

## Graded Challenge [3040007202]

This order set is designed to be utilized in accordance with the Penicillin Allergy Guidance Document published on the Antimicrobial Stewardship website.

If patient's allergy is to penicillin only, then cefazolin or a carbapenem can be safely given; no graded challenge is required.

Indications for graded challenge:

- History of IgE-mediated reaction with no previous tolerance to beta-lactam agents, and reaction occurred more than 10 years ago
- History of IgE-mediated reaction and previously tolerated beta-lactam agent, but a different beta-lactam is now required for treatment

This is NOT a desensitization. Patients that tolerate this challenge are not allergic to the agent used and should have their allergies updated accordingly.

**NOT intended for use in patients who are pregnant or have a history of life-threatening immunotoxicity reactions (e.g., vasculitis, TEN, SJS, DRESS, AGEP, or severe cytopenias).**

Provider must document that risks and benefits of the graded challenge have been discussed with patient and/or caregiver.

**Patients on beta-blockers (eg, metoprolol, carvedilol, propranolol, atenolol, labetalol, etc.) may have a diminished response to epinephrine if needed for the management of a severe allergic reaction. If a patient is on a beta blocker, schedule the graded challenge for the following morning and reschedule the next dose of the beta blocker to occur following the graded challenge. A pharmacist consult order is available in this order set to assist with beta blocker timing if applicable.**

[Penicillin Allergy Guidance](#)

**URL:** [https://www.unmc.edu/intmed/\\_documents/id/asp/2023\\_penicillinallergy\\_guidance.pdf](https://www.unmc.edu/intmed/_documents/id/asp/2023_penicillinallergy_guidance.pdf)

[BetaLactam Allergy Guidance](#)

**URL:** [https://www.unmc.edu/intmed/\\_documents/id/asp/2023\\_non-pcn\\_bl\\_allergy\\_guidance.pdf](https://www.unmc.edu/intmed/_documents/id/asp/2023_non-pcn_bl_allergy_guidance.pdf)

## General

### Consent (Selection Required) [547750]

Prepare consent form [NUR827]

Routine, Once

Provider assessed and patient agreed to graded challenge

### Nursing Assessment/Interventions [260099]

Continuous telemetry [NUR225]

Routine, Continuous

Telemetry indication? Drug monitoring  
if (answer = Other)

Please provide other indication:

Telemetry Removal:

if (answer = Remove telemetry for)

:

Discontinue 60 minutes after last dose if patient does not have another indication for telemetry monitoring

Routine, Every 4 hours, Monitor prior to each dose and every 30 minutes x 2 (for 60 minutes) after final dose  
Include breathing sounds for bronchospasms and stridor  
Routine, Continuous, Pulse oximetry every 30 minutes during infusion and one hour post-infusion

Routine, Once For 1 Occurrences

Medication information included? Yes

If patient has a beta blocker ordered (eg, metoprolol, carvedilol, propranolol, atenolol, labetalol, etc.), confirm patient did not take beta blocker prior to graded challenge that day. If beta blocker was taken, please notify ordering provider

Vital signs [NUR490]

Pulse oximetry [NUR586]

If patient has a beta blocker ordered (eg, metoprolol, carvedilol, propranolol, atenolol, labetalol, etc.), confirm patient did not take beta blocker prior to graded challenge that day. If beta blocker was taken, please notify ordering provider [NUR185]

