

The Impact of a Formalized Medication Reconciliation Process in the Emergency Department

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Introduction

Accreditation Canada and Safer Health Care Now! have established both requirements and guidelines to improve medication management and safety upon admission to hospital. Recent literature suggests home medication prescribing upon hospital admission is often incomplete and, in many cases, inaccurate.

What is Medication Reconciliation?

1. Documenting a complete and accurate list of home medications called a Best Possible Medication History (BPMH)
2. Resolution of discrepancies between BPMH and home medication admission orders

Best Possible Medication History sources include:

- Patient &/or family interview
- Medication bottles
- Patient medication list- prescription, non-prescription, herbal
- PharmaNet
- Health records
- Community Pharmacy
- Family Physician
- Physician medication samples

Objectives

Primary Objectives

Baseline Study (Phase I):

- Quantify home medication discrepancies, without proactive reconciliation, by 2400hrs one day post presentation to the Emergency Department (ED)

Pilot Study (Phase II):

- Quantify the number of discrepancies resolved due to a Medication Reconciliation intervention

Secondary Objectives (Baseline Study Phase I & Pilot Study Phase II)

- Characterize the severity of home medication discrepancies (type of Drug Related Problems [DRP] & medications involved) without proactive reconciliation by 2400hrs one day post presentation to the ED
- Determine if the discrepancies were undocumented intentional or unintentional

Methods

Design

- Single center
- Prospective study
- Observational

Patient Inclusion Criteria (consent obtained)

Baseline study (Phase I):

- Admitted to the ED at the Royal Jubilee Hospital (RJH) in Victoria, BC
- Required admitting orders written in the ED by 2400hrs one day post presentation to the ED

Pilot study (Phase II):

- Admitted to ED at RJH

Patient Exclusion Criteria

Baseline & Pilot Study:

- Admitted to Clinical Teaching Unit (patients involved in another protocol)
- If sent directly to a procedural location (limited time in ED)
- Under 18 years of age due to confidentiality concerns
- Admitted to psychiatric emergency service, violent or in isolation

Protocol (research activities conducted by Clinical Pharmacists)

Baseline Study (Phase I):

- BPMH was obtained and discrepancies identified by 2400hrs one day post presentation to the ED

Pilot Study (Phase II):

- Patient was interviewed as close to admission as possible (<24 hours)
- A BPMH and clinical pharmacy note, identifying the discrepancies to be resolved, was left in the chart for physician to review
- Resolved discrepancies were quantified by 2400hrs one day post Medication Reconciliation intervention

Statistical Methods

Sample Size Calculation

Baseline Study (Phase I):

- Desired number of patients calculated for baseline information was 28 participants based on 80% power and a two-sided alpha of 0.05

Pilot Study (Phase II):

- To show a decrease in discrepancies by 75% compared to baseline, 28 participants were also needed

Statistical Tests

- Descriptive and bivariate techniques were used to analyze data
- Means (standard deviations) and percents were used to examine the type of demographics found (age, gender, medical conditions, and family support), and the number of discrepancies per patient in the baseline and pilot study groups
- T-tests were used to examine the mean difference in number of discrepancies per patient pre and post-intervention

Results

Figure 1: Number of Discrepancies in Baseline Study (Phase I)

