BETA-LACTAM ALLERGY EVALUATION

PENICILLIN ALLERGY EVALUATION

IN A PATIENT WITH A SUSPECTED OR DOCUMENTED ALLERGY TO A PENICILLIN

OBTAIN A HISTORY: Age at the time of the reaction; description of the reaction; which penicillin the patient reacted to; route of administration; day of therapy that reaction occurred; whether treatment was required; type of treatment; whether the patient can tolerate other penicillins or cephalosporins.

History of Stevens-History of serum sickness like reaction, History of maculopapular or History of anaphylaxis, SOB, diffuse Johnson syndrome, interstitial nephritis, thrombosis morbilliform rash or localized hives with facial or periorbital toxic epidermal cytopenia, hemolytic anemia, hepatitis hives/urticarial reaction edema, hypotension, angioedema necrolysis (TEN) exfoliative dermatitis Did the history reveal reactivity Did the history reveal reactivity to a Did the history reveal reactivity to a **AVOID** use of all to a specific penicillin and specific penicillin and tolerability to specific penicillin and tolerability to penicillins, cephalosporins tolerability to other beta-lactams other beta-lactams (e.g. reaction to other beta-lactams (e.g. reaction to and carbapenems (e.g. reaction to only one agent only one agent such as amoxicillin, only one agent such as amoxicillin, regardless of time since such as amoxicillin, ampicillin, or ampicillin, or piperacillin)? ampicillin, or piperacillin)? last exposure. piperacillin)? **AVOID THE SPECIFIC PENICILLIN** Cefazolin, 3rd - 5th generation NO OR HISTORY YES cephalosporins (e.g. ceftriaxone, **IS UNCLEAR** cefpodoxime, ceftazidime, cefepime) with a dissimilar side chain, and YES carbapenems can be used safely. (See chart). **AVOID THE SPECIFIC WEIGH BENEFITS VERSUS RISKS AVOID THE SPECIFIC PENICILLIN PENICILLIN** Assume patient reacts to the Cefazolin, 3rd - 5th generation Cefazolin, 3rd - 5th generation **AVOID ALL BETA-LACTAM AGENTS** beta-lactam ring common to all cephalosporins (e.g. ceftriaxone, cephalosporins (e.g. penicillins, cephalosporins and Patient most likely has IgE reaction cefpodoxime, ceftazidime. ceftriaxone, cefpodoxime, carbapenems. Risk of crosscefepime) with a dissimilar side to beta-lactam ring. ceftazidime, cefepime) with reactivity is 90% with other NO OR chain, and carbapenems can be a dissimilar side chain, and If the specific penicillin, or cephalosporin **HISTORY** penicillins, 5-7.5% with 1st and used safely. (See chart). carbapenems can be used with similar side chain is warranted, 2nd generation cephalosporins. IS safely. (See chart). consult Allergy or ID for evaluation of <5% with 3rd generation **UNCLEAR** penicillin skin testing OR desensitization cephalosporins, and 1% with OR consider administration through carbapenems. (See chart). graded challenge.







CEPHALOSPORIN ALLERGY EVALUATION

IN AN ADULT PATIENT WITH A SUSPECTED OR DOCUMENTED ALLERGY TO CEPHALOSPORIN

OBTAIN A HISTORY: Age at the time of the reaction; description of the reaction; which cephalosporin the patient reacted to; route of administration; day of therapy that reaction occurred; whether treatment was required; type of treatment; whether the patient can tolerate other penicillins or cephalosporins.

