Beta-Lactam Cross Reaction Allergy Alert Modifications

January 16, 2020

This information applies to: *PEI Physicians, Nurse Practitioners, Nurse Managers/Educators, Pharmacists and Pharmacy Technicians*

As a follow-up to the 2017 "Management of Beta-Lactam Allergies" memo from the Antimicrobial Stewardship Subcommittee, **Cerner will no longer trigger an allergy alert for antibiotics where there is no cross reactivity recognized** (specifically ceftriaxone, cefotaxime, cefuroxime, cefazolin, ertapenem and meropenem).

This update in the alerts will take place on January 27th, 2020 and allow for better communication between prescribers, nursing, and pharmacy for selection of the most effective antibiotic.

In addition, all front line health care providers should be aware of a special allergy circumstance called "SEVERE Beta-lactam Reaction (Non-IgE)" that when added to a patient's allergy list will trigger the appropriate alert to avoid all beta-lactam antibiotics for that patient.

An educational video on the above information can be found here:
https://youtu.be/uH8jmxbpzxU

Additional educational materials follow as an appendix

For more information, contact:

Dr. Greg German
Medical Microbiologist and Infectious Disease Consultant
Provincial Laboratory Services
Queen Elizabeth Hospital
(902) 894-2515
gigerman@gov.pe.ca

Fiona Mitchell
Provincial Antimicrobial Stewardship Pharmacist
Queen Elizabeth Hospital
(902) 894-2587
fcmitchell@ihis.org

Appendix 1

Background:

- Beta-Lactam antibiotics include **penicillins**, **cephalosporins**, and **carbapenems**.
- In 2017 Health PEI launched the Beta-Lactam Allergy Management Guidelines and Tools available at https://src.healthpei.ca/microbiology. These tools include the Beta-Lactam Cross Allergy Matrix and the Penicillin Allergy Management Algorithm.
- Beta-lactams are generally safe; allergic and adverse drug reactions are over-diagnosed and over-reported.
- Studies have shown that between 80 – 95% of reported penicillin allergies are not true hypersensitivity reactions and the vast majority of the patients reporting an allergy to penicillins can tolerate beta-lactams.
- Cross-reactivity between penicillin and cephalosporins is due to similarities in the side chains and not similarities in the beta-lactam ring structure as previously suspected.
- A patient with a reported beta-lactam allergy is more likely to receive antibiotics from other classes which may be less effective, more toxic, broader spectrum, more expensive, and more likely to lead to resistant organisms than beta-lactams.

Situation:

- The MULTUM allergy alerts in the Clinical Information System (CIS) contradict information described in the Beta-Lactam Allergy Management Guidelines and Beta-Lactam Cross Allergy Matrix.
- This could undermine ongoing efforts to educate health care providers on beta-lactam allergy management and cause confusion.
- The MULTUM allergy alerts could lead prescribers to unnecessarily change beta-lactam orders to less desirable antibiotics.

Solution:

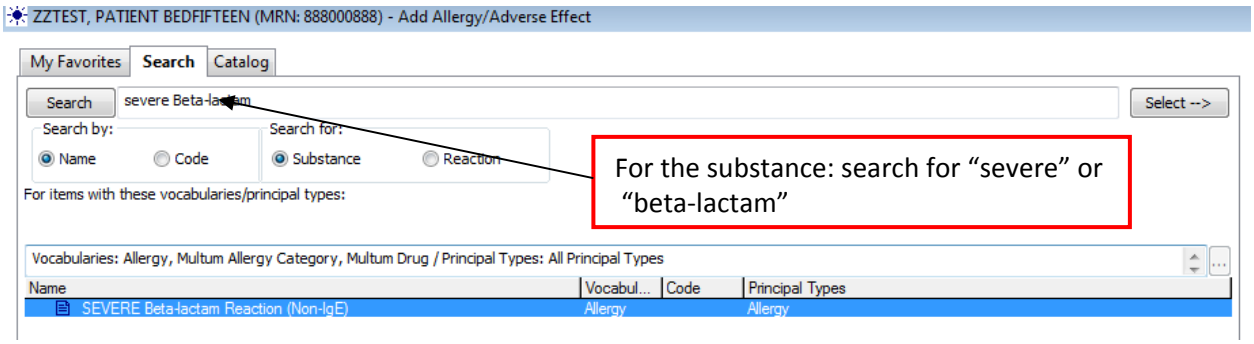
- Suppress allergy pairs in Cerner based on the Health PEI Beta Lactam Cross Allergy Matrix.
- Create a custom allergy and alert that will still fire for patients with severe or life-threatening non-IgE mediated hypersensitivity reactions.

