American Academy of Allergy Asthma & Immunology

AAAAI Position Statement on Changing Electronic Health Record Allergy Documentation to "Alerts" to Lead to Easily Understood, Actionable Labels

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The term "allergy" is inaccurate for the vast majority of the contents in the current allergy fields of electronic health records (EHRs). While EHRs have transformed access to health information and streamlined the delivery of care, their ability to reliably indicate medications, vaccines, or foods that mandate avoidance versus preferences or mild intolerances, is suboptimal. The current systems are reactive instead of being proactive and frequently fail to communicate the appropriate course of action. This Position Statement of the American Academy of Allergy, Asthma and Immunology (AAAAI) advocates for a change in terminology. The section of the EHR currently labeled "allergies" should be renamed "alerts." The term "alert" accurately captures the purpose of this section without incorrectly assigning an allergic mechanism, and prioritizes easily understood and actionable labels. This change has the potential to simultaneously improve patient safety and care. This shift will be the first step in the transformation of the alerts section of the EHR. This document provides a framework for categorizing what should be included in this section. Enacting these changes will require EHR and clinical decision support vendors, healthcare and data standard regulators, allergists, and the larger health care community to work together to bring about these important advances. **(J Allergy Clin Immunol Pract 2024;12:3237-41)**

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Abbreviations used
AAAAI- American Academy of Asthma Allergy & Immunology
EHR- Electronic health record

INTRODUCTION

The incorporation of electronic health records (EHRs) into modern health care systems was intended to revolutionize medical documentation and enhance the quality and safety of patient care in a personalized manner. To implement precision medicine, physicians must be aware of patient-centric metrics related to clinical care, including genetics, previous reaction phenotypes, past and active disease states, utilization of current medications, and patient preferences.[1] However, several complexities and challenges persist in realizing the benefits of EHR documentation. The current module that has documentation of patient-specific and clinically significant reactions or warnings about medications, foods, and topical materials used in patient care is suboptimal and fails to improve quality and safety. This Position Statement from the American Academy of Allergy, Asthma & Immunology (AAAAI) outlines critically needed enhancements in the design and functionality of the "allergy" module, or field, of EHRs. Although it serves as a call to action for EHR vendors, clients, and users, it also serves as a warning that regulatory agencies must update these data elements and subsequently align EHR documentation with regulatory standards and dynamic data exchange requirements.

CURRENT STATE OF THE EHR

At present, there is only an "allergy" module available in the EHR to list medications, foods, and topical materials that a particular patient should be avoiding. This module is a "catch-all" for immunologically mediated reactions, personal preferences, family histories, intolerances, underlying genetics or physiology, disease states, concomitant medication usages, and other contraindications.[2] In most cases, any member of the health care team, regardless of training level, can modify this "allergy" module.[3] Furthermore, there is no standardization of the "allergy" module across different health care systems, different EHR vendors, or even within the same type of EHR, such as Epic (Verona, Wis) or Oracle Cerner (Austin, Tex).[4] Entries into the "allergy" module are often determined by patient self-reports, without links to clinical visits or encounters documenting the index adverse reaction. Patients may still be listed as "allergic" to a medication that they have tolerated and may have duplicative entries or entries that are not informative because of a missing substance or reaction.[5] There is an overreliance on "free-text" entries, which hinders current and future clinical decision support and research.[6] EHR vendors should be provided with medically accurate and updated cross-reactive drug-warning logic. This will limit the discordance between evidence-based practice and sometimes archaic and unnecessary drug alerts, which have an effect on patient safety and treatment outcomes.

It is the position of the AAAAI that the current state of "allergy" EHR documentation leads to confusion, misunderstandings, and suboptimal patient outcomes and safety hazards. Substantial opportunities exist for refining the documentation in this field to ensure a more comprehensive, accurate, and clinically useful representation of patient health information.[7,8]

CHANGING THE NAME OF THE "ALLERGY" MODULE

The current "Allergy" module, in all widely used EHRs, is populated primarily with entries that would not cause a clinically significant immunologically mediated hypersensitivity reaction with subsequent exposure. By calling this field "allergy," it distorts the perceived risks of use and future management. The term "allergy" triggers concern for anaphylaxis with reexposures or that desensitization procedure (ie, induction of tolerance) is possible. This terminology may contribute to indefinite avoidance of medications, despite the possibility of change in tolerance with the passage of time. **We propose changing the terminology of the overall module in the EHR from "allergy" to "alerts" as an effective starting point to change risk perception and clinical behavior.** The term "alerts" does not specify a mechanism and does not presume that an adverse event has occurred with a previous exposure. This term is generic enough to apply to everything from personal preferences to life- threatening contraindications. The meaning behind this term is accessible to all stakeholders in this arena, including patients, health care professionals, EHR vendors, and software engineers, as "alerts" are commonly used across EHRs as advice or warnings to health care teams members.

