An Assessment of the Cost-Effectiveness of 24/7 Hospital Pharmacy

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INTRODUCTION

In recent years, regulatory bodies that govern pharmacy have laid out an increasing number of standards that seek to improve patient care.

- The Ontario College of Pharmacists, the regulatory body in Ontario, stipulates that pharmacist must review all prescriptions or medication orders prior to administration of the first dose, as noted in Section B (criteria #98) on the hospital self-assessment form.
- Accreditation Canada's Medication Management Standards address the need for pharmacists' review of medication orders prior to administration in Standard #15. Although Accreditation Canada's review is voluntary, accreditation continues to be regarded as an importance piece of recognition for hospital institutions.
- NAPRA model standards of practice also includes a section which stipulates pharmacists should review each prescription.

While the practice of all prescription review prior to administration of the first dose is the norm in the community, it is not always the case in hospital practice, for example during a code.

This study aims to determine the cost-effectiveness of 24/7 hospital pharmacy services.

OBJECTIVES

- To present overnight order distribution by hour
- To assess the overnight data by weekday, weekend, urgency, and location
- To create a 24-hour order distribution curve using the pharmacy order-entry/patient profile system – WORx
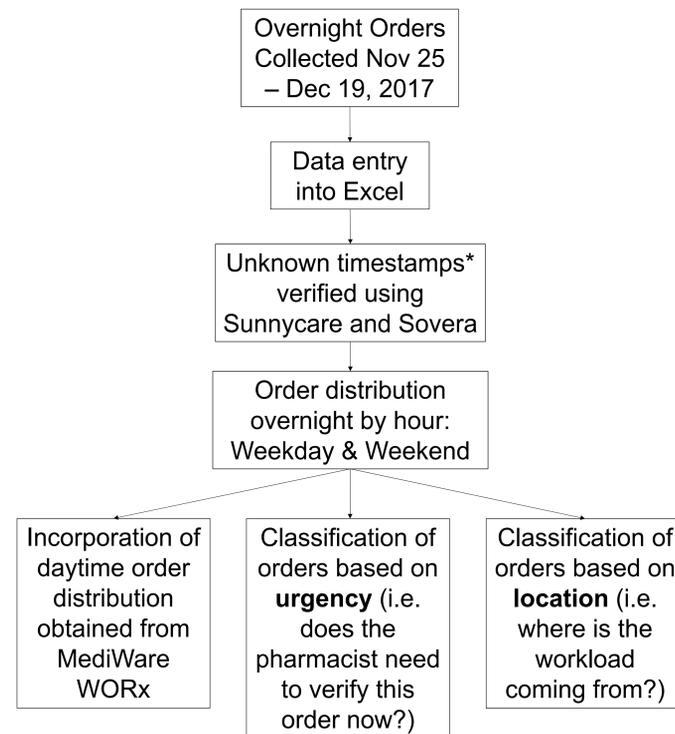
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METHODS

Overnight Orders Collected Nov 25 – Dec 19, 2017
↓
Data entry into Excel
↓
Unknown timestamps* verified using Sunnycare and Sovera
↓
Order distribution overnight by hour: Weekday & Weekend
↓

| Incorporation of daytime order distribution obtained from MediWare WORx | Classification of orders based on **urgency** (i.e. does the pharmacist need to verify this order now?) | Classification of orders based on **location** (i.e. where is the workload coming from?) |

*ensured <5% of orders per day had unknown timestamps

Yes, dose is due now (Y)	No, dose is not due now (N)
Narcotics	Discontinues/Stops/Continues
Antibiotics	IV fluids/electrolytes
Insulin	Eyedrops
Stat orders, dose now, x1	PRN medications (part of order set)
PRN medications (standing orders)	
Verbal orders	

LIMITATIONS

- Overnight orders were represented by a collection of 5 weekdays and 2 weekend days
- Daytime orders were determined by WORx order entry numbers per hour

CONCLUSIONS

The data failed to support 24/7 pharmacy operation as there was insufficient workload to justify a pharmacist's wage. However, the data did support extending pharmacy hours.

RESULTS

A total of 17,385 orders included in the analysis, of which 2921 were overnight orders.

Location:
- Overnight workload came from mainly wards (37.9%), emergency (34.4%), and ICU areas (11.1%).

Urgency:
- For weekdays, 70% of urgent overnight orders were written between 8PM-12AM, while 50% were written between 4PM-8PM on a weekend.