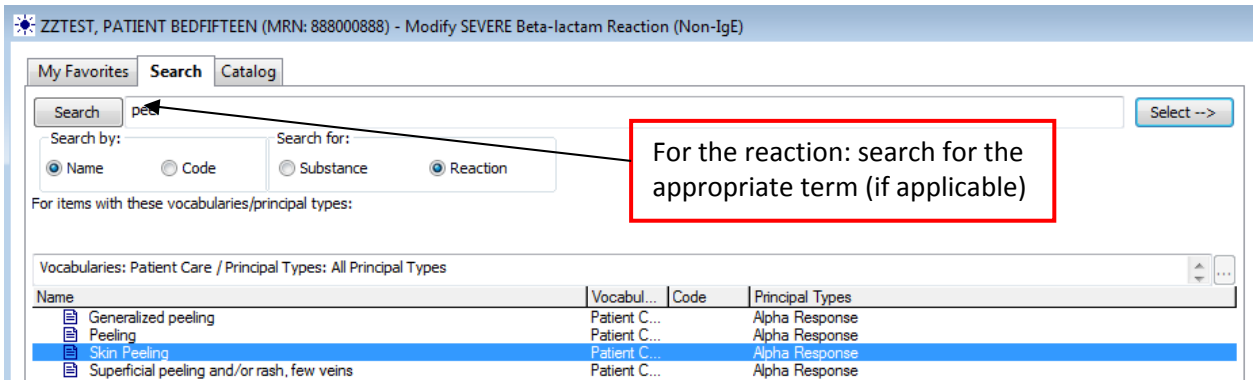
For patients with severe or life-threatening non-IgE mediated reactions to Beta-Lactams:

- Patients with reported Stevens-Johnson syndrome or Toxic Epidermal Necrolysis secondary to Beta-Lactam use should avoid ALL Beta-Lactams and not receive Beta-Lactam skin testing, re-challenging or desensitization.
- Patients with reported drug reaction with eosinophilia and systemic symptoms (DRESS), immune hepatitis, hemolytic anemia, serum sickness or interstitial nephritis secondary to Beta-Lactam use warrant a consult to the Medical Microbiologist/Infectious Diseases Consultant before utilizing any Beta-Lactam antibiotic.
- Stevens Johnson Syndrome (SJS) and variants are exceedingly rare (0.9 per Island per year)
- Beta-lactam antibiotics cause SJS only about 10-15% of the time based on a review of 4 studies.
- Despite this, a safety net is needed so that these patients are not given Beta-Lactam antibiotics.

Custom Allergy:

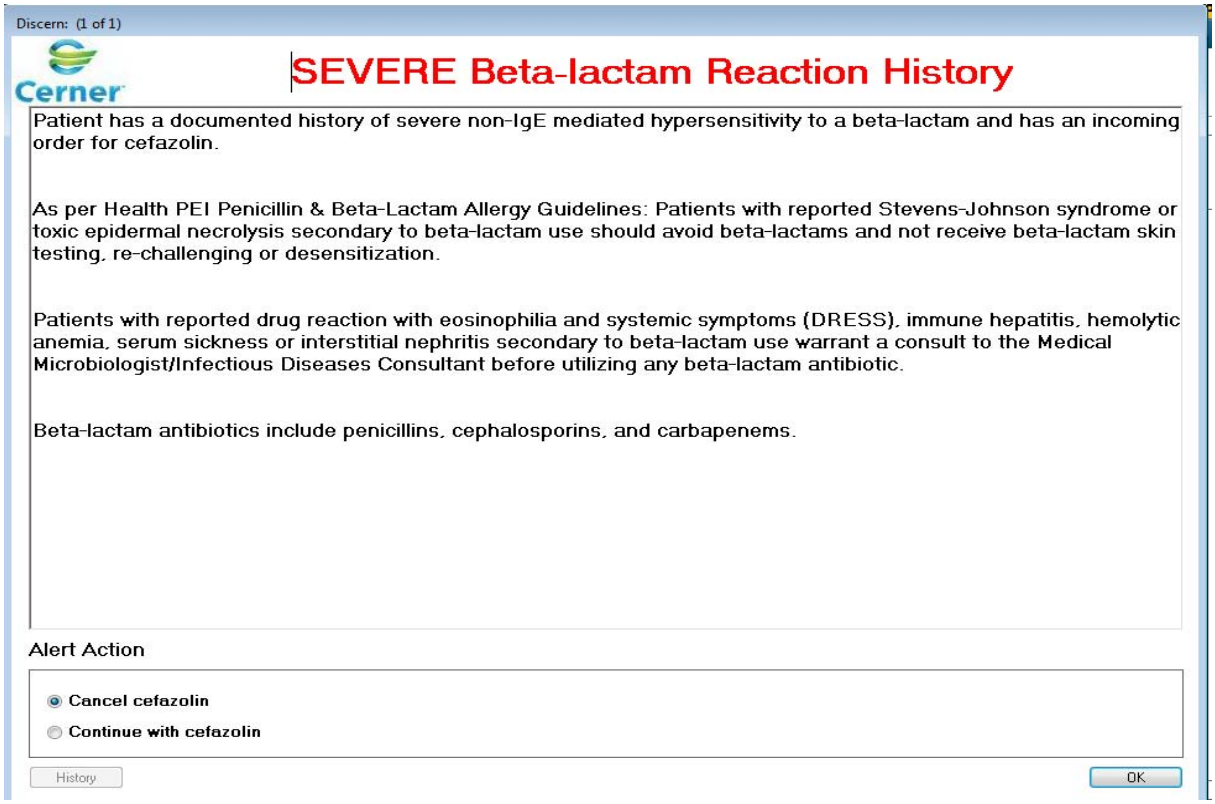
- For patients with a severe or life-threatening non-IgE mediated hypersensitivity reaction, a custom allergy called **"SEVERE Beta-Lactam Reaction (non-IgE)"** has been created that can be added to their profile to ensure that allergy alerts will still fire in CIS upon ordering of a Beta-Lactam antibiotic.
- Consider recording "SEVERE Beta-Lactam Reaction (non-IgE)" on your patient's allergy profile if they report any of the following after taking a Beta-Lactam antibiotic: skin peeling, Stevens-Johnson syndrome, toxic epidermal necrolysis, DRESS (drug reaction with eosinophilia and systemic symptoms), immune hepatitis, hemolytic anemia, serum sickness and interstitial nephritis.





Other examples of reactions include Stevens-Johnson syndrome, Toxic Epidermal Necrolysis, Severe Cutaneous Adverse Drug Reactions, and blisters

Custom Alert:



This custom alert will fire in Powerchart for:

Any patient with an existing allergy recorded for “SEVERE Beta-Lactam Reaction (non-IgE)”

OR

Any patient with an existing allergy for a Beta-Lactam antibiotic with a reaction of 'Skin Peeling', 'Superficial peeling and/or rash, few veins', ‘blisters’, 'Stevens-Johnson syndrome', 'Severe Cutaneous Adverse Drug Reactions', or 'Toxic Epidermal Necrolysis'

+

An incoming order for a Beta-Lactam antibiotic

Monitoring

- The Health PEI Antimicrobial Stewardship Team (AST) in collaboration with our colleagues at CIS have been able to identify some patients already that have a history of these reactions and have proactively added the custom allergy to their file.
- The AST will be notified by email any time the custom alert fires and an evaluation of the patient’s allergy history will take place.