Review of Electronic Allergy Records in a Canadian Tertiary Care Hospital (REACT)

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island health

Introduction

- Medication allergy and sensitivity information is important for patient care but the balance between completeness and accuracy is a challenge.
- Previous studies have shown allergy documentation to be inadequate 14-62% of the time, clearly presenting a challenge to making informed medication decisions.[1,2] This has also been noted anecdotally by Island Health staff.
- Island Health policy requires that frontline staff review and document patients' allergies and sensitivities in the patient's electronic health record (EHR) at every point of care or intervention.[3, 4]
- In February 2016, as part of a system update, all entries in the allergy record were migrated to a new EHR platform, excluding the details of the reaction. Since then, all patients admitted to hospital should have an updated allergy profile. This created a unique opportunity to evaluate the current allergy/sensitivity documentation at the Royal Jubilee Hospital (RJH).
- We hypothesized the majority of allergy/sensitivity information currently documented is inadequate for fully informed medication-related decisions.

Study Objective and Outcome Measures

Study Objective:

- To assess the accuracy and completeness of allergy and sensitivity entries documented on the EHR

Primary Outcome Measures:

- Allergy/sensitivity documentation on the EHR that contain sufficient detail to discern an absolute contraindication from a precaution (retrospective)
  - Lists the medication and details of the reaction or states no known drug allergy (NKDA)
- Allergy/sensitivity documentation reported accurately (prospective)
  - Reflects what the patient reports during an allergy assessment

Secondary Outcome Measures:

- Medications that are most frequently reported (retrospective)
- Documentation frequency by healthcare discipline and location (retrospective)
- Patients who received a drug for which they had a documented allergy (retrospective)
- Number of medication allergies/sensitivities that were not previously documented on the EHR (prospective)

Methods

Design

- A retrospective qualitative chart review and prospective cohort study

Retrospective Population

- 1000 randomly selected patients had allergy and medication data collected from their EHR by pharmacy informatics personnel
- Only medication allergies were included in the analysis. Patients with food or environmental allergies only were considered to have NKDA.

Retrospective Study Criteria

Inclusion	Exclusion
• Age ≥ 19 • Admitted to RJH between February 21 - November 30, 2016	• None

Prospective Population

- Patients admitted to RJH between Nov 2016 – April 2017 during predetermined weeks were selected to have an allergy assessment conducted by a pharmacist which was compared to their EHR.
- Patients were enrolled from the emergency department (ED), clinical teaching unit (CTU), general medicine ward, and orthopedic surgery ward.
- Patients with food or environmental allergies only were considered to have NKDA.

Prospective Study Criteria

Inclusion	Exclusion
• Age ≥ 19 • Persons who met the exclusion criteria, but had a legally authorized representative (LAR) available to give consent and an allergy history	• Admitted for < 1 day or > 5 days • Foreign language barrier • Hearing impairment impeding patient interview • Unable to give an accurate history due to medical condition (i.e., Delirium) • Patients under duress in the ED

Results

Table 1: Characteristics of study patients and allergy entries

Characteristic	Retrospective Patients	Prospective Patients
Total Patients – no.	999	38
Age – yr, mean	66.4	70.6
Male sex – no. (%)	493 (53.0)	20 (52.6)
Allergy entries – no.	991	69
No known drug allergies – no. (%)	547 (54.8)	13 (34.2)
Total entries assessed (including NKDA) – no.	1538	82

Table 2: Allergy/sensitivity entries containing sufficient detail to discern an absolute contraindication from a precaution (retrospective population)

	Frequency	Percent
Nature of Reaction documented (excluding NKDA)	354 / 991	**35.7%**
Entries that fulfill primary outcome (both the medication and the nature of reaction listed, or stated NKDA)	833 / 1538	**54.2%**

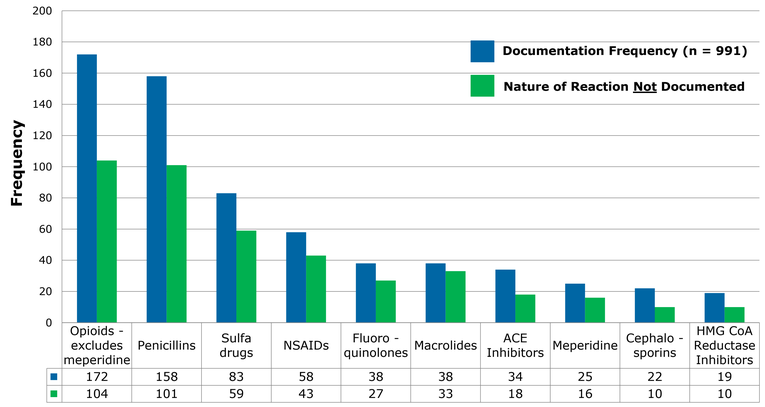

Figure 1: Ten most common medications / medication classes with the corresponding nature of reaction documented (retrospective population)

Table 3: Frequency of allergy documentation on the EHR by healthcare discipline (retrospective cohort)

