



Overcoming barriers and expanding an existing Antimicrobial Stewardship Program: Allergy Collaboration to de-label Penicillin allergy

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ABSTRACT

Background

The pandemic placed barriers to face-face visits and repurposed Antimicrobial Stewards. During the pandemic, our existing Antimicrobial Stewardship Program: Allergy PCN or beta-lactam de-labeling program (PDL) collaborated with a medical center within our network to adopt an existing EMR-based screening tool and CDSS tracking system to overcome barriers.

Methods

Between April 2021-March 2022 we expanded our PDL by off-loading the workload through EMR beta-lactam assessment (BLA) notes targeting inpatient PharmDs. The ability to de-label was expanded by 'chart' de-labeling using a BLA note template developed from the Memphis VAMC. The BLA allowed historical allergy (duration, tolerability of other beta-lactams) or drug-related side effect

Results

Over one year the new BLA note was used in 113 patients, assessments were completed by the targeted audience (Inpatient Medicine PharmD) by the 3 month of the adoption period; subsequently BLA use increased 180% compared to the 3 month lead-in period. BLAs gave inpatient providers guidance on drug selection, referral for formal PCN testing or Pharmacist/Allergy review, a "chart only" de-label. With pandemic constraints few patients (17/113, 15%) were referred for skin testing with 65% of those successfully de-labeled. Among those not requiring PCN testing, when EMR records demonstrating tolerability to other beta-lactam agents, non-allergic reactions were clarified and/or patients were well enough during the hospital stay to provide accurate historical information nearly a third of those patients (19/66, 29%) were successfully de-labeled.

Conclusion

The pandemic provided clinical barriers, however we successfully adopted an EMR-based BLA tool. Engagement and buy-in from providers resulted in chart documentation and allergy de-labeling. Allergy working with ASPs can leverage both EMR and CDSS tools to de-label allergies to beta-lactams.

BACKGROUND

Allergies listed in medical records are often erroneous and have been shown to contribute to worse patient outcomes, increased antimicrobial resistance, and increased healthcare costs. Labeling of a patient or patient's chart with penicillin (PCN) allergy is an important public health issue if the labeling is incorrect. It is reported that up to 10% of the population and as many as 20% of inpatients are labelled with beta-lactam allergy (BLA). However, less than 10% have a proven allergy after being assessed with comprehensive evaluation and investigation. Most concerning from the perspective of Antimicrobial Stewardship, patients labelled as having a PCN allergy are more likely to receive second-line and sub-optimal antibiotic regimens. As a result, not only reporting an allergy to penicillin, but providers who act on erroneous or out of date information regarding allergy run the risk of not achieving effective antimicrobial choices. Patients incur all the potential unavoidable side effects and may experience completely avoidable toxicities or consequences. Patient: labelled as having an allergy to PCN may suffer worse patient outcomes. Providers may often be unaware of the serious impact of the allergy history on the outcomes or consequences of the drug-choices that are made.

Skin-testing to 'de-label' PCN allergies has been shown in the past to be safe and cost-effective in multiple clinical settings. Oral challenge is appropriate when allergy to the antibiotic is unlikely after considering details of the past reaction. Patients who have had a mild allergy or lack IgE mediated symptoms are good candidates for an oral challenge. Similarly, if patients had a mild allergy > 10 years ago they may undergo an oral challenge as 80% lose sensitivity to the drug after 10 years. The clinician should be ready to treat an allergic reaction should one occur. Patients who have a remote history of allergy and had tolerated penicillin since the allergy, get their allergy removed or de-labeled without testing. Chart review de-labeling for low-risk patients who have adverse reactions or intolerance to PCN such as symptoms such as headache, Gastrointestinal disturbance, or family history can easily be removed for penicillin allergy.

Antimicrobial Stewardship teams which focus on de-labeling BLAs can improve efforts to identify and refer patients through close collaboration with Allergy Services. By expanding collaboration to inpatient providers, particularly inpatient Pharmacists, the recognition and referral process can be maximized. Despite the challenges of the global pandemic, two VA medical centers shared best practices across sites using an EMR-based tool combined with education to expand existing referral and evaluation of BLAs.