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Ensure patient took scheduled respiratory medications prior to procedure [NUR185]  | Routine, Once For 1 Occurrences<br>Medication information included? Yes<br>Ensure patient took scheduled respiratory medications prior to procedure  |
| <input checked="" type="checkbox"/> Confirm patient has functioning IV line placed [NUR185]  | Routine, Once For 1 Occurrences<br>Medication information included?<br>Confirm patient has functioning IV line placed  |
| <input checked="" type="checkbox"/> Notify physician/provider if any signs or symptoms of allergic reaction: hypotension, tachycardia, chest tightness, respiratory distress, wheezing, stridor, nausea, vomiting, abdominal pain, diarrhea, itching, rash, hives, facial edema, sneezing, rhinorrhea, or watery eyes [NUR183] | Routine, Continuous<br>Notify physician if any signs or symptoms of allergic reaction: hypotension, tachycardia, chest tightness, respiratory distress, wheezing, stridor, nausea, vomiting, abdominal pain, diarrhea, itching, rash, hives, facial edema, sneezing, rhinorrhea, or watery eyes  |
| <input checked="" type="checkbox"/> For mild reaction (patchy macular and/or papular rash, hives or itching), administer diphenhydramine PO or IV as directed by prescriber. [NUR183]  | Routine, Once For 1 Occurrences<br>For mild reaction (patchy macular and/or papular rash, hives or itching), administer diphenhydramine PO or IV as directed by prescriber.  |
| <input checked="" type="checkbox"/> For severe reaction (hypotension, tachycardia, wheezing, chest tightness, respiratory distress, angioedema, and/or emesis and diarrhea), immediately administer Epinephrine IM and diphenhydramine IV then notify MD. [NUR183]   | Routine, Continuous<br>For severe reaction (hypotension, tachycardia, wheezing, chest tightness, respiratory distress, angioedema, and/or emesis and diarrhea), immediately administer Epinephrine IM and diphenhydramine IV then notify MD.   |
| <input checked="" type="checkbox"/> Update allergy section within electronic medical record [NUR185]   | Routine, Once For 1 Occurrences<br>Medication information included? Yes<br>Update allergy section within electronic medical record. If patient tolerated graded challenge, document the agent and date tolerated within the comments section of the beta-lactam allergy. If patient had a reaction to the graded challenge, update comments section of the beta-lactam allergy to document the agent and reaction to the beta-lactam antibiotic. Call pharmacist to confirm that graded challenge process has been completed and the allergy section has been updated. |

## Consults

### Consults [260103]

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Inpatient consult to pharmacist-allergy documentation [PHA22] | Routine, Once   |
| <input checked="" type="checkbox"/> Inpatient consult to pharmacist-other [PHA16]                 | Routine, Once   |
| <input type="checkbox"/> Inpatient consult to case management [CON101]                            | Case Management reason for consult: Directed referral |

## Medications

### Antibiotic Administration [215628]

- |   |   |
|---|---|
| <input type="checkbox"/> Amoxicillin - 250 mg [541719]  | <b>"Followed by" Linked Panel</b><br>25 mg, Oral, Once, Starting H, For 1 Doses<br>Suspected Pathogen:                                  |
| <input type="checkbox"/> amoxicillin (AMOXIL) 250 mg/5 mL suspension [454]                    | 250 mg, Oral, Once, Starting H+30 Minutes, For 1 Doses<br>Suspected Pathogen:   |
| <input type="checkbox"/> amoxicillin (AMOXIL) capsule [450]                                   | 250 mg, Oral, Once, Starting H+30 Minutes, For 1 Doses<br>Suspected Pathogen:   |
| <input type="checkbox"/> Cefazolin - 1000 mg (Selection Required) [541752]                    | <b>"Followed by" Linked Panel</b><br>10 mg, Intravenous, Once<br>Administer as a slow IV push at bedside [ceFAZolin]Suspected Pathogen: |
| <input type="checkbox"/> ceFAZolin (Ancef) in dextrose 5% in water 10 mL IV syringe [4084249] | 100 mg, Intravenous, Once, Starting H+30 Minutes<br>Administer as a slow IV push at bedside [ceFAZolin]Suspected Pathogen:              |
| <input type="checkbox"/> ceFAZolin (Ancef) in dextrose 5% in water 10 mL IV syringe [4084249] | 1,000 mg, Intravenous, for 30 Minutes, Once, Starting H+60 Minutes, For 1 Doses<br>Suspected Pathogen:                                  |
| <input type="checkbox"/> ceFAZolin (Ancef) injection [40801445]                               | 1,000 mg, Intravenous, for 30 Minutes, Once, Starting H+60 Minutes, For 1 Doses<br>Suspected Pathogen:                                  |
| <input type="checkbox"/> Cefazolin - 2000 mg [540699]   | <b>"Followed by" Linked Panel</b>   |

