ASsessment of a Strategy to improve Electronic allergy records at a Tertiary care hospital (ASSET)

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island health

Introduction

- While medication allergies are abundant in patients' electronic health records (EHRs), it has been suggested that as few as 6-10% of documented allergies are true allergies that require complete avoidance of a medication.[1]
- Documenting details about a drug reaction can help clinicians distinguish an allergy from an intolerance or side effect, helping to guide appropriate medication decisions and optimize care.
- REACT study[2], conducted last year at Royal Jubilee Hospital (RJH):
  - Evaluated the accuracy and completeness of allergy records at RJH for patients admitted between Feb 21 – Nov 20, 2016
  - Key results: Nearly two thirds of documented medication allergies did not contain the details about the reaction (excluding NKDA entries), ~50% of allergies are documented by nurses, and inpatient wards were the most common location of allergy documentation
- Previous studies have looked to improve allergy documentation through patient education, or by restricting allergy documentation to pharmacists, but no studies have examined the effect of an educational intervention targeting the primary allergy documenters – nurses.
- We hypothesized that an educational intervention targeting nurses on a medical ward would improve allergy documentation on that ward.

Study Objective & Outcomes

Study Objective:
To create and implement an educational intervention for nursing staff (RNs and LPNs) on medication allergies and allergy documentation, and to assess whether this intervention improved completeness of allergy documentation compared to what was found in the REACT study.[2]

Primary Outcome:
- To determine if the proportion of allergy/sensitivity documentation containing sufficient detail to discern an absolute contraindication from a precaution improves after implementing an educational intervention strategy

Secondary Outcomes: (compared before and after the educational intervention)
- Average number of allergies per patient
- Durability of effect after the intervention if indeed an effect is found
- Proportion of allergy entries inputted by nurses on 8N
- Proportion of reactions documented as intolerance, allergy or ADR
- Number of documented antibiotic allergies updated (unable to assess)
- Proportion of allergies entered as a drug class or as a single drug (not shown)

Methods

Design
- Retrospective before-and-after chart review
- Intervention: education targeting nurses on a medical ward
  - Nurses were required to sign informed consent forms to participate and attendance was not mandatory

Inclusion	Exclusion
• > 18 yo admitted to 8N (medical ward) Nov 6/17 - Jan 12/18	• < 19 yo

Educational Intervention

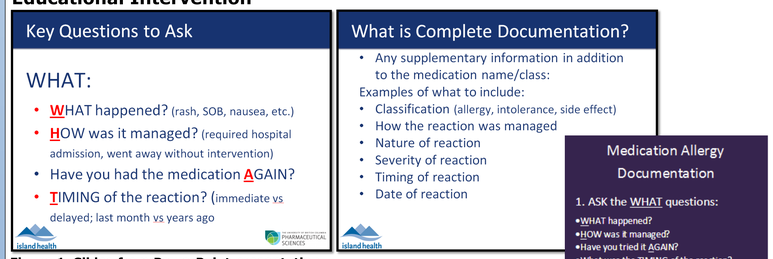


Figure 1. Slides from PowerPoint presentation

- Allergy documentation PowerPoint presentation
- Email summary sent to attendees post-presentation highlighting key points
- Posters placed at each nursing pod
- 70% of nursing staff scheduled during the intervention period attended the presentation

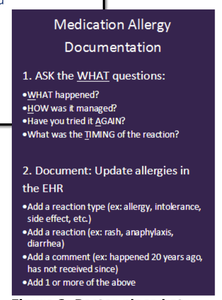


Figure 2. Poster placed at nursing pods

Statistical Methods
- 95% CI
- 2-sided Pearson Chi-Squared test for primary outcome

Results

Table 1. Characteristics of patients included

Characteristic	Pre-Intervention Feb 21/16 - Nov 30/16	Post-Intervention 1 Nov 6/17 - Dec 10/17	Post-Intervention 2 Dec 11/17 - Jan 12/18
Total Patients – no.	931	130	133
Age – yr, mean	66.4	69.5	70.7
Male sex – no. (%)	493 (53.0)	55 (42.3)	53 (39.8)
Allergy entries – no.	991	192	162
No known drug allergies – no. (%)	547 (54.8)	63 (48.5)	71 (53.4)
Total entries assessed (including NKDA) – no.	1538	255	233
Average # allergy entries per patient (excluding NKDA)	1.3	1.4	1.3

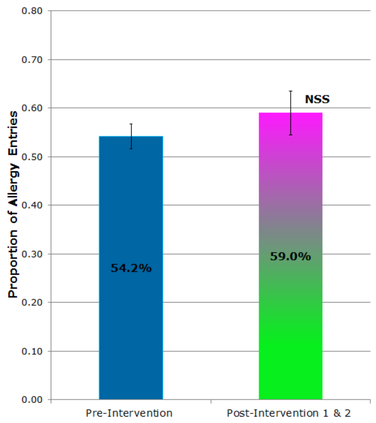


Figure 3. Proportion of allergy entries that either describe the nature of the reaction or state NKDA in combined post-intervention groups

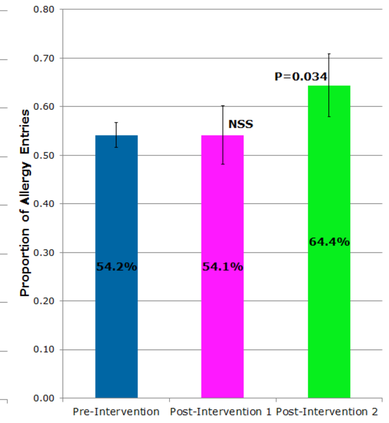


Figure 4. Proportion of allergy entries that either describe the nature of the reaction or state NKDA in post-intervention groups 1 and 2

