**Table 1. Demographic Data of Patients with Penicillin Allergies**

|  |  |
| --- | --- |
| **Age (median)** | 69 |
| **Female Sex** | 14505 (63.8%) |
| **Race** |  |
| White | 17445 (76.8%) |
| Black or African American | 3374 (14.8%) |
| Asian | 895 (3.9%) |
| American Indian/Alaska Native | 43 (0.2%) |
| Native Hawaiian or Pacific Islander | 27 (0.1%) |
| Other | 859 (3.8%) |
| Unknown | 75 (0.3%) |
| **Ethnicity** |  |
| Non-Hispanic | 20323 (89.5%) |
| Hispanic | 2299 (10.1%) |
| Unknown | 95 (0.4%) |
| **Payor** |  |
| Medicare | 11603 (51.0%) |
| Medicaid | 1320 (5.8%) |
| Commercial | 8437 (37.1%) |
| Other/Unknown | 1358 (5.9%) |

**Table 2. Patient ICD-10 codes for acute allergic reaction**

|  |  |
| --- | --- |
| ICD-10 | Description |
| L50.0 | Allergic Urticaria |
| T36.0X1A | Poisoning by penicillins, accidental (unintentional), initial encounter |
| T36.0X4A | Poisoning by penicillins, undetermined, initial encounter |
| T36.0X5A | Adverse effect of penicillins, initial encounter |
| T36.1X1A | Poisoning by cephalosporins and other beta-lactam antibiotics, accidental (unintentional), initial encounter |
| T36.1X5A | Adverse effect of cephalosporins and other beta-lactam antibiotics, initial encounter |
| T36.1X4A | Poisoning by cephalosporins and other beta-lactam antibiotics, undetermined, initial encounter |
| T88.6XXA | Anaphylactic reaction due to adverse effect of correct drug or medicament properly administered, initial encounter |
| T78.40XA | Allergy, unspecified, initial encounter |
| T78.2XXA | Anaphylactic shock, unspecified, initial encounter |
| T78.40XD | Allergy, unspecified, subsequent encounter |
| T78.49XA | Other allergy, initial encounter |
| T78.49XD | Other allergy, subsequent encounter |

**Table 3. Cases in which a broader spectrum or more toxic antibiotic was prescribed as a result of an allergy alert**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Patient Background | Medication Allergy and Reaction | Antibiotic Order that Triggered Interruptive Alert | Alternative Antibiotic Given  (Instead of original beta-lactam order) | Previously Tolerated Beta-Lactam | Likely preferred management |
| 41F presenting with nephrolithiasis and possible pyelonephritis versus cystitis | Penicillin caused hives | Cefotaxime | Ciprofloxacin | Cephalexin capsules given in 2 separate, prior ED visits.  Amoxicillin-clavulanate tablet given in 1 prior ED visit.  IV cefotaxime given in 1 prior ED visit  IV cefotetan given in 1 prior ED visit.  Penicillin V given in 2 separate, prior ED visits. | 3rd generation cephalosporin |
| 34F with history of type 1 DM and renal transplant with E. coli pyelonephritis | Penicillin caused rash | Cephalexin | Ciprofloxacin | IV ceftriaxone 1g administered daily for 3 doses during same hospitalization. Patient was discharged later in the day on same day of last ceftriaxone dose. | Cephalosporin |
| 58F with history of recurrent nephrolithiasis who developed severe hydronephrosis and required nephrostomy tube placement, requiring peri-procedural antibiotics | Piperacillin-tazobactam caused the patient to feel "sick to my stomach" | Ceftriaxone | Trimethoprim-sulfamethoxazole | Patient reported she had been taking cephalexin as an outpatient. | 3rd generation cephalosporin |
| 70M with history of heart failure secondary to amyloidosis who underwent orthotopic heart transplantation and received periprocedural antibiotics | Amoxicillin caused rash | Cefazolin | Vancomycin and aztreonam | IV cefazolin 1g administered q8hours for 3 doses in previous hospitalization. IV cefotaxime 2g administered q8hours for 5 doses in previous hospitalization. | Cefazolin |
| 87F with a history of heart failure and asthma who received antibiotics to cover for HAP | Penicillin caused anaphylaxis | Piperacillin-tazobactam | Aztreonam | IV ceftriaxone administered once in previous hospitalization. IV cefotaxime administered 9 times in previous hospitalization. IV cefazolin administered 16 times in previous hospitalization. | 4th generation cephalosporin |

Figure 1. Sample Interruptive Penicillin Allergy Alert Displayed to Providers When any Beta-Lactam is Ordered

Graphical user interface, application

Description automatically generated