History of Steven-Johnson Syndrome, toxic epidermal necrolysis (TEN), History of mild reaction, including exfoliative dermatitis, drug rash with History of anaphylaxis, angioedema. maculopapular or morbilliform rash, eosinophilia and systemic symptoms wheezing, laryngeal edema, diffuse localized hives, or urticarial reactions hives/urticaria, hypotension, or (DRESS), drug-induced autoimmune OR electronic documented allergy disease, hemolytic anemia, drug-induced unknown reaction without mucosal, skin but patient denies hepatitis, acute interstitial nephritis desquamation or organ involvement **AVOID** use of all penicillin and cephalosporins regardless of the time since last exposure. Did the history reveal reactivity Did the history reveal reactivity to a specific cephalosporin and to a specific cephalosporin and tolerability of other beta-lactams? tolerability of other beta-lactams? **NO OR HISTORY** YES **IS UNCLEAR WEIGH BENEFITS VERSUS RISKS AVOID THE SPECIFIC CEPHALOSPORIN AVOID THE SPECIFIC PENICILLIN** Assume patient reacts to the beta-Penicillin, cephalosporin with a dissimilar Carbapenems can be used safely. If the lactam ring common to all penicillins, side chain and carbapenem can be used to specific cephalosporin is warranted, cephalosporins and carbapenems. determine tolerance. (See chart). consult Allergy for evaluation of skin testing OR desensitization OR consider If the specific cephalosporin is If the specific cephalosporin administration through graded challenge. warranted, consult Allergy for evaluation is warranted, consult Allergy for of skin testing-guided treatment evaluation of skin testing-guided OR desensitization OR consider treatment OR desensitization OR consider administration through graded challenge. administration through graded challenge.



PENICILLIN & CEPHALOSPORIN CROSS-REACTIVITY CHART

| R1 | AVOID USE due to identical R1 side chain structures | | | | | | | | | |
|----|--|--|--|--|--|--|--|--|--|--|
| R2 | AVOID USE due to identical R2 side chain structures | | | | | | | | | |

Cross reactivity less likely due to dissimilar R1 and R2 side chain structures.

CAUTION USE. Similar R1 or R2 side chain structures.

| | | | P | enicill | in | | 1st Gen | | | 2nd Gen | | | | 3rd Gen | | | | | 4th Gen | 5th Gen | | en | Mono |
|------------|----------------|----------------|-----------|-------------|------------|--------------|------------|-----------|------------|----------|-----------|-----------|------------|----------|----------|-------------|-------------|-------------|------------|-------------|-------------|-------------|-----------|
| | | Penicillin G/V | Oxacillin | Amoxicillin | Ampicillin | Piperacillin | Cephalexin | Cefazolin | Cefadroxil | Cefaclor | Cefoxitin | Cefprozil | Cefuroxime | Cefdinir | Cefixime | Cefpodoxime | Ceftazidime | Ceftriaxone | Cefepime | Ceftaroline | Ceftolozane | Cefiderocol | Aztreonam |
| | Penicillin G/V | | | | | | | | | | | | | | | | | | | | | | |
| 트 | Oxacillin | | | | | | | | | | | | | | | | | | | | | | |
| Penicillin | Amoxicillin | | | | | | | | R1 | | | R1 | | | | | | | | | | | |
| | Ampicillin | | | | | | R1 | | | R1 | | | | | | | | | | | | | |
| | Piperacillin | | | | | | | | | | | | | | | | | | | | | | |
| <u>_</u> | Cephalexin | | | | R1 | | | | | R1 | | | | | | | | | | | | | |
| 1st Gen | Cefazolin | | | | | | | | | | | | | | | | | | | | | | |
| 15 | Cefadroxil | | | R1 | | | | | | | | R1 | | | | | | | | | | | |
| | Cefaclor | | | | R1 | | R1 | | | | | | | | | | | | | | | | |
| Ger | Cefoxitin | | | | | | | | | | | | R2 | | | | | | | | | | |
| 2nd Gen | Cefprozil | | | R1 | | | | | R1 | | | | | | | | | | | | | | |
| | Cefuroxime | | | | | | | | | | R2 | | | | | | | | | | | | |
| | Cefdinir | | | | | | | | | | | | | | R2 | | | | | | | | |
| en | Cefixime | | | | | | | | | | | | | R2 | | | | | | | | | |
| 3rd Gen | Cefpodoxime | | | | | | | | | | | | | | | | | R1 | R1 | | | | |
| 3. | Ceftazidime | | | | | | | | | | | | | | | | | | | | | R1 | R1 |
| | Ceftriaxone | | | | | | 1 | | | | | | | | | R1 | | | R1 | | | | |
| 4th Gen | Cefepime | | | | | | | | | | | | | | | R1 | | R1 | | | | | |
| 5th Gen | Ceftaroline | | | | | | | | | | | | | | | | | | | | | | |
| | Ceftolozane | | | | | | | | | | | | | | | | | | | | | | |
| | Cefiderocol | | | | | | | | | | | | | | | | R1 | | | | | | R1 |
| Mono | Aztreonam | | | | | | | | | | | | | | | | R1 | | | | | R1 | |