METHODS

The Washington DC Veterans Affairs Medical Center (VAMC) Antimicrobial Stewardship Program (ASP) and Allergy services have a long-standing collaboration (dating to 2016) to address BLAs and refer appropriate patients for de-labeling. An opportunity arose during the Fall of 2020 to work with the Memphis VAMC (Dr. Gillion) in adopting their VHA award winning tool, EMR-based assessment note the Beta-lactam Assessment Tool or BLAT. The goal of the tool was to empower providers to systematically challenge and clarify penicillin allergy reports and either confirm or de-label the allergy. Between April 2021-March 2022 we adopted the EMR beta-lactam assessment tool (BLAT). The BLAT was introduced to the EMR and used initially by the ASP (Group A), then adopted quickly by the Allergy providers (Group B) and slowly introduced to the inpatient Pharmacists (Group C) over the period of observation. Adjustments were made over time to account for remote workforce and with feedback from stakeholders. The initial role out phase was focused on training and engaging the inpatient providers. General information on the program and adoption was also given widely through educational emails, Grand Rounds, in-person visits to departments and standing meetings of providers in a number of areas including Nursing, Pharmacy, General Surgery, Urology, Neurology, Procedural Cardiology, and Long-Term Care. The DC VAMC modified the Memphis BLAT to additionally capture the patient's allergy history in EMR, allowing providers to document the details of the allergy as recalled by the patient in detailed steps. Identified patients with a historical and/or documented BLA were automatically enrolled in Clinical Decision Support Software or CDSS (Theradoc[®], Inc). The CDSS tracked interventions including previous exposure to alternative antibiotics, exposure of cephalosporins, carbapenems and tolerance of beta-lactams after PCN de-labeling. The CDSS was also used by the ASP to identify inpatients with or without a concurrent antimicrobial (AM) and provided a means to track referral and outcome characteristics of the BLAT use over time. The primary outcome of interest was the adoption of the BLAT use over time during the pandemic period. For purposes of this poster, we are limiting presentation to the adoption patterns of the specially trained providers.

RESULTS SUMMARY AND DISCUSSION

During the pandemic period 3,281 unique patients carrying a BLA generated nearly 8,000 alerts due to health care encounters at our medical center. The alerts generated for BLA in the EMR-CDSS system demonstrate ongoing need for medical interaction during the pandemic, with nearly 40% of all BLA alerts being generated in setting of at least one antimicrobial being used. Barriers encountered during the pandemic included: clinic closures, repurposing of ASP staff for COVID efforts, reduction in face-face clinical visits favoring tele-health and staff working from home and significant competing clinical and social issues for both staff and patient. There was additional impact from the need to repurpose Allergy clinic space for COVID interventions.

- ✓ At the height of the pandemic and during surge periods in US hospitalizations (4/2021-3/2022), 115 BLATs were entered into the EMR at the DCVAMC. The adoption rates followed the patterns expected, in that the initial phases were achieved by the primary stakeholders (ASP, Allergy) and then Inpatient Clinical Pharmacist Specialists (CPS). Steady adoption over time as the ASP/Allergy teams moved to a monitoring and patient-interaction role
- ✓ With use, modifications were introduced, and BLAT use increased over the period of observation. Patient populations were targeted in both in- and outpatient settings. BLAT was reinforced through ASP, Allergy and Pharmacy leadership in educational sessions and supportive interaction with stakeholders through real-time messaging via Microsoft Teams and team-level handshakes AS activity.
- ✓ BLAT tool provided a platform for documenting history, evaluation and generated referrals when indicated through combination of ASP oversight and training of key stakeholders and patient education
- ✓ Tracking through BLAT use and the Allergy service referrals demonstrated nearly one third of BLAT use resulted in chart-review removal of BLA (examples include clarification of intolerance/side effect or demonstrated tolerance to beta-lactam through review of EMR).
- ✓ There were comparable rates of de-labeling between the pre and post-pandemic periods (Figure 4). Oral challenge was used in greater proportion during the pandemic

The Memphis VAMC's BLAT was adopted to assist in ASP activity at the DC VAMC. The BLAT was successfully adopted during an incredibly difficult time. Despite the challenges faced, the rate of de-labeling achieved was comparable to the pre-pandemic period. When circumstances limited face-face visits for skin testing, the BLAT provided ASP-Allergy additional ability to identify and de-label during the pandemic through oral challenge and EMR review. Identifying high risk patient groups helped to target efforts. Allergists invited to work within an ASP can lead to effective de-labeling programs.

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