

# Evaluation of Return on Investment for Pharmacy Technicians Performing Best Possible Medication Histories for Admission Medication Reconciliation in the Emergency Department



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## Background

- Preventable, drug-related hospitalizations in Canada result in more than 1.5 million hospital days at an estimated cost of \$2.2 to \$5.6 billion annually<sup>1,2</sup>
- In Canada, 12% of ED visits and 25% of Internal Medicine unit admissions are estimated to occur due to ADEs<sup>3,4</sup>
- Communicating effectively about medications is a critical component of delivering safe care<sup>5</sup>
- BPMH policies and procedures were recently implemented across most VCH and FHA hospitals predominantly utilizing physicians and nurses
- A \$305,000 per year, pilot program investigating the effectiveness of pharmacy technicians performing BPMH began at Lions Gate Hospital (LGH) in 2017
- The comparative quality of BPMH as performed by physicians, nurses, and pharmacy technicians at LGH is unknown

## Objectives

- To characterize the comparative quality of BPMH as performed by physicians, nurses, and pharmacy technicians at LGH
- To estimate the return on investment of pharmacy technicians performing BPMH at LGH

## Methods

- Design:** Retrospective single-centre chart review at LGH
- Sample Size** (30 days of baseline data):
  - ISMP MedRec Quality Score
    - Physicians or Nurses (n = 50), BPMH Technicians (n = 50)
  - Discordance between verified med history and PharmaNet
    - Physicians (n = 60), Nurses (n = 24), BPMH Technicians (n = 56)
- Inclusion Criteria:** Adult patients admitted to LGH
- Exclusion Criteria:** Patients taking < 2 prescription medications, except for ASA, prior to admission (PTA). Products for external use, multivitamins, and alternative medications were not considered for therapeutic appropriateness.
- Analysis:** Wilcoxon and Kolmogorov-Smirnov tests for non-parametric data
- Primary Outcome:**
  - ISMP MedRec Quality Audit Tool score comparison between physician/nurse and pharmacy technician –performed BPMH
  - Discordance rate between patients verified medication history and PharmaNet list for medications continued on reconciliation
- Secondary Outcomes:**
  - Collection of significant clinical near misses and misses resulting from incomplete BPMH
  - Frequency of BPMH and MedRec completion per LGH policy
  - Estimated cost for pharmacy technicians to perform BPMH per patient

## Results

Table 1: Baseline Characteristics: ISMP MedRec Score

Characteristics	Baseline (n = 50)	BPMH Tech (n = 50)
Age – mean (± SD)	72 (13.2)	71 (13.2)
Male – no. (%)	21 (42)	21 (42)
Avg. Number of Medications	10.3	9.3

