Appropriate Prescribing of Oral Beta-Lactam Antibiotics](#). Holten KB, Onusko EM. American Family Physician. 2000;62(3):611-20.
12. [Community-Acquired Pneumonia](#). File TM, Ramirez JA. The New England Journal of Medicine. 2023;389(7):632-641. doi:10.1056/NEJMcp2303286.
13. [Community-Acquired Pneumonia: A Review](#). Vaughn VM, Dickson RP, Horowitz JK, Flanders SA. JAMA. 2024;332(15):1282-1295. doi:10.1001/jama.2024.14796.

PENICILLIN ALLERGY CLINIC

Help us give your family medicine patients access to optimal GBS prophylaxis and first-line antibiotic therapy.

WHO TO REFER

Children with

- Penicillin allergy labels acquired in early childhood (especially 5 years)
- Label after "rash" to amoxicillin during illness
- Recurrent ear infections, pharyngitis, or other infections requiring frequent antibiotics

Adults with

- Penicillin allergy labels acquired in childhood or more than 10 years ago
- Remote reactions or unknown reaction details
- Need for frequent antibiotic therapy for chronic conditions
- Surgery scheduled who would benefit from optimal prophylaxis

Both

- Any patient where first-line penicillin therapy would be beneficial
- Patients labeled after only 1-2 penicillin exposures

2ND FRIDAY
**EACH
MONTH**
IN A.M.

BMC LOUISVILLE

80 HEALTH PARK DR.
SUITE 200, LOUISVILLE
(303) 440-3083

Safe, Evidence-Based Testing

We use validated, internationally recognized protocols proven safe for both children and adults:

- Direct oral amoxicillin challenge for low-risk patients (most patients)
- Risk stratification using validated clinical decision rules (PEN-FAST)
- Skin testing available for higher-risk histories when indicated
- Severe reactions are exceedingly rare (anaphylaxis 0.1%)
- Testing can be performed safely outside specialist allergy settings

Success Rates

Published studies demonstrate:

- Over 95% of patients can be successfully delabeled
- Direct oral challenge is safe and effective in both adults and children
- Most delabeled patients tolerate subsequent penicillin courses without problems
- Delabeling leads to increased use of guideline-concordant antibiotics

Clinic capacity can expand based on demand.