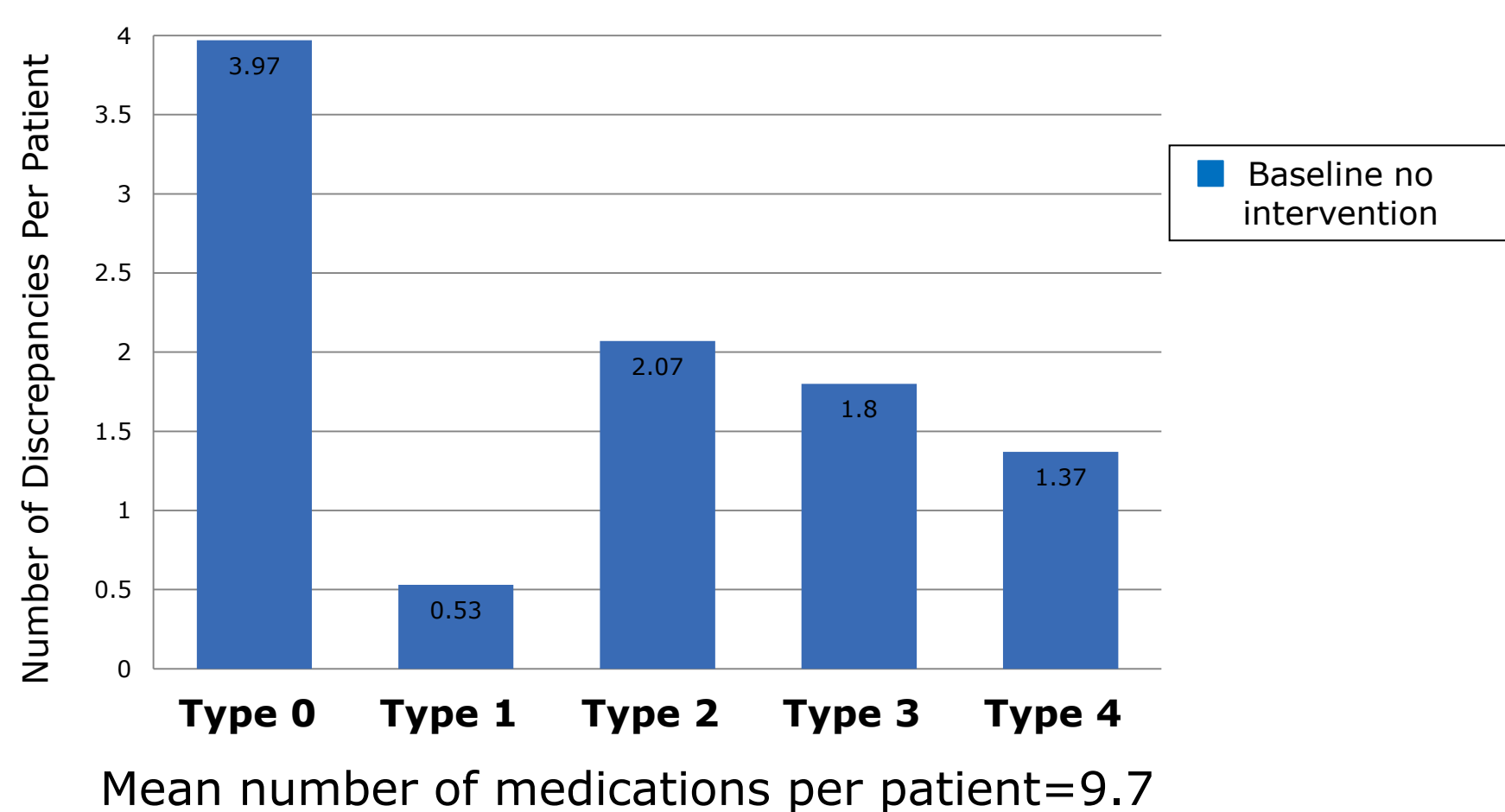


Figure 2: Number of Discrepancies Pre & Post Intervention Pilot Study (Phase II)

