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Perspective

Drug allergy delabeling in the clinical setting

An all-hands-on-deck opportunity

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Drug allergy delabeling refers to the removal of a listed drug from the allergy section. In an ideal scenario, the removal of the patient allergy label is then communicated in a streamlined process to the patient and their health care settings. The future of large-scale drug allergy delabeling rests on multiple factors: culture shifts, easily adapted tools to delabel our largest drug allergy categories, and electronic health record (EHR) crosstalk. The present functionalities of most EHR allergy sections and ignorance of their content are at odds with our universal goals of providing highly reliable, expert, safe, and affordable care. In a previous study from our health care system, more than 35% of patients had at least 1 listed drug allergy in their EHR.¹ In our practice at Brigham and Women's Hospital, we have manually reviewed patients' charts with more than 20 listed drug allergies, and it was clear that no one took the time to look at the complete list, remove duplicates, or ask a reaction history to any listed agent. Frequently, the drug allergy list is not as daunting, but it still lists an "unknown" reaction or an inaccurate medication, despite the fact that the patient is able to clearly articulate the drug allergy history. The documentation of these drug allergies has real implications for safe prescribing, longer hospital admissions, and hospital-associated infections.²

Our hope is to have a culture shift wherein drug allergies and drug allergy review are paired in importance with medication reconciliation at every office visit, every admission, and every procedure, but most importantly done correctly. For us, it was not until becoming faculty (4 years and 9 years ago, respectively) did drug allergy delabeling become an internal mandate of clinical

encounters no matter the listed reason for the patient visit. In addition, there is a need for a standardized approach to operationalizing drug allergy evaluation programs to make them feasible and sustainable. Innovative and successful delabeling efforts have been studied and spread for penicillin allergy.³ There is a need to uncover the integral components of drug allergy delabeling programs that can be tailored and disseminated in various settings, incentivized by insurance companies and hospitals, and standardized nationally. Alternatively, antibiotic allergy management can be integrated into existing programs such as antimicrobial stewardship programs and transplant evaluation programs, or high-risk patient populations.

Although delabeling programs or initiatives can have their own associated costs, the costs are not burdensome. Moreover, there are tangible economic benefits to delabeling, beyond the patient outcomes. One study estimated a penicillin allergy delabeling cost savings of \$192,223 per year in a tertiary care center pediatric emergency department.⁴ Another study estimated the cost of a penicillin allergy evaluation by an allergist (taking into account all resources, including building space and equipment) that ranged from \$220 to as high as \$1247 (if ratio of cost to charges modeling was used) in 2016 US dollars.⁴ Estimated costs dropped to \$40 when a nurse practitioner conducted a 2-step graded challenge, without skin testing.⁴

There are significant challenges to operationalizing drug allergy delabeling efforts. First, there is a finite number of allergists who are comfortable and have the resources to perform drug allergy evaluations and testing. Second, an initial drug allergy evaluation by a primary care provider (who would then ultimately refer to an allergist) is usually not prioritized in the context of preventive health and chronic disease management. Third, the lack of integration across health systems, including hospitals, outpatient office and clinics, and pharmacies, is a challenge to the complete "clearing" of someone's allergy in their records. To ensure that drug allergy integration is addressed, allergists must be involved to

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ensure our concerns are not left out. After drug allergy delabeling is completed, there is frequently a persistent lack of understanding regarding use of the drug among patients, families, and physicians.⁵ The confusion can be related to not fully understanding the drug allergy is resolved and discomfort regarding the risk of allergy recurrence. Finally, quality improvement efforts must be used to modify how allergy documentation is done. Our health care system, Mass General Brigham, has spent considerable effort designing drug allergy dictionaries and categories for cross-reactive alerting. Until we put in place validated safety functions within our EHR systems for drug allergy documentation (eg, date of reaction and reaction type), we will not be able to productively and uniformly aid clinicians in thoughtful delabeling and minimizing avoidance of prescribing first-line medications.

How does skin testing fit into our drug delabeling efforts? Our only standardized skin testing protocol is for penicillin; therefore, the development of new standardized testing protocols is extremely important. Irritant skin test concentrations have been established for most antibiotics, which can help determine appropriate use of graded drug challenge. However, there are clinician knowledge gaps about available skin testing reagents and concentrations. We can start with structured programs for populations with urgent needs (eg, bone marrow and solid organ transplants and preoperative settings) and brief assessments to identify appropriate patients. As key as development and utilization of novel and existing drug allergy reagents are to allergy practice, delabeling every listed drug allergy solely by allergists is not feasible or practical. There is emerging literature on using graded

oral challenge (without previous allergy testing) to delabel low-risk patients with a history of penicillin allergy.³ Acceptance of this approach could reduce allergy testing burden on allergists while potentially increasing drug allergy delabeling efforts.

There has been significant progress in designing systems that aid the allergist and nonallergist in managing some of our largest drug allergy issues (eg, penicillin). Continued efforts in this area have the potential to affect drug allergy delabeling on a large scale. In turn, this will minimize unnecessary avoidance of first-line medications.

These efforts, however, would not be successful without an all-hands-on-deck attitude by the entire health care team.

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