Figure 1: ISMP MedRec Quality Score Comparison

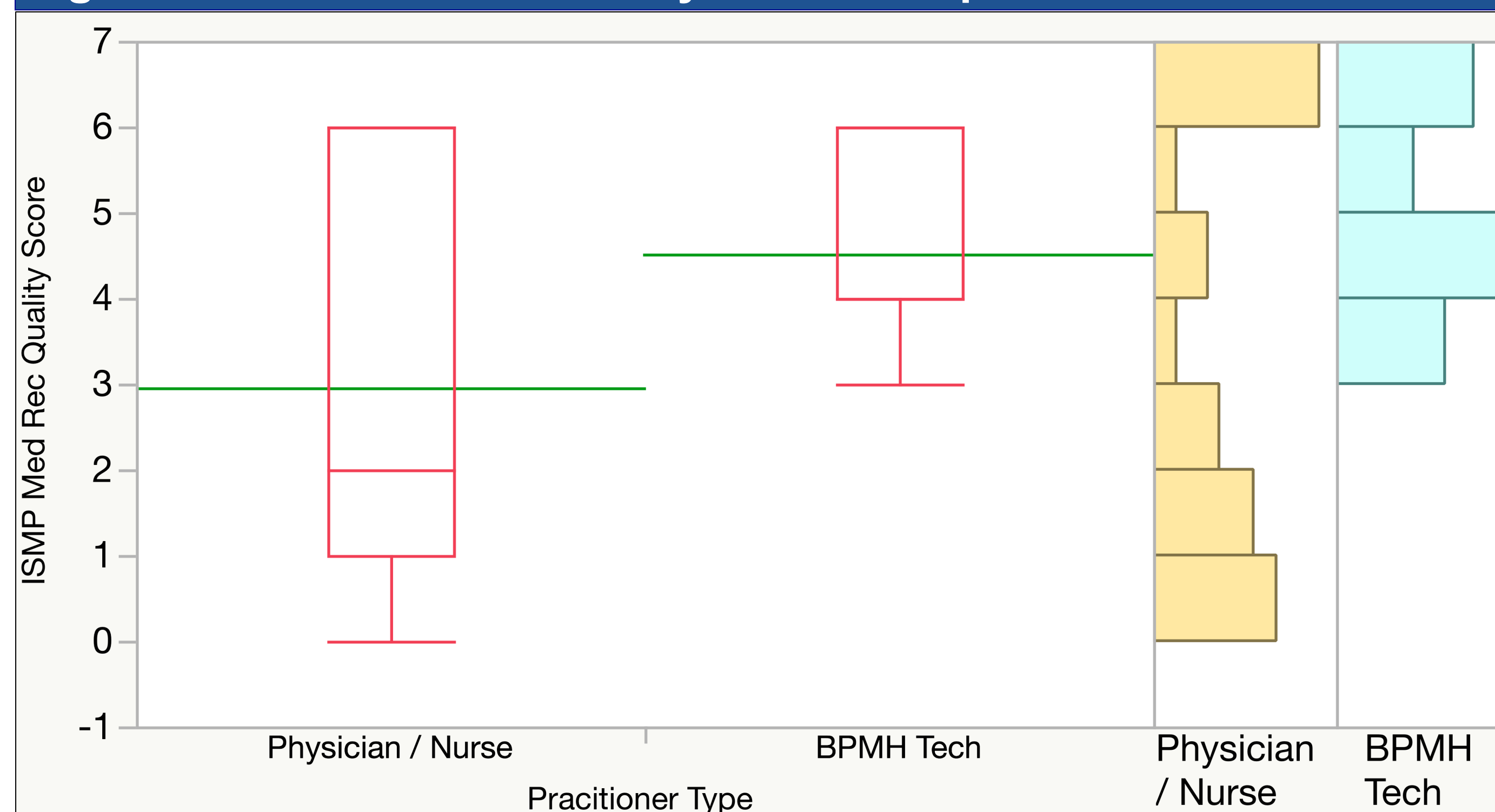


Table 2: Baseline Characteristics: Discordance

Characteristics	Baseline (n = 84)	BPMH Tech (n = 56)
Age – mean (± SD)	63.7 (22.7)	74.1 (16.3)
Avg. Number of Medications	8.3	8.3

Figure 2: Discordance Data Plot (Richmond Hospital Criteria)