Changing the name of the "allergy" module to "alerts" is an initial step for a myriad of changes that are necessary to improve this section of the EHR. The goal of modifying the module name is to promote recognition that indications for medication, food, or substance avoidance include much more than immune-mediated (allergic) reactions. For medications, the "alerts" module should foster communication about the reasons for medication avoidance or potential reuse, because both unnecessary avoidance of medications and reintroduction of contraindicated medications may lead to patient harm. The "alerts" module should include immune-mediated reactions, adverse reactions, intolerances, contraindications, personal preferences, and others, and would also allow growth of the module in the future to accommodate various personalized risks associated with different medications, such as genetic variations in drug metabolism to HLA risks for severe immunologically mediated drug reactions.[9]

INITIAL RECOMMENDATIONS FOR THE NEW "ALERTS" EHR MODULE

Create meaningful subcategories using easily understood language that will lead to meaningful, actionable labels. We recognize that change of the EHR involves many stakeholders, and that change will be iterative. We propose some initial modifications that will be an improvement from the current state while transformative change is in development. Essential elements of the newly constituted "alerts" module are displayed in Figure 1, along with some specific examples of subcategories. Dividing the new module broadly into drug, topical, and venom/food "alerts" will separate these 3 main categories of exposure concern. It is our position that environmental allergens, such as pollen, pet dander, or molds, should not be entered into this module but rather documented in the problem list.[7] For an

1) **Step 1**: Choose Agent type: drug, food, topical (choose one- leads to branching logic); Required Field
2) **Step 2:** Identify specific Name of drug, food, or topical agent- chosen from standardized list; Required Field
3) **Step 3: Choose Reason** for avoidance: **Required field**; leads to branching logic- questions that trigger if previous adverse reaction vs other questions that trigger if "predisposition to adverse reaction".
    1) Personal preference
    2) Predisposition to adverse reaction
    3) Previous adverse reaction
4) **Step 4: Choose rationale/evidence for avoidance** (Agent and Reason specific, Not a required field) - example for a medication, previous adverse reaction:
    - Route of exposure
    - Dose
    - Date of last exposure
    - Indication
    - Time to onset of symptoms after first dose of last course
    - Description of symptoms-chosen from standardized list
    - Duration of symptoms
    - Treatment given for symptoms-chosen from standardized list
    - Any genotyping, phenotyping, clinical condition and/or testing performed that precludes safe reuse, rechallenge, and/or desensitization
5) **Step 5: Choose Management** (Lay language, no expertise required, Required Field but customizable); example below is for medication:
    a. Strict avoidance of agent and potentially cross-reactive agents (class avoidance)
    b. Strict avoidance of agent only (others in class are tolerated)
    c. Contraindicated because of patient-specific predispositions to adverse reaction
    d. Use only when alternative options are not available or higher risk
    e. Use only with a prespecified management plan (premedications, altered dosing or observation, specialist involvement)

FIGURE 1. Simplified data elements needed for an accurate evaluation, documentation, and subsequent management of EHR alerts.

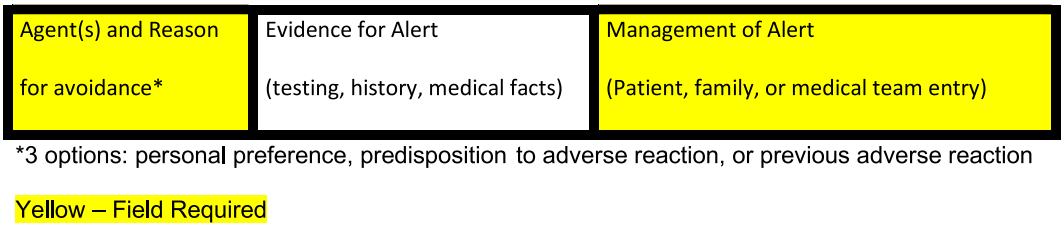

FIGURE 2. Simplified Alerts section.

"alert" to create a meaningful change, it should require documentation that is easy to enter by a medical assistant and patient/parent (Figures 2 and 3) to support the label. For a label to be entered, the entry should first require a "reason," such as personal preference, previous adverse reaction, or predisposition to adverse reaction. Accurate labeling of the "reason" is critical to avoid misclassification and unnecessary drug avoidance or unsafe drug exposures.[10] Making the default "reason" that appears when