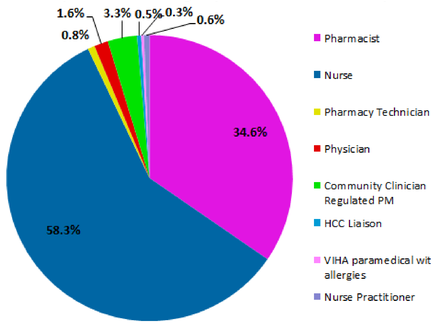


Figure 5. Health discipline that documented the allergy entry pre-intervention

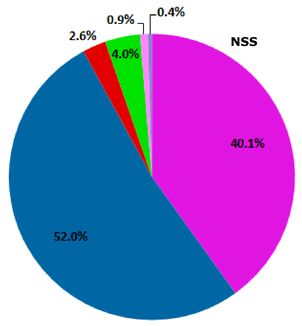
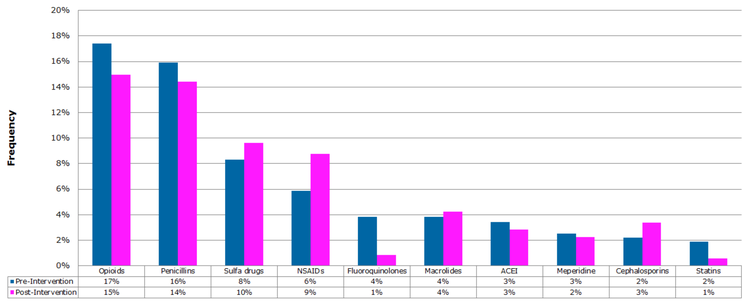
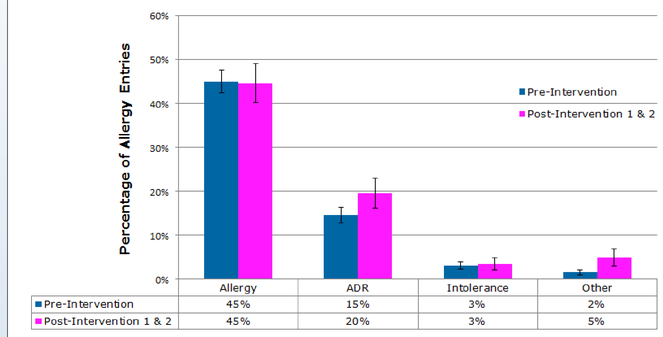


Figure 6. Health discipline that documented the allergy entry post-intervention



No statistically significant differences
Figure 7. Most commonly entered medication allergies pre and post-intervention

Results



No statistically significant differences
Figure 8. Classification of drug reaction pre and post-intervention excluding NKDA entries

Discussion

- There was no statistically significant improvement in the number of allergy entries that met the primary outcome after implementation of the educational intervention.
- Contrary to our expectation of seeing a decline in the impact of our intervention (if any) as time went on, there was a statistically significant improvement when comparing the pre-intervention data to the post-intervention period 2 data. Possible explanations include nurses:
  - Requiring time after education to implement and apply their learning
  - Re-visiting the email summary during post-intervention period 2
  - Being reminded by the posters at the nursing pods
  - Finding was due to chance or unknown confounder
- A potential reason that we did not find a difference when comparing post-intervention groups (1&2) to the pre-intervention group may have been difficulty providing the educational intervention to all the nurses on the ward. Scheduling logistics limited our ability to provide the education intervention to all nurses on the unit (39/56, or 70%). Some of the nurses who attended were serving temporary roles on the study unit which likely impacted the practical application of the education.
- Additionally, many RNs expressed an uncertainty around changing an allergy status or detail even if confirmed with the patient. They also voiced their concerns about lack of time to go in and make changes to the EHR. Perhaps this suggests more education or utilizing multidisciplinary strategies (e.g., involving pharmacists retroactively if allergy uncertainty arises) would be beneficial, as pharmacist-led initiatives have shown to be successful in improving allergy documentation.[3]
- The educational intervention included teaching about the types of reactions and common signs and symptoms to distinguish a true allergy from an ADR or intolerance. We expected to see a reduction in reactions classified as "allergy" and a relative increase in ADR and intolerance classification. This suggests more education is required on this distinction.
- In both the pre and post-intervention periods the 4 most common drug allergies or intolerances were opioids, penicillins, sulfa drugs and NSAIDS, reinforcing where future targeted interventions could have greatest impact and also indicating that the small sample size was representative of the larger population.

Limitations
- Educational in-services for 8N nurses estimated at only 70% attendance.
- Small sample size, therefore not powered to find a difference in the overall primary outcome.

Conclusion

- After implementation of an educational intervention on medication allergies & documentation for nurses on a medical ward, there was no change to the proportion of complete allergy records (those which contained sufficient information to inform medication-related decisions). However, there was a small but statistically significant improvement in post-intervention period 2 data.
- The most common medication allergies, health profession documenting allergies, and distribution of classification of reactions remained the same pre and post-intervention. Targeting future interventions to the most commonly reported medication allergies may be a strategy to improve documentation.

Next Steps
- A forced function feature in the EHR was implemented in Feb 2018 that requires the input of a reaction description for an allergy entry.
- A follow-up study to assess if this intervention has improved allergy documentation is planned for Jan 2019.

References available on request