South Okanagan Similkameen
Division of Family Practice
A GPSC initiative

MEDICATION WASTAGE

IN RESIDENTIAL CARE FACILITIES

OCTOBER 2017

TABLE OF CONTENTS

EXECUTIVE SUMMARY

In 2016, our Residential Care quality improvement team discovered potentially significant medication wastage at residential care facilities, stemming from the unnecessary return and subsequent discarding of patient medications. For example, one medication order change often resulted in a week's worth of medications being thrown out.

Three main factors lead to this wastage:

1. Medicines in many of our region's care facilities are delivered in weekly multi-dose packages
2. Physician medication orders are considered STAT by default
3. Returned medications can not be reused (except in rare occasions when medications are unit dosed)

To quantify the cost of this medication wastage, our team collaborated with a pharmacy to track the cost of medications discarded when a residential care patient's dosage was either decreased or discontinued. We studied these costs from 10 facilities over a 4-week period. Pharmacy and nursing staff were extremely supportive of this study, both hoping that this source of wastage could be reduced.

In this study, we found that 13% of residents had their pills discarded each month. Province-wide this extrapolates to a potential of 50,000 mid-week multi-dose strips returned per year and 2.5 million individual pills incinerated. The ***hard*** cost of these discarded medications is estimated to be $550,000 per year in BC. During our exploration we also discovered time and labour costs. These and other ***soft*** costs were not quantified in our study.

As a result of our exploration and study, we recommend the following:

1. Testing policy changes to reduce medication wastage such as: changing the default for medication orders from STAT to 'Next Pouch Day' implementation, unless overridden by a physician order. This would involve committed stakeholders collaborating to study both ***hard*** and ***soft*** costs, and co-developing a solution.
2. The creation of a provincial working group of Pharmacy Leads from the major companies supplying residential care facilities.

BACKGROUND

IDENTIFYING THE ISSUE

In 2016, our Residential Care quality improvement team discovered significant medication wastage at residential care facilities stemming from the unnecessary return and subsequent discarding of a resident's medications. Currently, one medication order change can result in a week's worth of medications being thrown out.

In exploring this issue, we learned of results from a preliminary review conducted internally by a BC pharmacy. This pharmacy used computer records over a 3-week period to document medication wastage at facilities it serves. If extrapolated to include returns from all BC care facilities, it was estimated that medication wastage costs could equal $5-10 million in BC per year.

Further in our explorations, we identified three main factors that are contributing to medication wastage.

THREE MAIN FACTORS CONTRIBUTING TO MEDICATION WASTAGE

1 Medications at most residential care facilities in BC are delivered in multi-dose packaging

Multi-dose packaging: multiple pills are packaged together in one pouch, as shown in this photograph. These pouches are delivered in weekly strips. There are often several pouches per resident per day.

It's important to note that multi-dose packaging differs from single-dose packaging. In single-dose packaging, each pill is packaged individually in an often lengthy strip of medications.

2 All physician medication orders in residential care facilities are considered STAT by default

STAT medication order: An order that must be changed immediately.

This is in contrast to a 'Next Pouch Day' medication order change, which can wait until the next scheduled regular delivery of medications.

3 The College of Pharmacists of BC mandates that pharmacies can not reuse returned medications[1]

COMBINED RESULT OF THESE THREE FACTORS

With the discontinuation or reduction in dosage of any medication, a patient's ***entire*** strip of weekly medications is immediately returned to the pharmacy for controlled disposal. For example, in our study, a simple reduction in the dosage of Acetaminophen, costing pennies, led to the disposal of approximately $100 of medication.

[1]Except on rare occasions when medications are unit dosed

BACKGROUND

Initiatives designed to improve one area of health care may create unintended consequences in others. In our case, the provincial Residential Care Initiative, designed to improve patient care by increasing the frequency of proactive physician visits, meaningful medication reviews, and physician attendance at care conferences is inadvertently leading to medication wastage.