- ceFAZolin (Ancef) in dextrose 5% in water 10 mL IV syringe [4084249]
  - ceFAZolin (Ancef) in dextrose 5% in water 10 mL IV syringe [4084249]
  - ceFAZolin (Ancef) injection [40801445]
  - Cefepime - 1000 mg [541732]
    - ceFEPime (MAXIPIME) in sodium chloride 0.9 % 50 mL IV syringe [160486]
    - ceFEPime (MAXIPIME) in sodium chloride 0.9 % 50 mL IV syringe [160486]
    - cefepime (MAXIPIME) IV [420008]
  - Cefepime - 2000 mg [541734]
    - ceFEPime (MAXIPIME) in sodium chloride 0.9 % 50 mL IV syringe [160486]
    - ceFEPime (MAXIPIME) in sodium chloride 0.9 % 50 mL IV syringe [160486]
    - cefepime (MAXIPIME) IV [420008]
  - Ceftazidime/Avibactam - 2500 mg [540774]
    - cefTAZidime-avibactam (AVYCAZ) in sodium chloride 0.9 % 10 mL IV syringe [4084251]
    - cefTAZidime-avibactam (AVYCAZ) in sodium chloride 0.9 % 10 mL IV syringe [4084251]
    - cefTAZidime-avibactam (AVYCAZ) in sodium chloride 0.9 % 100 mL IVPB [4083302]
  - Ceftolozane/Tazobactam - 1500 mg [541737]
    - ceftolozane-tazobactam (ZERBAXA) in sodium chloride 0.9 % 50 mL IV syringe [4082036]
    - ceftolozane-tazobactam (ZERBAXA) in sodium chloride 0.9 % 50 mL IV syringe [4082036]
    - ceftolozane-tazobactam (ZERBAXA) 1,500 mg in sodium chloride 0.9 % 100 mL IV [40802061]
  - Ceftolozane/Tazobactam - 3000 mg [541738]
    - ceftolozane-tazobactam (ZERBAXA) in sodium chloride 0.9 % 50 mL IV syringe [4082036]
    - ceftolozane-tazobactam (ZERBAXA) in sodium chloride 0.9 % 50 mL IV syringe [4082036]
- 20 mg, Intravenous, Once  
Administer as a slow IV push at bedside  
[ceFAZolin]Suspected Pathogen:

200 mg, Intravenous, Once, Starting H+30 Minutes  
Administer as a slow IV push at bedside  
[ceFAZolin]Suspected Pathogen:

2,000 mg, Intravenous, for 30 Minutes, Once, Starting H+60 Minutes, For 1 Doses  
Suspected Pathogen:

**"Followed by" Linked Panel**

10 mg, Intravenous, for 5 Minutes, Once, Starting H, For 1 Doses  
Administer as a slow IV push at bedside  
[ceFEPime]Suspected Pathogen:

100 mg, Intravenous, for 5 Minutes, Once, Starting H+30 Minutes, For 1 Doses  
Administer as a slow IV push at bedside  
[ceFEPime]Suspected Pathogen:

1,000 mg, Intravenous, Once, Starting H+60 Minutes, For 1 Doses  
Suspected Pathogen:

**"Followed by" Linked Panel**

20 mg, Intravenous, for 5 Minutes, Once, Starting H, For 1 Doses  
Administer as a slow IV push at bedside  
[ceFEPime]Suspected Pathogen:

200 mg, Intravenous, for 5 Minutes, Once, Starting H+30 Minutes, For 1 Doses  
Administer as a slow IV push at bedside  
[ceFEPime]Suspected Pathogen:

2,000 mg, Intravenous, Once, Starting H+60 Minutes, For 1 Doses  
Suspected Pathogen:

**"Followed by" Linked Panel**

25 mg, Intravenous, for 5 Minutes, Once  
Administer as a slow IV push at bedside

250 mg, Intravenous, for 5 Minutes, Once, Starting H+30 Minutes  
Administer as a slow IV push at bedside

2.5 g, Intravenous, for 2 Hours, Once, Starting H+60 Minutes, For 1 Doses  
Is treatment for a suspected or confirmed carbapenem resistant gram-negative infection? If no, please contact ID or Antimicrobial Stewardship Team to review treatment options.

**"Followed by" Linked Panel**

15 mg, Intravenous, for 5 Minutes, Once, Starting H  
Administer as a slow IV push at bedside  
[ceftolozane-tazobactam]Suspected Pathogen:

150 mg, Intravenous, for 5 Minutes, Once, Starting H+30 Minutes  
Administer as a slow IV push at bedside  
[ceftolozane-tazobactam]Suspected Pathogen:

1,500 mg, Intravenous, Once, Starting H+60 Minutes, For 1 Doses  
[ceftolozane-tazobactam]Suspected Pathogen:

**"Followed by" Linked Panel**

30 mg, Intravenous, for 5 Minutes, Once, Starting H  
Administer as a slow IV push at bedside  
[ceftolozane-tazobactam]Suspected Pathogen:

300 mg, Intravenous, for 5 Minutes, Once, Starting H+30 Minutes  
Administer as a slow IV push at bedside  
[ceftolozane-tazobactam]Suspected Pathogen:

- ceftolozane-tazobactam (ZERBAXA) 1,500 mg in sodium chloride 0.9 % 100 mL IV [40802061]
- Ceftriaxone - 1000 mg [541741]
  - cefTRIAxOne (ROCEPHIN) in sodium chloride 0.9 % 10 mL IV syringe [4082316]
  - cefTRIAxOne (ROCEPHIN) in sodium chloride 0.9 % 10 mL IV syringe [4082316]
  - cefTRIAxOne (ROCEPHIN) IV [420012]
- Ceftriaxone - 2000 mg [541742]
  - cefTRIAxOne (ROCEPHIN) in sodium chloride 0.9 % 10 mL IV syringe [4082316]
  - cefTRIAxOne (ROCEPHIN) in sodium chloride 0.9 % 10 mL IV syringe [4082316]
  - cefTRIAxOne (ROCEPHIN) IV [420012]
- Ertapenem - 1000 mg [541744]
  - ertapenem (INVanz) in sodium chloride 0.9 % 50 mL IV syringe [4081299]
  - ertapenem (INVanz) in sodium chloride 0.9 % 50 mL IV syringe [4081299]
  - ertapenem (INVANZ) IV [4080189]
- Meropenem - 500 mg [541746]
  - meropenem (MERREM) in sodium chloride 0.9 % 50 mL IV syringe [4080997]
  - meropenem (MERREM) in sodium chloride 0.9 % 50 mL IV syringe [4080997]
  - meropenem (MERREM) IV [4080208]
- Meropenem - 2000 mg [541748]
  - meropenem (MERREM) in sodium chloride 0.9 % 50 mL IV syringe [4080997]
  - meropenem (MERREM) in sodium chloride 0.9 % 50 mL IV syringe [4080997]
  - meropenem (MERREM) IV [4080208]

**Medications for Allergic Reaction [539678]**

- Mild Allergic Reaction [539681]
  - 0.9% NaCl continuous infusion [27838]
  - albuterol (PROVENTIL HFA;VENTOLIN HFA) inhaler [17837]