Agent(s) Reason for alert	Evidence for alert	Management of alert
Milk (food) Previous adverse reaction	Date: July 1,2020 Food: Similac Reaction: Hives, difficulty breathing Testing: Not yet	Strict avoidance of milk in all forms.
Eggs (food) Previous adverse reaction	*Family does not know the details- does not fill out*	Okay to eat eggs in baked foods
Amoxicillin (drug) Previous adverse reaction	Date: July 1, 2021 Drug: Amoxicillin Reaction: Hives, swelling and throat felt tight Testing: Not yet	Refer to allergy for skin testing or evaluation.
MMR vaccine (drug)	Medical condition : Heart transplant	
 Medically based contraindication		Strict avoidance of MMR vaccines
Adhesive tape Patient preference	Skin irritation with some adhesive bandages	Use micropore tape when possible.May need topical corticosteriod to area.
Vancomycin IV Previous adverse reaction	Date: February 10, 2020 Drug: Vancomycin IV Reaction: flushing, pruritus, hives at the infusion site Testing: Not indicated	Premedicate with cetirizine 10 mg PO. Infuse IV vancomycin slowly, at a rate no higher than 10 mg/min
Ceftriaxone (drug) Previous adverse reaction	Date: July 1, 2021 Drug: Ceftriaxone Reaction: Hives, swelling and SOB Testing: Skin test positive september 9, 2021	Needs skin testing prior to use or desensitization when testing and alternative options are not available or higher risk. Use with allergist or expert supervision.

FIGURE 3. Example of ideal Alert field using simplified language, required fields, and branching logic that ensures meaningful management for idealized patient care. *IV,* Intravenous; *PO, per os* (by mouth); *SOB*, shortness of breath.

reporting a patient intolerance, "personal preference," when there has been no adverse reaction with previous exposure would more closely align with reality. Currently, most systems have their default reaction type as "allergy," when less than 1 in 5 reactions consistent with hypersensitivity.[11]

After defining the "reason" for avoidance, patients/parents should next be asked to provide any meaningful information that substantiates the "alert." The questions will be specific to drug, food, or topical. Finally, patients will then be asked how the "alert" should be managed—the drop-down options will be specific to drug, food, or topical.

When a true absolute contraindication to use or reuse of a specific drug, food, or material is present (management entry that states strict avoidance), the EHR should completely block any attempt to order that specific material (eg, through an interruptive alert that does not permit the action to occur). Furthermore, each time an "alert" is overridden, associated information needs to be permanently linked to that "alert" module entry to improve patient safety. This must include the reasons that supported overriding the recommendation and the outcome of the exposure. There are operational issues with "allergy alerts" and "medication-related clinical decision support alerts" resulting in high override rates that cause fatigue without any meaningful gain in patient safety.[12]

"Alerts" are rarely absolute, and this module should be considered plastic and modifiable over time and in line with biomedical discovery. "Alerts" should be updated with regular periodicity, ideally through the optimization of digital tools, rather than manual entry. Natural touch points such as annual primary care visits, or admission/discharges from hospitals, are ideal situations to revisit the list of alerts. "Alert" reconciliation at regular intervals and across clinical care should be similar to medication reconciliation requirements. Finally, the EHR vendors should also be provided with updated, evidence-based cross reactivity data so that the logic governing the alerts is current and accurate.

FUTURE POSSIBILITIES

The EHR should prompt delabeling, or a removal of an inaccurate or disproven "alert" label, when there are uneventful exposures or when a patient has passed a drug challenge (ie, administration of a full dose without reaction). The current EHR status permits such "alerts" to be overridden repeatedly without inactivation or removal.[12] All deleted "alerts," and all associated documentation, need to be permanently retained. Delabeling needs to be exported via health information exchanges between different EHR systems rather than relying on patient-facilitated communication between health systems.[8] Physiologically impossible "alerts," such as those to vitamins, epinephrine, and iodine, should be removed from the EHR "alert" module. Entry of general drug class, such as "radiocontrast," may be necessary if patients provide clear history of reactivity but the records cannot be obtained. In general, entire drug classes such as "cephalosporins" should not be possible, because alternative cephalosporins may still be safely used. We anticipate that improvements in EHR technology will enhance this module today and in the future. Ideally, the "alerts" module should populate with data from other sections of the EHR, such as relevant genetic data, significant comorbid diseases, mechanical risk factors, and other medication usage. There are emerging data regarding the use of natural language processing toward achieving these aims.[13-15] There should be information that is reconciled across sections of an EHR and between EHRs. There might be coded fields presented as options based on statistically expected "alerts" with certain medications in specific hosts. The "alerts" module should eventually support clinical decision making for new reactions for improved management and documentation.

CONCLUSIONS

This position statement of the AAAAI outlines a proposed terminology change and reframe of the "allergy" module of the EHR. Specifically, we propose a change in the module name to "alerts." This is an accessible name for health care professionals, patients, and EHR vendors that will ensure a more accurate reflection of diverse clinical situations where "alerts" would ensure the quality and safety of medical care with appropriate avoidance of medications, foods, and other substances when needed.

Second, we propose initial steps to improve the documentation of "alerts" in the EHR that are driven by lay language and meaningful management plans specific for the type of "alert." We encourage stakeholders to work with AAAAI experts to design and implement these modifications to benefit patients, health care professionals, and health care systems.

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