We have documented a significant increase in the number of physician visits to residential care facilities and increased attendance at residential care conferences; these increases were also noted by pharmacy and nursing staff. Pharmacists have found a corresponding increase in returned medications due to these practice improvements.

During our exploration, we discussed medication wastage with provincial pharmacy leads of Remedy's Rx, London Drugs, Save On Foods and Sobey's/Safeway. These four pharmacies provide pharmacy coverage for a majority of the 30,000 residential care beds in the province. All had been aware of this source of medication wastage, and several had tried changes to remedy it.

During our initial background explorations, we also discovered ***soft*** costs, which include time wastage both by pharmacies and healthcare staff, potential increased costs and errors due to mid-week medication dosages being initiated or increased, and unknown environmental costs resulting from the incineration of the 2.5 million pills per year. Due to the broad scope, none of these ***soft*** costs was measured in our study.

PROJECT OVERVIEW AND DESIGN

The South Okanagan Similkameen (SOS) Division of Family Practice reported the discovery of this systemic medication wastage to the General Practices Services Committee (GPSC) Project Director. In consultation with the GPSC committee, a small grant was given to SOS Division of Family Practice, partnering with Remedy's Rx, to determine the drug costs associated with medication wastage over a 4-week period. We took several steps to design the project:

Solidified a Partnership with Pharmacy

Remedy's Rx was a natural partner for this project.

1. Remedy's Rx has a contract for 7,000 beds in the province, and their Kelowna facility receives all medication returns for 10 residential care facilities within the Interior Health region.
2. SOS Division of Family Practice worked with Remedy's Rx and two of their clinical pharmacists on our polypharmacy risk reduction project.
3. Remedy's Rx previously investigated medication wastage, and subsequently created a new order form which differentiated between STAT and 'Next Pouch Day' orders. This form required behavioural change by the physician as they had to indicate if an order was STAT or could wait until 'Next Pouch Day'. It had limited success.

Communicated with Other Health Care Providers

We discussed medication wastage and its potential magnitude with Interior Health. They were quick to recognize the significance of the issue, and wanted to be kept apprised of findings.

Of the 10 residential care facilities who return medications to the Remedy's Rx facility, two are located within the SOS Division of Family Practice. The remainder are located within 4 other Divisions: Central Interior Rural, Central Okanagan, Shuswap North Okanagan and Thompson Region. The SOS Division of Family Practice Medical Lead discussed the project with the respective Residential Care Medical Leads within those 4 regions, outlining the purpose of the project, and soliciting their support. They were reassured that the study would not interefere with the operation of their facilities. Prior to these discussions, some of the Divisions were marginally aware of the medication wastage issue but not of its potential magnitude; others had no awareness of the issue.

These Divisions will be kept apprised of the results of the project. Without exception, all were supportive of this project and interested in the outcome of the study.