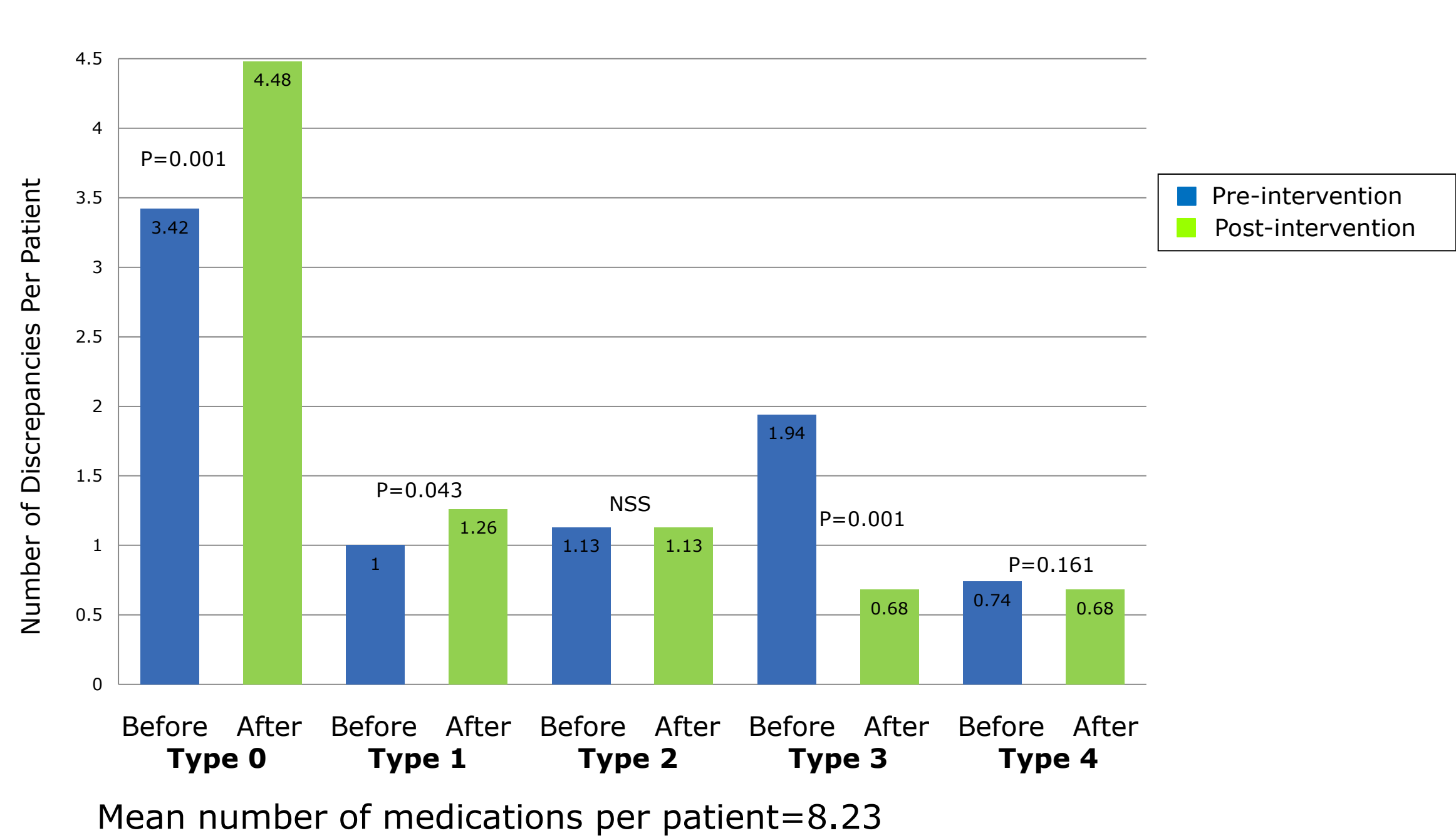