3,000 mg, Intravenous, Once, Starting H+60 Minutes, For 1 Doses  
[ceftolozane-tazobactam]Suspected Pathogen:

**"Followed by" Linked Panel**

10 mg, Intravenous, for 5 Minutes, Once, Starting H, For 1 Doses  
Administer as a slow IV push at bedside.  
[cefTRIAxOne]Suspected Pathogen:

100 mg, Intravenous, for 5 Minutes, Once, Starting H+30 Minutes  
Administer as a slow IV push at bedside.  
[cefTRIAxOne]Suspected Pathogen:

1,000 mg, Intravenous, Once, Starting H+60 Minutes, For 1 Doses  
Suspected Pathogen:

**"Followed by" Linked Panel**

20 mg, Intravenous, for 5 Minutes, Once, Starting H, For 1 Doses  
Administer as a slow IV push at bedside.  
[cefTRIAxOne]Suspected Pathogen:

200 mg, Intravenous, for 5 Minutes, Once, Starting H+30 Minutes,  
For 1 Doses  
Administer as a slow IV push at bedside.  
[cefTRIAxOne]Suspected Pathogen:

2,000 mg, Intravenous, Once, Starting H+60 Minutes, For 1 Doses  
Suspected Pathogen:

**"Followed by" Linked Panel**

10 mg, Intravenous, for 5 Minutes, Once, Starting H  
Administer as a slow IV push at bedside

100 mg, Intravenous, for 5 Minutes, Once, Starting H+30 Minutes  
Administer as a slow IV push at bedside

1,000 mg, Intravenous, Once, Starting H+60 Minutes, For 1 Doses  
Suspected Pathogen:

**"Followed by" Linked Panel**

5 mg, Intravenous, for 5 Minutes, Once, Starting H  
Administer as a slow IV push at bedside

50 mg, Intravenous, for 5 Minutes, Once, Starting H+30 Minutes  
Administer as a slow IV push at bedside

500 mg, Intravenous, Once, Starting H+60 Minutes, For 1 Doses  
Suspected Pathogen:

**"Followed by" Linked Panel**

20 mg, Intravenous, for 5 Minutes, Once, Starting H  
Administer as a slow IV push at bedside

200 mg, Intravenous, for 5 Minutes, Once, Starting H+30 Minutes  
Administer as a slow IV push at bedside

2,000 mg, Intravenous, Once, Starting H+60 Minutes, For 1 Doses  
Suspected Pathogen:

Intravenous, Continuous PRN, Allergic Reaction

2 puff, Inhalation, Every 20 minutes PRN, Wheezing, Shortness of  
Breath

Management:

if (answer = Provider directed)

Route changes:

if (answer = Other (specify))

Explanatory comment:

Frequency changes:

<input checked="" type="checkbox"/> diphenhydrAMINE (SOMINEX) tablet [2505]	50 mg, Oral, Every 2 hours PRN, Mild allergic reaction Daily maximum of 400mg
<input checked="" type="checkbox"/> Severe Allergic Reaction [539682]	
<input checked="" type="checkbox"/> diphenhydrAMINE (BENADRYL) injection [2508]	50 mg, Intravenous, Every 2 hours PRN, Allergies, Mild or Severe allergic reaction Daily maximum of 400mg
<input checked="" type="checkbox"/> EPINEPHRINE INJECTABLE ALLERGY ORDERABLE [4081885]	0.3 mg, Intramuscular, Every 10 minutes PRN, Severe allergic reaction Maximum number of doses: 2
<input checked="" type="checkbox"/> hydrocortisone sod succ (PF) (Solu-CORTEF) injection [119665]	100 mg, Intravenous, Once PRN, Severe allergic reaction Severe allergic reaction
<input checked="" type="checkbox"/> famotidine (PEPCID) IV [4081890]	20 mg, Intravenous, Once PRN, Severe allergic reaction Please contact pharmacy for dose if needed.