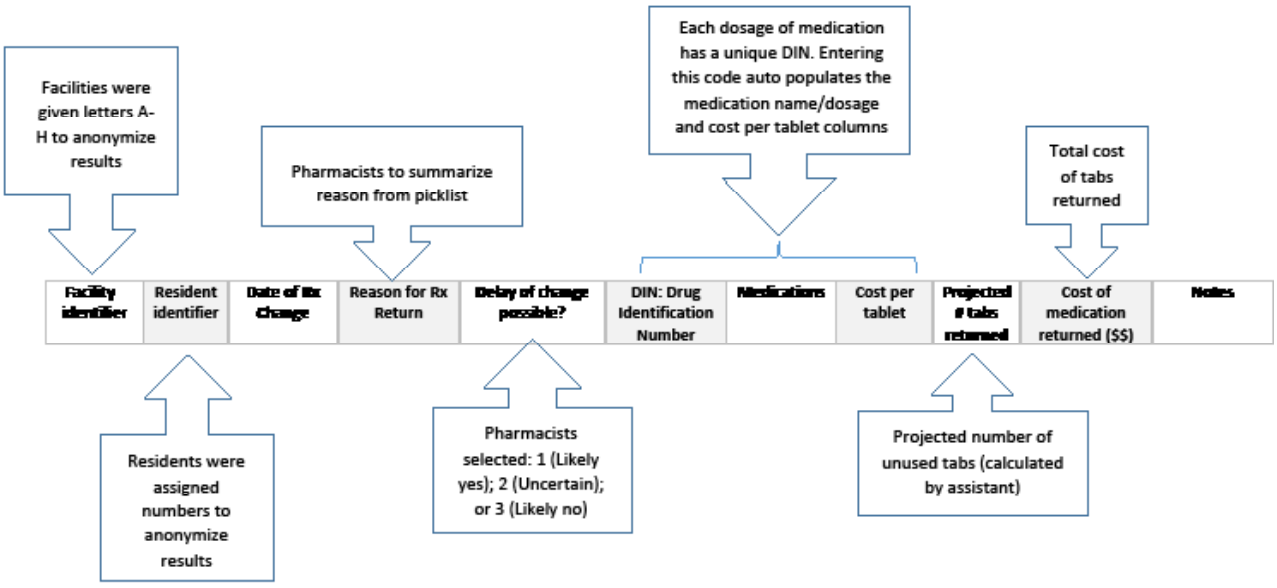
PROJECT OVERVIEW AND DESIGN

Created a Tracking Process

The creation of a tracking process was a collaborative effort between SOS Division staff and Remedy's Rx pharmacy staff. It quantified the number of medications returned during a 4-week period, and reported them as an aggregate of facilities. It did not identify individual facilities. The GPSC funding supported the hiring of a pharmacy assistant to facilitate the tracking process.

A field visit to the Remedy's Rx Kelowna facility walked project members through the process of medication returns, and the process for packaging medications. This led to the creation of a flow diagram, which outlined the numerous staff and steps involved in the process (**Appendix A**), and a tracking sheet (**Figure One**).

Figure One: Tracking Sheet



Tracking Sheet Methodology

The project team developed a standardized tracking sheet to capture relevant information. Medication changes came in over the course of the day, and were collected and processed by the facility. Copies of these changes were made, and a pharmacist (upon reviewing the change) would add the appropriate additional notation to a copy of the requisition, which was then collected, and batch-entered by the pharmacy research assistant. Once the sampling period was complete, all data was entered by the assistant, and double checked in its entirety by a pharmacist. After this, the data set was reviewed by Remedy's Rx and then shared with the project team. Facilities were given identifiers (A-H), and residents were given randomized identifiers to protect the anonymity of clients and facilities. Data was analyzed by the project team and is discussed in the following section.

PROJECT RESULTS

Our study included returns from 948 beds in 10 different facilities, ranging in size from 46 to 152 beds per facility. During the 4-week sample period, 818 medications (approximately 6,229 pills)[2] were returned. This can be extrapolated to equal approximately 2.5 million pills returned per year in BC.

Figure Two: Aggregate Total Values of Medication Returned in 4-week Sample

	# Beds	#Returns of weekly strips	#Meds returned	#Pills returned	Cost total	Cost/bed/year
Total for all facilities	948	125	818	6,229	$1,382.61	$18.96

Major Results

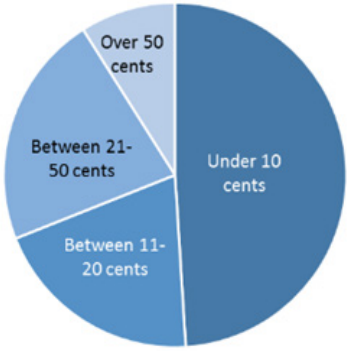
- **13% of residents had medication strips returned over 4 weeks → (≈ 50,000 returned per year in BC)**
- **6,229 pills returned over 4 weeks → (≈ 2.6 million pills per year in BC)**
- **Total cost of all medications returned was $1,382.61 → (≈ $570,000 per year in BC)**
- **85% of the medication returns were due to prescription changes[3]**
- **Pharmacists estimated that approximately 2/3 of returns could be delayed until next weekly medical strip**