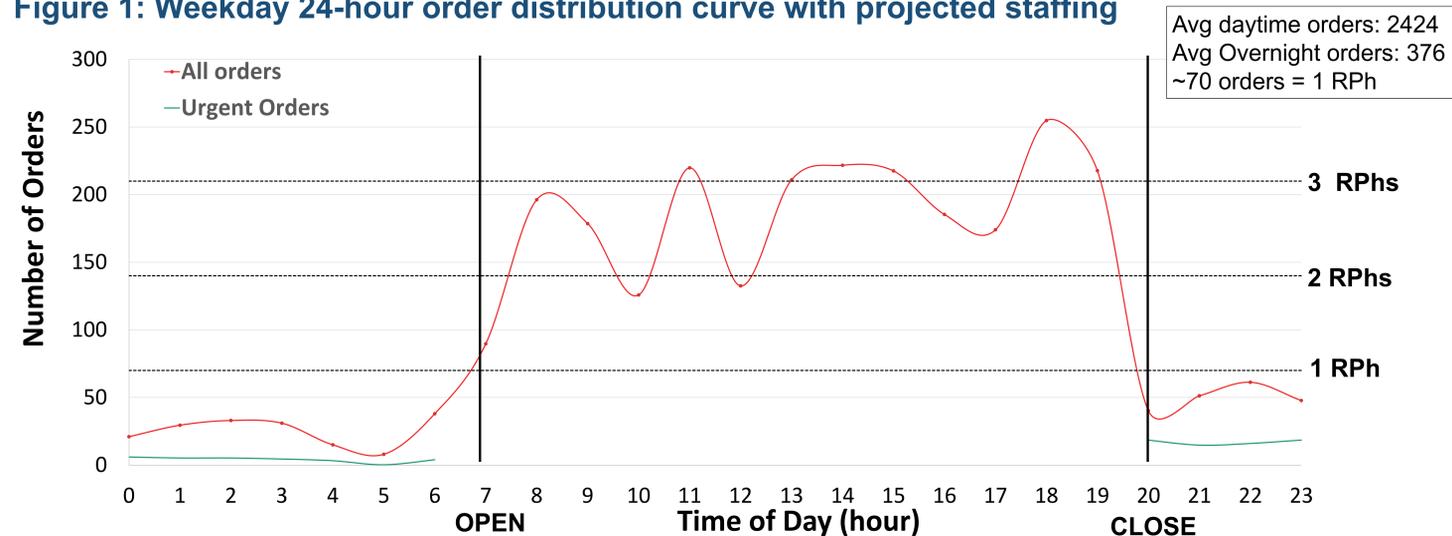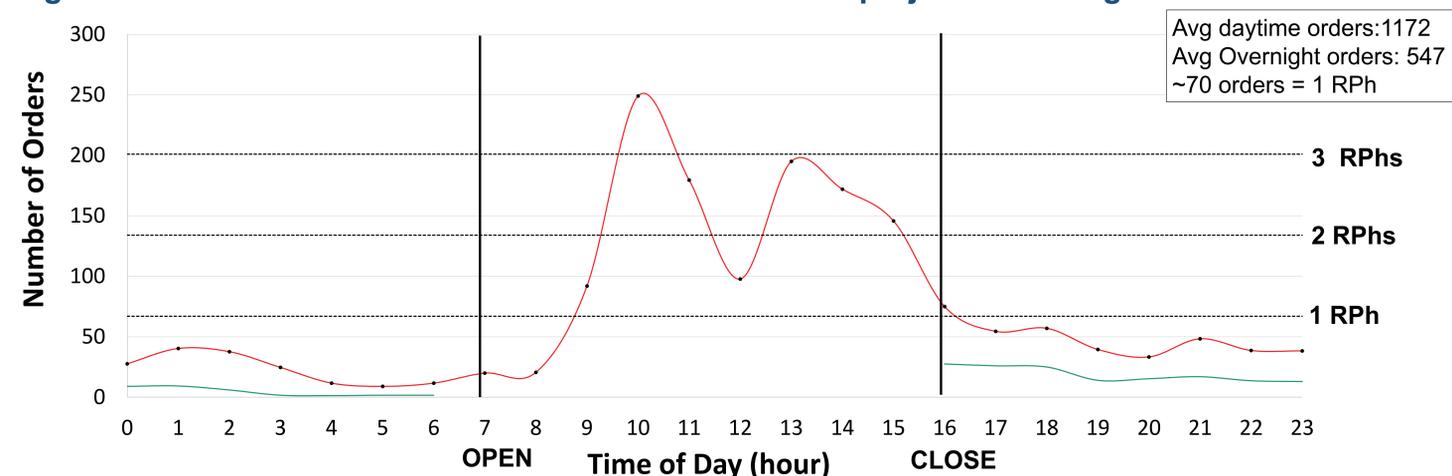**Figure 1: Weekday 24-hour order distribution curve with projected staffing**

Avg daytime orders: 2424
Avg Overnight orders: 376
~70 orders = 1 RPh

Figure 2: Weekend 24-hour order distribution curve with projected staffing

Avg daytime orders:1172
Avg Overnight orders: 547
~70 orders = 1 RPh

	Cost per order verification	Average order-entry pharmacist workload per hour	Maximum required FTE at any hour while closed
Weekday	$0.73	68.7 orders	0.72 FTE
Weekend	$0.76	66.1 orders	0.72 FTE

*assuming $50 wage per pharmacist, and staffing 3 pharmacists per hour throughout the day; FTE: Full Time Equivalent