The Problem

- The need for pre-medication in patients allergic to iodinated contrast is often not recognized before the patient arrives in the radiology department or the pre-medication protocol is often incomplete or incorrect.
- Ordering physicians often either don’t ask the patient and/or don’t reference the known allergies in the electronic health record (EHR) when ordering studies.
- If the allergy is recognized by the ordering physician, premedication is often incomplete/incorrect.
- What problems does this cause?
  - If allergies are recognized by the ordering physician, this often triggers a call to the radiology department for further direction. These interactions reduce resident and attending productivity.
  - Residents often recognize the history of allergy and lack of an ordered prep during the protocol process.
  - The need for pre-medication in patients allergic to iodinated contrast is often not recognized before the patient arrives in the radiology department or the prep protocol is often incomplete or incorrect.
  - What are the failure points?
    - If allergies are recognized by the ordering physician, this often triggers a call to the radiology department for further direction. These interactions reduce resident and attending productivity.
    - Residents often recognize the history of allergy and lack of an ordered prep during the protocol process.
    - The need for pre-medication in patients allergic to iodinated contrast is often not recognized before the patient arrives in the radiology department or the prep protocol is often incomplete or incorrect.

METHODS

- Baseline Measurements
  - Generate a report of contrasted exams in patients with a documented contrast allergy using the electronic health record (EHR) (Epic, Verona WI).
  - Measured: Rates of contrast allergy preps ordered without radiology prompting, contrast reaction rates.
- Step 1: Identify patients with a contrast allergy using standard logic
- Step 2: Create a procedure grouper which includes exams which use iodinated contrast
- Step 3: Setup the BPA to trigger when an order is placed and the following two conditions are met: 1) order for iodinated contrast enhanced exam and 2) Patient is allergic
- Step 4: Have the EHR display a BPA at the time of order validation when an iodinated contrast allergy alert is ordered in an allergic patient, which encourages use of non-contrast studies when the allergy is severe.
- Make a best practice alert (BPA) using Epic decision support tools
- Step 1: Identify patients with a contrast allergy using standard logic
- Step 5: Configure the SmartSet for four possible scenarios: 1) Adult Inpatient, 2) Adult Outpatient, 3) Pediatric Inpatient, 4) Pediatric Outpatient
- Step 6: We installed the alert with physician education in the form of an Epic Tip. We then waited 8 months and measured again.

RESULTS

- 210 encounters had an alert triggered during the study period
- 46% were cancelled (p value <.0001)
- There were decreased same day cancellations
  - Pre-alert, 89% of all cancellations occurred on the day of the radiology appointment. Post-alert, 51% of all cancellations occurred on the day of the radiology appointment (p value <.0001)
  - Before the alert, 32% of the exams were changed to noncontrast. After the alert, 48% were changed to noncontrast (p value <.017).
- No effect on contrast reactions: 1.4% in both groups.

CONCLUSIONS

Implementation of a contrast allergy decision support system in the EHR, maintained appropriate anti-allergy prophylaxis with reduced need for radiologist intervention and resulted in fewer same day cancellations, thus likely improving patient satisfaction and departmental efficiency. The unanticipated decline in the frequency of contrast exams after BPA introduction requires further study. It is possible that the alert alarms the clinician more than the previous more reassuring verbal conversations with the radiology staff. Allowing the clinician to choose a reason for ignoring the alert or changing to a noncontrast exam could further enlighten us on reasons for the decline in frequency of contrast enhanced exams.