Our results of the ***hard*** costs of medication wastage are significant, but are less than the results from a preliminary review by a BC pharmacy, which we referenced at the outset of our project. Unfortunately, we can not account for this discrepancy because the raw data from that review (generated from computer records only) is no longer available. ***Soft*** costs, which included time wastage, incineration, transportation and the increase in potential medication errors, were not determined. These ***soft*** costs include the cost of packaging wastage. For example, it's estimated that packaging wastage costs $73,000 per year in BC alone.

Minor Results

We were surprised by the cost of returned medications — 50% cost less than 10 cents per pill, and only 9% cost more than 50 cents. Approximately 40% of all returned medications were simple analgesics, bowel medications, thyroid replacement or dietary supplements (vitamins, iron etc.). If these were excluded, these residents were only taking ~4 medications/day.

Figure Three: Average Returned Medication Costs (Individual tabs)



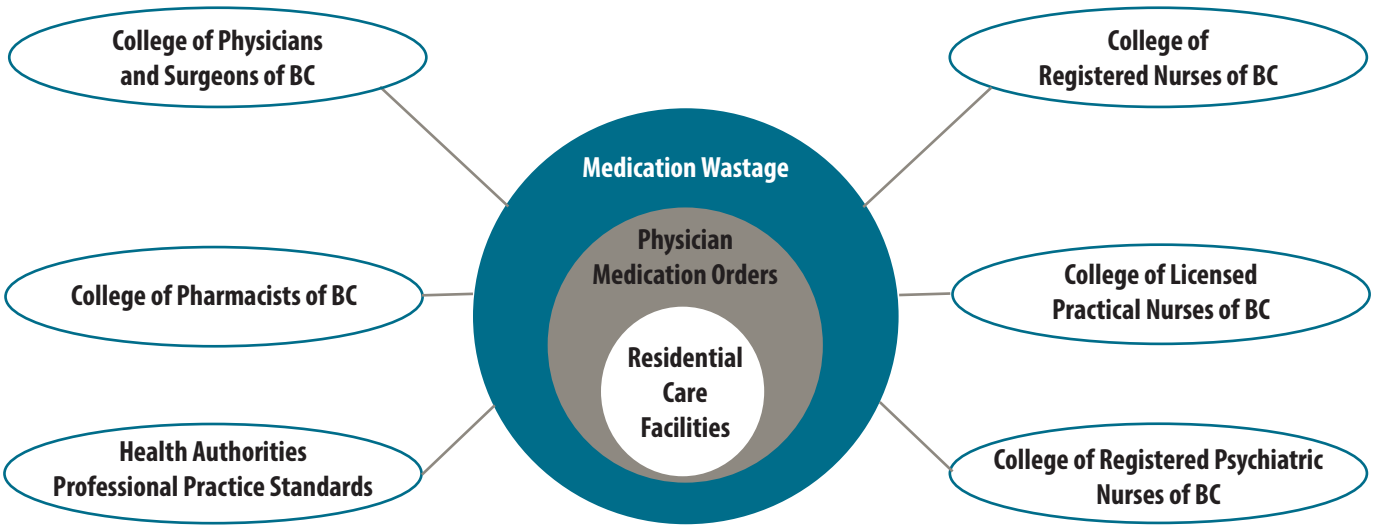
[2]Approximate, as not all doses whole. [3]Remainder were due to resident transfer and death.

KEY PROCESS LEARNINGS

UNDERSTANDING THE CONTEXT OF MEDICATION WASTAGE IN RESIDENTIAL CARE

The practice standards of many professional groups and governing bodies influence how care is provided and medication is dispensed in residential care facilities, making the issue of medication wastage complex.

