

“My mom told me I’m allergic” – Making Sense of Antibiotic Allergies

Intended Audience: Physicians, Nurses, Pharmacists, and other allied health providers

What are the facts about β -lactam allergies?

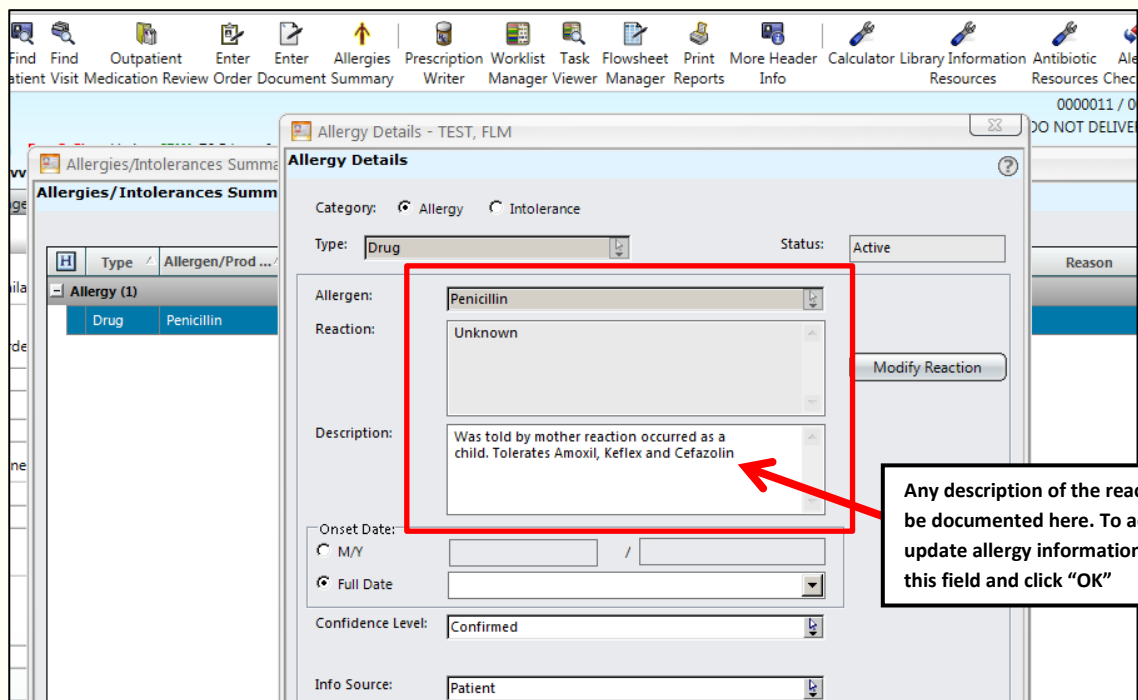
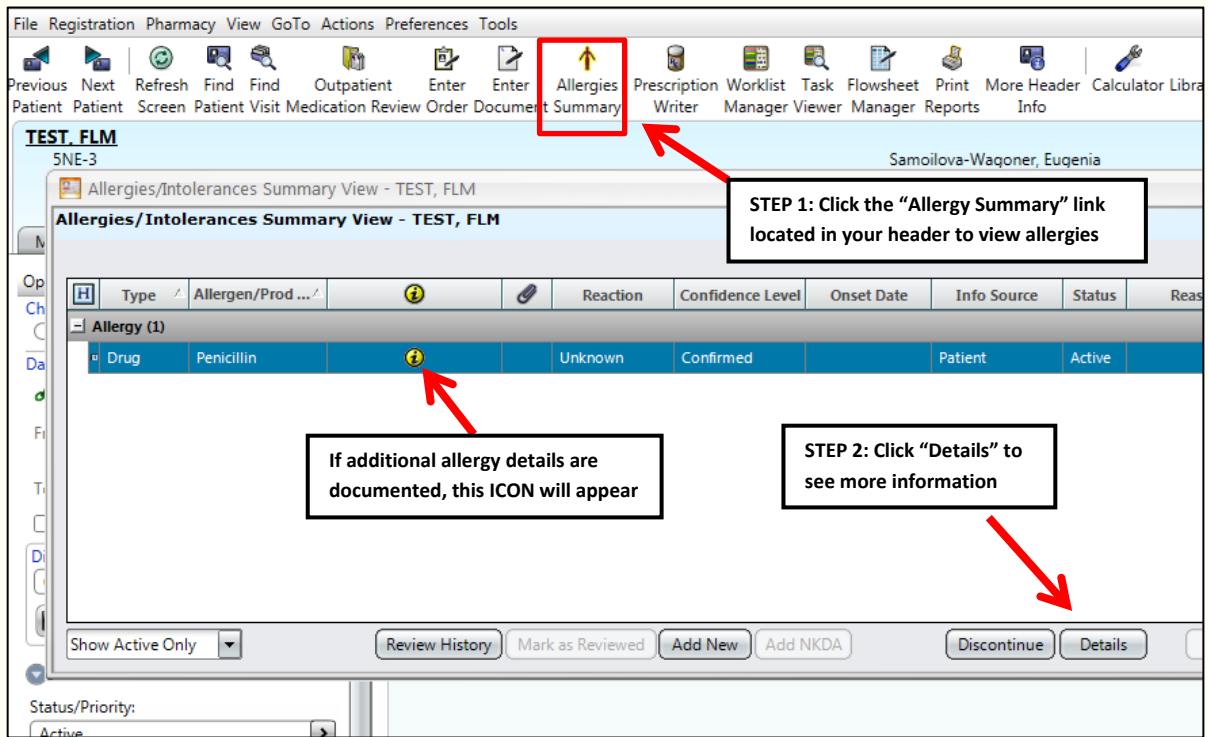
- Penicillin allergy is reported by 10% of the population and up to 15% of inpatients
 - After formal allergy evaluation, including penicillin skin testing, 90% - 99% of patients with reported allergy can actually tolerate penicillins and other beta-lactams
 - Life-threatening anaphylaxis is estimated to be 0.02 - 0.04%
- Cross-reactivity with penicillin and other β -lactam antibiotics is very low
 - Aminopenicillins 2%
 - Cephalosporins 3-5% (lower with 3rd and 4th generation)
 - Carbapenems 1%
 - Monobactams 0%
- A reported penicillin allergy is associated with increased use of alternative antibiotics, including vancomycin, clindamycin, fluoroquinolones, aztreonam, and aminoglycosides
 - Use of these alternative agents increases the patients’ risk of infection with MRSA, VRE, and *C. difficile*
 - They are often more expensive, more toxic, less effective in certain circumstances, and broader spectrum
- A recent review at SMH determined that nearly 40% of patients who received aztreonam could have received another β -lactam based on reported allergy symptoms