Healthcare Discipline	No. of Allergy Entries (%)	No. of Allergy Entries (excluding NKDA) (%)	No. with Nature of Reaction Reported (excluding NKDA) (%)
Nurse	376 (52.7)	237 (50.5)	139 (58.6)
Pharmacist	224 (31.4)	193 (41.2)	181 (93.8)
Indeterminate	68 (9.5)	0	-
Physicians	31 (4.3)	29 (6.2)	-
Pharmacy Technician	5 (0.7)	4 (0.9)	-
Nurse Practitioner	4 (0.6)	4 (0.9)	-
Liaison	3 (0.4)	2 (0.4)	-
Paramedic	2 (0.3)	0	-

Note that 825 (53.5%), or 522 (52.7%) entries when excluding NKDA, were not updated since the EHR platform migration. The healthcare discipline responsible for the last update prior to the migration is unknown. Percentages presented exclude the records that were not updated.

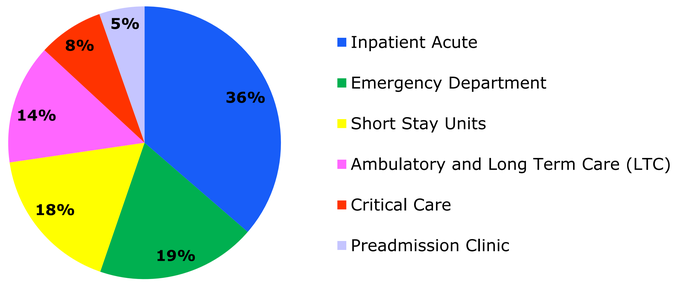

Figure 2: Location of allergy / sensitivity documentation (excludes NKDA) (retrospective population)

Data collection for patients who received a drug for which they had a documented allergy is still in progress

Results *(continued)*

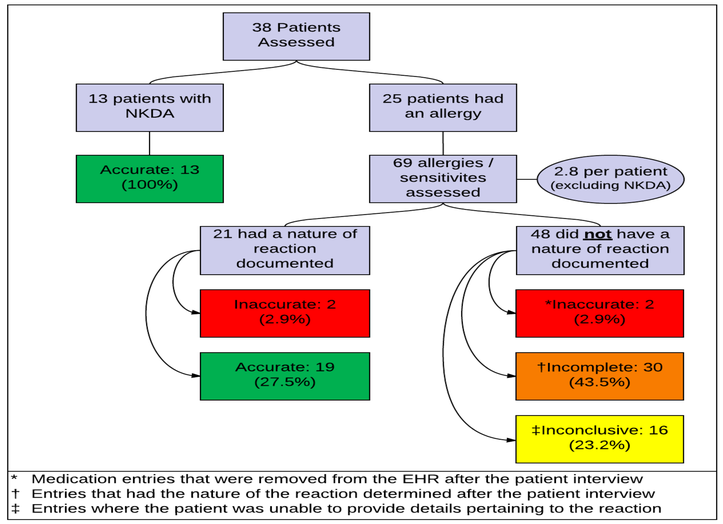

Figure 3: Assessment of allergy record accuracy through a pharmacist-led patient interview (prospective population)

Discussion

- Based on our definition, approximately half of all allergy entries (two-thirds when excluding NKDA) are insufficient to assess medication safety, which likely decreases workflow efficiency and may contribute to inappropriate drug therapy.
- The retrospective results are a conservative estimate, as shown by our prospective cohort, in which the nature of the reaction was not always accurate.
- Coincidentally, when only looking at allergy entries updated after the platform migration (excluding NKDA), 75.1% of entries contained the nature of reaction. This figure is higher than expected and may be due to increased focus on allergy documentation since the platform change.
- The prospective component of our study supports our retrospective findings and further validates our hypothesis that while allergies/sensitivities are not under-reported, the reporting of sufficient information to inform medication-related decisions is lacking.
- When the nature of reaction is reported clinicians can have a high degree of confidence in what it reports as these entries were accurate 90.5% of the time.
- The majority of prospective data considered incomplete was due to the nature of reaction not being reported despite this information being available 62.5% of the time. This would suggest room for improvement.
- Our results may be explained by a non-standardized data gathering process, a non-intuitive electronic documentation system, and a lack of patient knowledge about their allergies. Strategies to improve these factors require further study.
- The smaller sample size of the prospective cohort is a potential limitation to the results stated above.
- This study was designed to describe allergy/sensitivity documentation on the EHR. These results do not evaluate if allergies were properly assessed prior to medication administration.

Conclusion

- Approximately half of all allergy/sensitivity entries documented on the EHR did not contain sufficient information to inform medication-related decisions.
- The majority of documentation was completed by nurses and pharmacists, although location of documentation was distributed across different areas of care.

Next Steps

- A research project is to be conducted in the 2017/2018 pharmacy residency year aimed at developing and assessing an allergy documentation strategy that will improve patient care. Potential interventions may include policy updates, targeted education of staff and patients, and changes to the EHR platform.

References available upon request