Figure Four: Governing Bodies and Practice Standards influencing Residential Care



CURRENT PRACTICES

We spoke to a broad range of physicians, IH pharmacists, private pharmacists, nurses and directors of care to better understand current practices around the issue of medication wastage. Each of these groups endorsed this project and felt that a reduction in this wastage would improve efficiency and the quality of patient care. There may be other factors contributing to wastage not yet identified.

Pharmacy

- Private pharmacies are currently the major provider of medications to residential care facilities. They use multi-dose packaging, and typically deliver weekly.
- Interior Health pharmacies, which currently use single-dose medications, deliver several times per week. They envision privatizing pharmacies for more of their facilities, and moving towards multi-dose packaging for the facilities they continue to service.
- Pharmacies are not able to reuse returned medications due to the following safety issues:
  - A risk of cross-contamination of medications during return or repackaging
  - Errors reintroducing the returned medications into the system
  - Mixing of medications with differing expiry dates
  - An inability to track medications in the case of medication recalls
  - Potential for chemical changes to medications due to repeated heat sealing

KEY PROCESS LEARNINGS

All four provincial lead pharmacists consulted during this project were aware of this medication wastage, and believe improvement is possible. Increased medication returns are inefficient. Also, reducing wastage would allow pharmacists to spend more of their valuable time on high-level tasks.

Facility

- There is no standardized medication order sheet in residential care facilities.
- Local Health Authorities determine actual professional practice standards for nurses, which may or may not conform to the full scope of practice set by the College. For example, Interior Health nursing practice presently mandates that medication orders be dealt with immediately by fax or phone call to a pharmacy. At present, if a pharmacy delays filling an order, a nurse must record the delay as a medication error.

Physician

After discussion with Medical Leads and with a local physician focus group, physicians indicated that a majority of their residential care medication orders could have been delayed until the 'Next Pouch Day'. Most were not aware that their orders are automatically treated as STAT; and each spontaneously volunteered to make immediate changes to avoid wastage.

MEDICATION ERRORS AS A RESULT OF CURRENT PRACTICES

The risk of medication errors as a result of mid-week medication changes has not been quantified in this study. Yet, we know that errors can occur at multiple steps in this process. We widely discussed the potential for medication errors, and hired a consultant to delineate them. Some of our initial findings regarding the introduction of errors are outlined in a flow diagram: General Nursing Process for Changes to Medication Orders (**Appendix B**). We concluded that this complex subject was much too broad for this study.

RECOMMENDATIONS

As a result of our study on medication wastage in residential care facilities, we recommend the following:

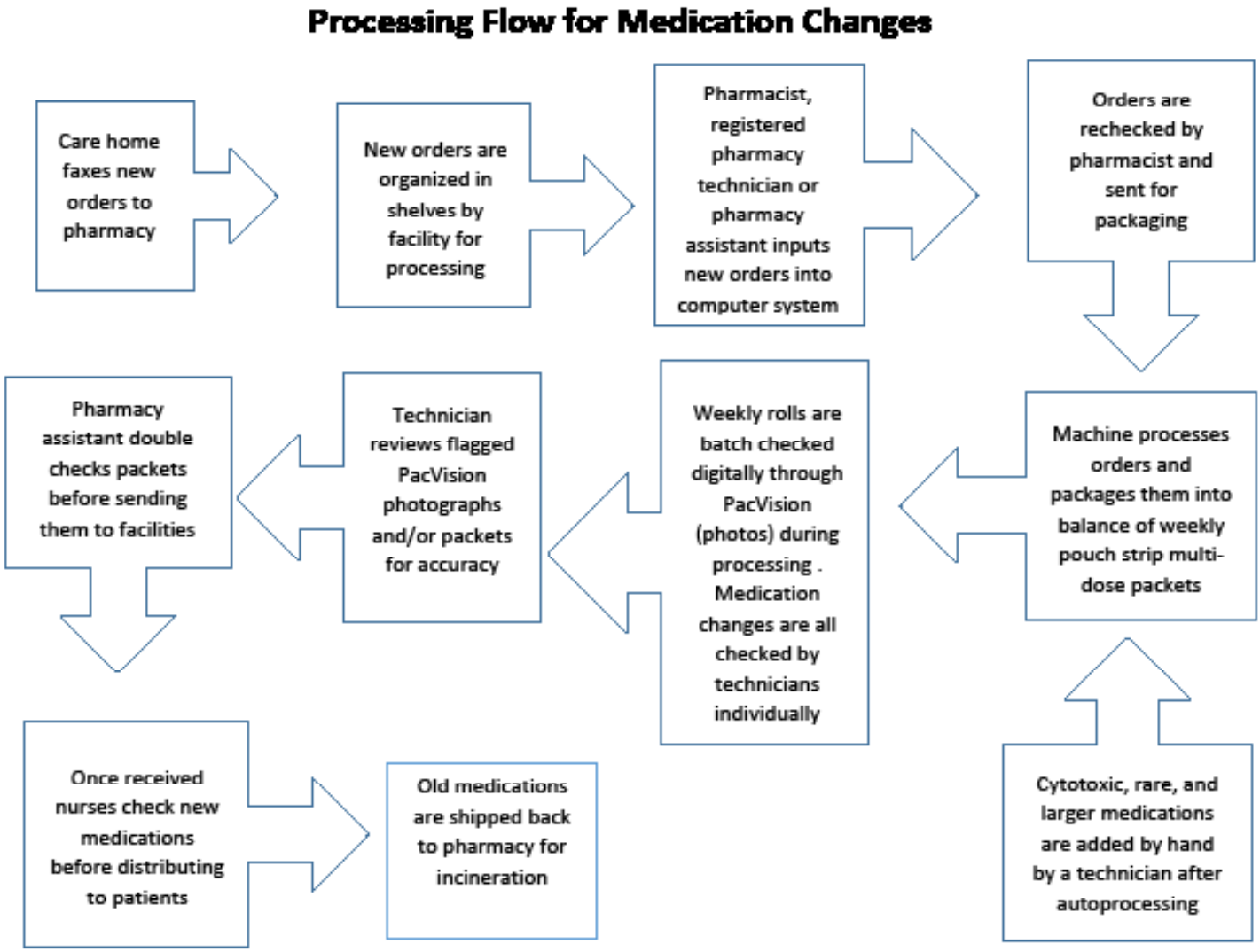
1. Testing policy changes to reduce medication wastage such as: changing the default for medication orders from STAT to 'Next Pouch Day' implementation, unless overridden by a physician order. This would involve committed stakeholders collaborating to study both ***hard*** and ***soft*** costs, and co-developing a solution.

2. The creation of a provincial working group of Pharmacy Leads from the major companies supplying residential care facilities. The creation of a working group was warmly endorsed by the leads of the four pharmacy groups.