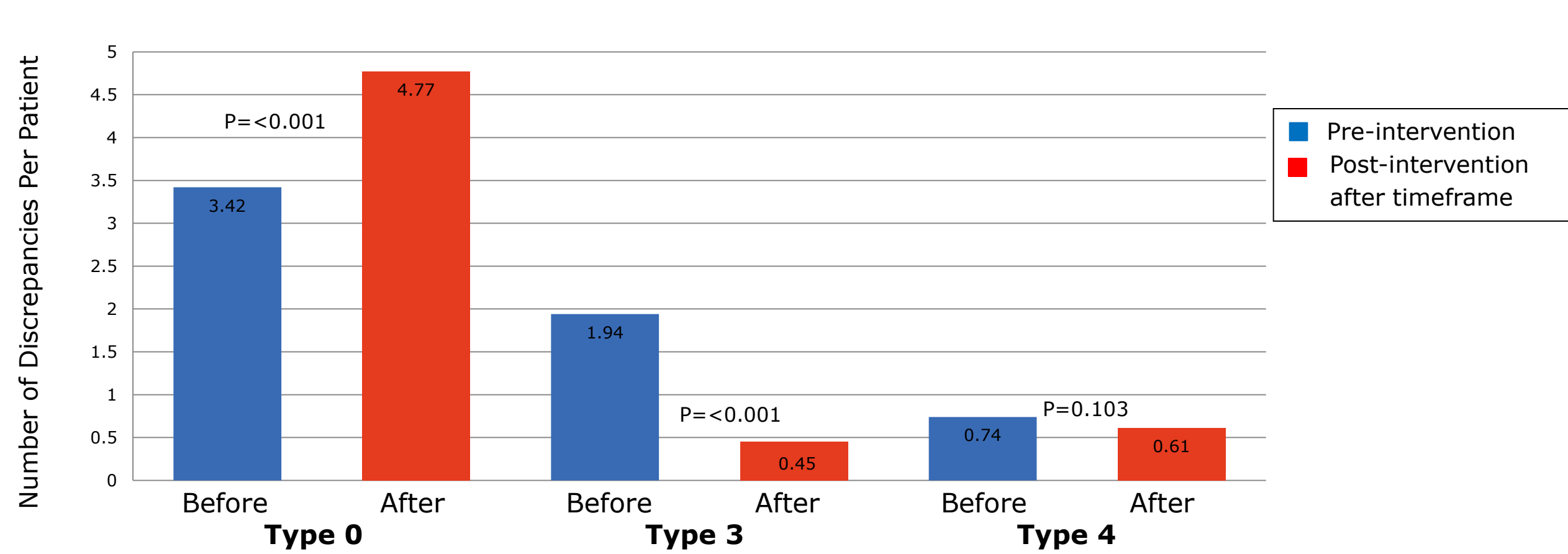


