



**Improving Patient Safety in Medication Flow in the Ambulatory Oncology Clinic
The Royal Victoria Hospital, Barrie Ontario
CPSI Patient Safety Studentship Project Summary
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Student Project - Part I

The purpose of this patient safety project was to study the current outpatient chemotherapy process at RVH to identify components of the treatment process for ambulatory oncology patients where patient safety could potentially be compromised. The project was guided by methodologies from both Root Cause Analysis (RCA) and Failure Modes Effects Analysis (FMEA). The following is a summary of the work that was completed over a period of 15 weeks to meet the proposed objectives of the patient safety project.

During the initial weeks of the project, time was spent reviewing material related to RCA, FMEA, patient safety, and associated organizations such as the Canadian Patient Safety Institute (CPSI), Institute of Safe Medical Practices (ISMP), Canadian Council on Health Services Accreditation (CCHSA), and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). After becoming familiar with the concepts and terminology associated with patient safety, more specifically RCA and FMEA in outpatient oncology settings and medication safety, the Computerized Physician Order Entry (CPOE) system and Oncology Patient Information System (OPIS) used here at RVH were reviewed. The two-day Project Management Training course offered by Trillium Health Center was taken to develop skills in planning and carrying out the patient safety project.

Staff shadowing and interviews were conducted to map out the current flow of the chemotherapy process in the Outpatient Oncology Clinic and Pharmacy Department. A high-level map of the main processes was produced and then reviewed by the steering committee to identify potential areas of risk to be further broken down into sub-processes. Ongoing time spent observing and working with Patient Services Clerks, Registered Nurses, Physicians, Pharmacists, and Pharmacy Technicians provided opportunity to capture every step involved in the chemotherapy process from the moment the patient steps into the Outpatient Oncology clinic for the first time, to the conclusion of their treatment regimen. All mapping was done using Microsoft Visio (2003). Upon completion of the mapping of the current chemotherapy flow, validation of the documented steps was sought from staff working within the Outpatient Clinic and Pharmacy Department.

The Fluorouracil Root Cause Analysis (2007) by the Institute of Safe Medical Practices Canada was studied and used as a guide to help point to potential failure modes in the RVH chemotherapy process. By cross-referencing the causal statements, the incidental findings, and the important associated findings of the Fluorouracil RCA with the RVH mapping, specific sub-processes were identified as potential areas of risk.

It was proposed to the Manager of Oncology that the project and the identified potential areas of risk be presented to the department's Quality Practice Council (QPC), but due to a combination of circumstances the QPC was not available to meet within the time constraints of the project. Instead, selected Outpatient Oncology and Pharmacy staff members were invited to attend one of two meetings held to review and confirm that the identified sub-processes were indeed potential areas of risk in the RVH process.

A package, which included copies of the Fluorouracil RCA, the mapping of the current chemotherapy processes at RVH, documents that linked applicable causal statements and incidental findings of the Fluorouracil RCA to the RVH process, and background information on RCA and FMEA, was distributed before the meeting. Meeting attendees were asked to review the package prior to the meeting and to come prepared to discuss their thoughts on the possible connections. The meeting provided a brief overview of the patient safety project, an introduction to the fundamentals of RCA and FMEA, and a review of the high-level facts of the incident studied in the Fluorouracil RCA. Each causal statement and incidental finding that was found to be a potential area of risk were discussed and confirmed by the staff members present. This meeting also helped further identify other potential areas of risk, as well as possible single point weaknesses in the chemotherapy process.

A review of the literature was conducted for best practice guidelines and recommendations to improve patient safety. Guided by the casual statements and incidental findings of the Fluorouracil RCA, the literature review covered such themes as human factors engineering of medication labels and infusion pumps, independent double checks, look-alike/sound-alike drug names, environmental distractions, and programming safeguards on infusion pumps.

Part I - Next steps

The process mapping and the applicable Fluorouracil RCA causal statements and incidental findings have been distributed to Kim Storey, Manager Ambulatory Oncology and Judy Chong, Director Pharmacy. These individuals will distribute these documents to staff members of Outpatient Oncology and Pharmacy for criticality scoring. Guided by the criticality scores, the Outpatient Oncology's Quality Practice Council (QPC) will meet to prioritize which potential areas of risk should be addressed first. Based on best practice guidelines and recommendations, the QPC will develop an action plan and implement new practices and processes that will increase patient safety within the ambulatory oncology patient treatment process at RVH.

Student Project - Part II

The student was also able to contribute significantly to a second, related but smaller patient safety project. The second component included work with the North Simcoe Muskoka (NSM) Chemotherapy Home Infusion Pump Program (CHIPP). A potentially critical incident in a patient's home with a chemotherapy home infusion pump instigated concern about patient safety and education within the Home Infusion Pump Program. An ambulatory oncology patient was sent home from the RVH Outpatient Oncology Clinic with an Infuser LV of 5FU for a 48 hour infusion. Approximately 8 hours after leaving the clinic the patient noted the pump was leaking. A lack of consistency in messages given to the patient by RVH, home care agencies and EMR teams about how to handle the spill and who to contact influenced the partners of the CHIPP to take a deeper look at the current practice within the program. The purpose of this component of the project was to review and document the current chemotherapy process for home infusions pumps at RVH and to explore and understand the RVH staff, home care nurses, and community pharmacists' role in patient education within the NSM Chemotherapy Home Infusion Pump Program.

Using Microsoft Visio (2003), the processes involved with patients receiving chemotherapy by an Infuser LV (baby bottle) or a CADD (continuous ambulatory drug delivery) pump were mapped. A high-level map of the main processes was produced and areas of importance including patient registration, nurse and physician assessments, computerized physician order entries, pump connects and programming, and pump disconnects were identified and broken down into sub-processes. Ongoing time spent observing and working with Patient Services Clerks, Registered Nurses, Physicians, and Pharmacists provided opportunity to capture the steps involved in the chemotherapy home infusion pump process at RVH. This mapping was presented to representatives of each home care agency in the NSM Local Health Integration Network (LHIN) at one of the program's biweekly meetings.

Interviews were also conducted with RVH Outpatient Oncology and Pharmacy staff, home care nurses, and a community pharmacist. These interviews focused on the professional's role in patient education about chemotherapy home infusion pumps, treatment regimens and patient safety in those processes. Interviews with RVH staff and the community pharmacist were done in person on a one-to-one basis. Interviews with home care nurses were done by telephone and an online version of the interview was made available through surveymonkey.com. Interview findings were summarized and presented to RVH staff and home care agency representatives a month later with the final draft of the RVH chemotherapy home infusion pump process mapping.

Part II - Next Steps

All mapping and work-to-date has been forwarded to Tracey Keighley-Clarke, Director Cancer Care Program at RVH. After a review of the Chemotherapy Home Infusion Pump Program Reference Manual from the Ottawa Hospital Regional Cancer Centre, the NSM CHIPP will use the manual, the process mapping and findings from staff and patient interviews to determine any necessary changes to the program to improve patient education and patient safety.