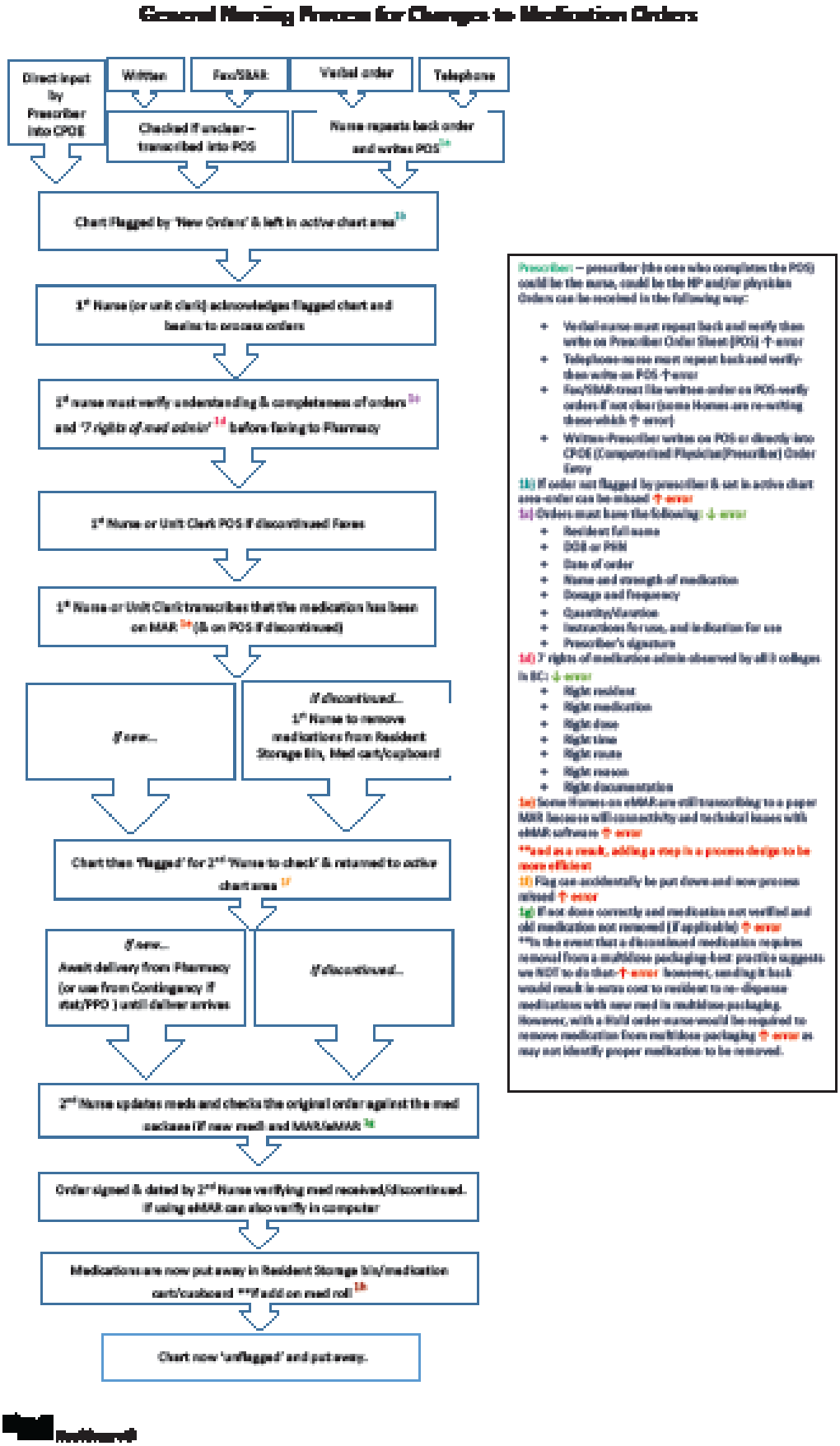
This Working Group could assist with:

- standardizing medication order sheets
- ensuring that successful practices from individual Health Authorities become generalized
- the creation of standardized licensing practices
- studying the implementation of the Computer Pharmacy Ordered Entry (CPOE) system
- identification of other sources of wastage. For example, currently a container of topical cream must be discarded and replaced when there is an order change of the frequency of application. Changing the label on the cream would be much more efficient.

APPENDIX A: PROCESSING FLOW FOR MEDICATION CHANGES



APPENDIX B: NURSING PROCESS FOR CHANGES TO MEDICATION ORDERS



Contact:

SOS Division of Family Practice

Tracy St. Claire
Executive Director

info@sosdivision.ca
778.476.5696