How do we differentiate between a true hypersensitivity reaction and a side effect?

Type of Reaction	Example Symptoms	Time of Onset (No Prior Exposure)	Time of Onset (Prior Exposure)	Skin Testing or Desensitization Useful
IgE mediated (Immediate)	Urticaria (hives/welts), hypotension, swelling, bronchospasm, breathing difficulty, wheezing, angioedema, anaphylaxis	0 – 1 hours	0 – 1 hours	Yes
Non-IgE mediated (Delayed)	Maculopapular rash (itching/rash), dermatitis, hemolytic anemia, thrombocytopenia, Stevens-Johnson Syndrome, Toxic Epidermal Necrosis	> 72 hours (up to 10-21 days)	24 – 96 hours	No
Side effect or Intolerance	GI distress, diarrhea, vomiting, headache, hallucinations, disorientation, Red-man syndrome (vancomycin)	Varies	Varies	No

What should you do if your patient has a reported allergy to a beta-lactam?

- Review current allergy detail in Allscripts (SCM) – see page 2 for details
- Obtain an up-to-date allergy history
 - Name, dose, and route of medication
 - Signs/symptoms experienced
 - Date of reaction
 - Timing of onset of the reaction in relationship to the initiation of the medication
 - Concurrent medications at the time that the reaction occurred and if any of these were newly started
 - Whether or not the reaction necessitated hospitalization
 - Treatment(s) given for the reaction and response
 - Whether or not the patient has taken the medication again since the prior reaction
 - Ask if the patient has had a similar medication since the initial reaction (e.g., Amoxil, Augmentin, Keflex)
 - Whether or not any recurrent signs or symptoms occurred with subsequent drug exposure
- Update the allergy details in Allscripts – add, discontinue, change to drug intolerance, or update details
- Discuss allergy history with patient and educate on importance of maintaining an accurate allergy history



Take home points:

- Less than 10% of patients with a self-reported allergy to penicillin actually have IgE-mediated reactions based on skin testing
- Cross reactivity with penicillin and other beta-lactams, including cephalosporins, is very low (1-5% depending on the drug)
- Inadequate assessment of patient allergies may lead to suboptimal patient care (drug resistance, poorer outcomes, higher cost)
- Improved allergy history can help us make informed decisions on antibiotic selection and limit inappropriate antibiotic exposure

References:

1. Legendre DP, et al. Antibiotic hypersensitivity reactions and approaches to desensitization. *Clin Infect Dis* 2014 Apr;58(8):1140
2. Blumenthal KG, et al. Impact of a clinical guideline for prescribing antibiotics to inpatients reporting penicillin or cephalosporin allergy. *Ann Allergy Asthma Immunol* 2015;115:294
3. Terico AT, et al. Beta-lactam hypersensitivity and cross reactivity. *Journal of Pharmacy Practice* 2014;27(6) 530-544