Figure 3: Number of Discrepancies Pre & Post Intervention up to 36 hours beyond goal timeframe Pilot Study (Phase II)

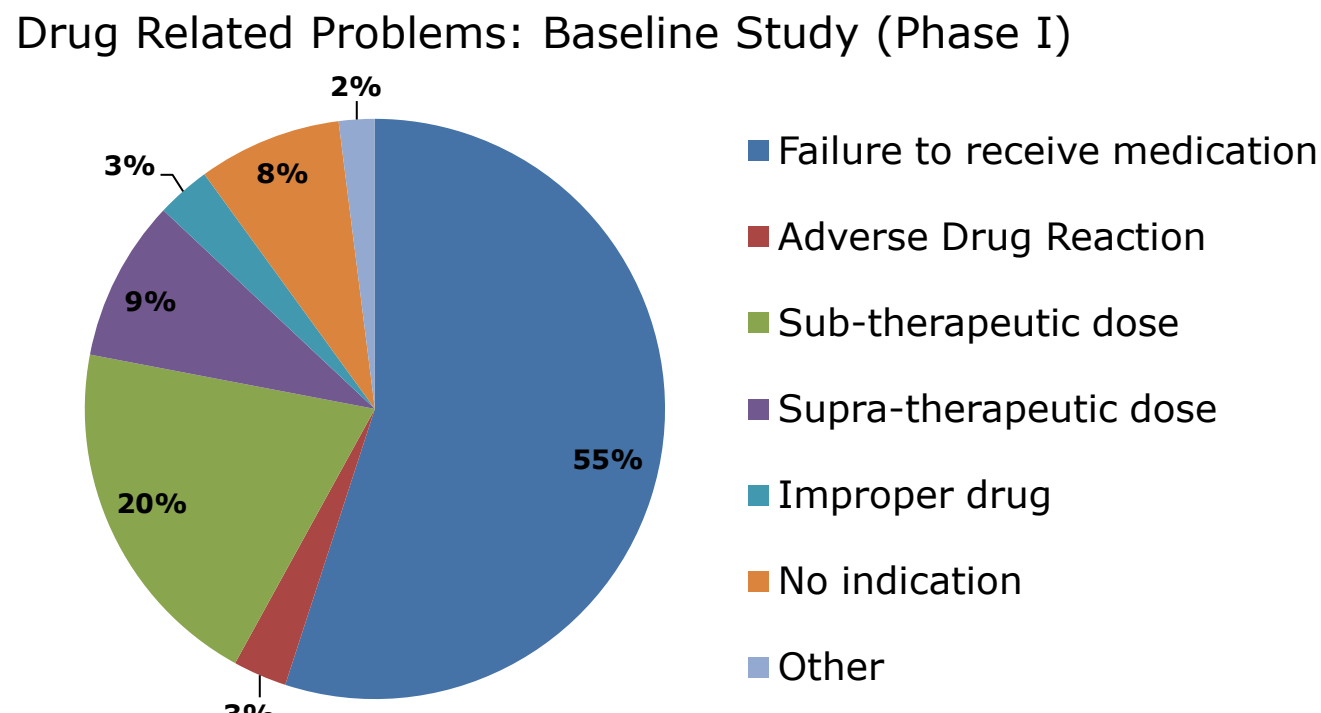


Discrepancy Type (Safer Healthcare Now!)

- 0= No discrepancy
1= Intentional discrepancy- physician made intentional choice to add, change or discontinue a medication and it was clearly documented
2= Undocumented intentional discrepancy- physician made intentional choice to add, change or discontinue a medication but it was not clearly documented
3= Unintentional discrepancy- physician added, changed or discontinued a medication unintentionally
4= OTC discrepancy (this type of discrepancy was added by the investigative pharmacists to describe self-selected natural health products and vitamins that were not prescribed)