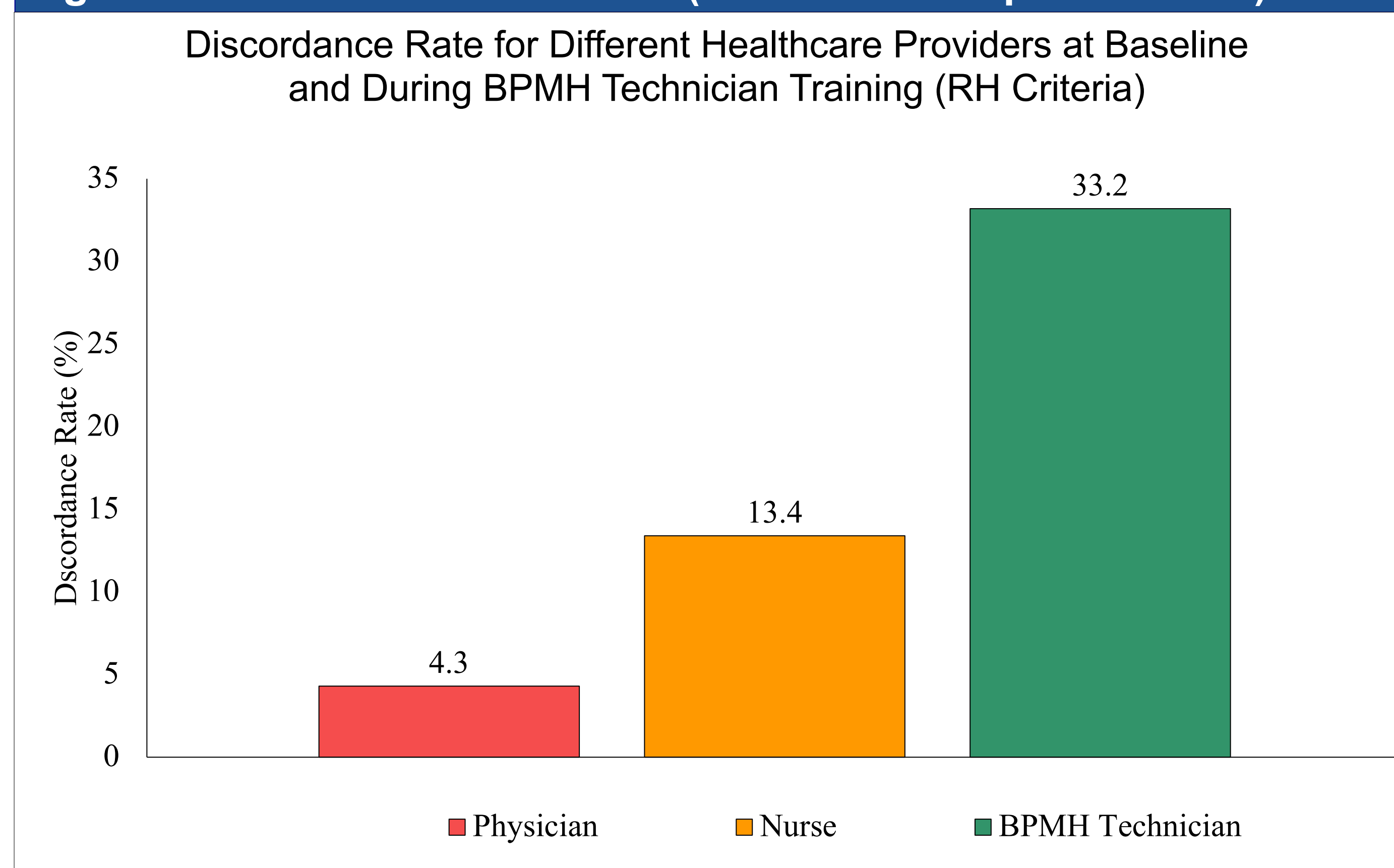


Table 3: Primary and Secondary Outcomes

Primary Outcomes	Physicians	Nurses	Physicians & Nurses	BPMH Tech	P-value
- ISMP MedRec Quality Score	--	--	2.9 ± 2.4	4.5 ± 1.1	< 0.001
- Discordance (%)	4.3	13.4	--	33.2	N/A
Secondary Outcomes	Physicians (n = 202)	Nurses (n = 41)	Physicians & Nurses	BPMH Tech (n = 79)	P-value
- BPMH Avg. Completion Rate (%)	3.4	46.3	--	94.9	N/A
- MedRec Avg. Completion Rate (%)	5.9	34.1	--	69.6	N/A
- BPMH Avg. Time to Complete for Technicians (min)	--	--	--	18.6 (n = 166)	N/A

## Discussion

- Antiretroviral medications and ASA were the most commonly missed medications
- The estimated cost for a pharmacy technician to perform BPMH is \$9.69 per patient
- Methods for classifying and predicting potential harms due to poor MedRec have been devised, but none have been validated and thus were not included in this study
- Limitations
  - Small sample size
  - BPMH completion at baseline was highly variable
  - Discordance is a surrogate marker for good medication history taking
  - Not feasible to capture all patient outcomes; misses and near-misses were recorded

## Conclusions

- ISMP MedRec Score
  - Pharmacy technician –performed BPMH resulted in 50% higher ISMP MedRec Scores (4.5/6 vs. 3/6) with half the standard deviation (1.1 vs. 2.4) compared to baseline
- Discordance
  - Pharmacy technicians had a higher discordance rate compared to physicians and nurses and therefore, are more likely to discover differences between PharmaNet and a patient's true medication regimen

## References

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- Zed PJ, Abu-Laban RB, Balen RM et al. Incidence, severity and preventability of medication-related visits to the emergency department: a prospective study. CMAJ 2008;178(12):1563-1569.
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