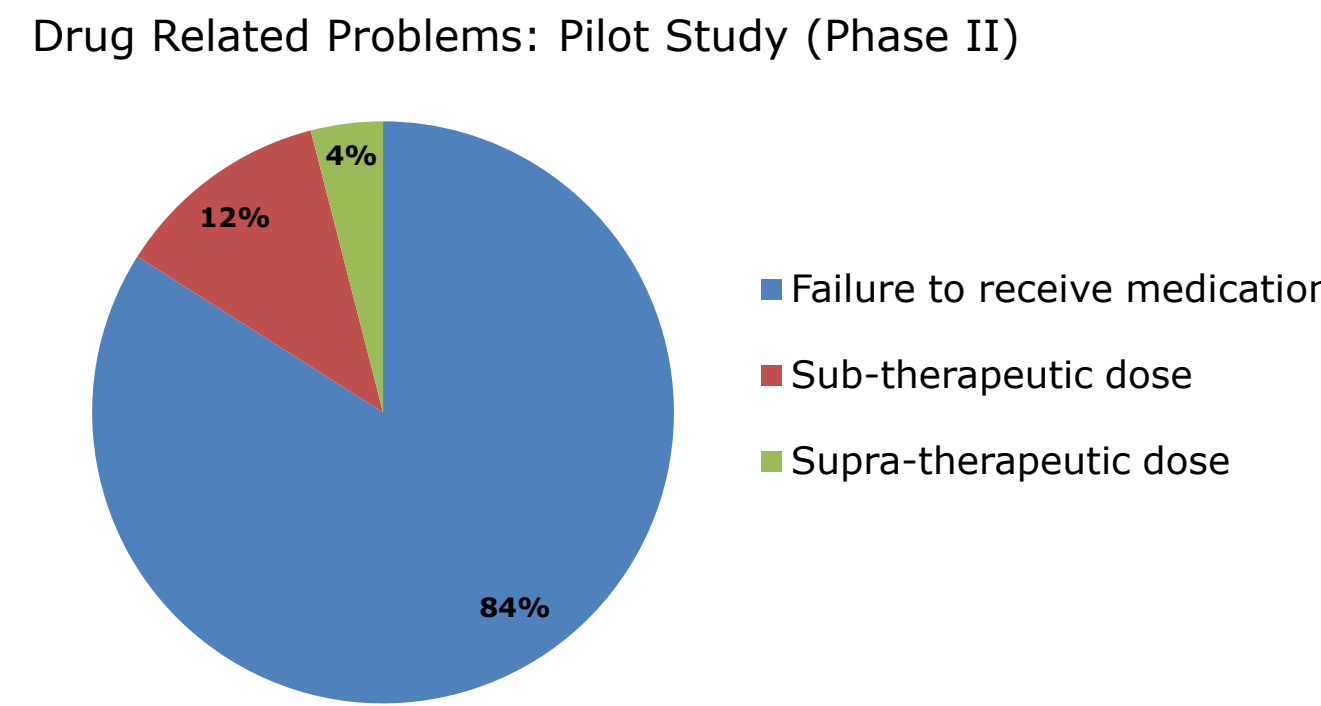
Results

Figure 4: Secondary Objectives Baseline Study (Phase I) -Type of DRP



The most common medications involved in discrepancies were cardiovascular medications e.g. warfarin and nitroglycerin.

Figure 5: Secondary Objectives Pilot Study (Phase II) -Type of DRP



Discussion

Findings

- There was an average of 8.23 medications per patient in Phase II
- There were 1.9 unintentional home medication discrepancies per patient at the RJH ED
- Leaving a BPMH and a clinical pharmacy note outlining the existing medication discrepancies for patients in this study reduced the unintentional discrepancies by 64%, within the goal timeframe and by 77% when additional time was given
- This study demonstrated that leaving the BPMH and clinical pharmacy note was not the most timely form of communication- An additional phone call may have produced more immediate results
- Failing to receive a home medication was the most common DRP
- Interviewing patients prior to the initial physician assessment was not attainable for most patients in this study, as there was not sufficient time for the pharmacist to interview the patient prior to the physician
- Average amount of pharmacist time required per patient with the Medication Reconciliation process was 32 minutes (15 - 65 minutes) in Phase II

Limitations

- Unable to educate staff prior to Pilot Study (Phase II)
- Exclusion criteria may have reduced the applicability of these results to patient population subgroups in ED settings
- Recruitment bias may have been introduced by the consent process and the limited data collection period that prevented randomization

Conclusion

- This study quantified ~1.9 unintentional home medication discrepancies without proactive Medication Reconciliation in both phases.
- This confirmed the need for a Medication Reconciliation process in the ED to improve the ordering of home medications at admission.
- The pilot study demonstrated a statistically significant reduction in the number of unintentional discrepancies post Medication Reconciliation, proving that a BPMH with a clinical pharmacy note outlining the discrepancies identified, decreased the unintentional discrepancies by 64%.
- DRP's can be identified and their resolution initiated with a Medication Reconciliation process.
- This study trialed a Medication Reconciliation process that could be adopted and modified by ED's to improve the accuracy of ordering home medications at admission to hospital.

Project References

1. Accreditation Canada. Patient safety area 2: communication. [Internet]. Accreditation Canada; [updated 2008 May day; cited 2009 July 11]. Available from:
<http://accreditation.ca/uploadedFiles/medication%20reconciliation.pdf?n=8404>
2. Safer Healthcare Now!. Medication reconciliation (acute care) getting started kit. [Internet]. Canadian Patient Safety Institute; [updated 2009 Jan 19; cited 2009 July 11]. Available from:
[http://www.saferhealthcarenow.ca/EN/Interventions/medrec_acute/Documents/Med%20Rec%20\(Acute%20Care\)%20Getting%20Started%20Kit.pdf](http://www.saferhealthcarenow.ca/EN/Interventions/medrec_acute/Documents/Med%20Rec%20(Acute%20Care)%20Getting%20Started%20Kit.pdf)
3. Cornish PL, Knowles SR, Marchesano R, Tam V, Shadowitz S, Juurlink DN, Etchells EE. Unintended medication discrepancies at the time of hospital admission. Arch Intern Med. 2005 Feb 28;165:424-29.
4. Tam VC, Knowles SR, Cornish PL, Fine N, Marchesano R, Etchells EE. Frequency, type and clinical importance of medication history errors at admission to hospital systematic review. JAMC. 2005 Aug 30;173(5):510-15.
5. Kent AJ, Harington L, Skinner J. Medication reconciliation by a pharmacist in the emergency department: a pilot project. CJHP. 2009 May-June;62(3):238-42.