



# Systemic Treatment Safety Symposium 2014: Oral Chemotherapy

*V. Simanovski MBA,\* L. Kaizer MD,\*<sup>†</sup> M. Wright,\* E. Rae MBA,\* N. Ahmad,\* K. Creber,\* E. Green RN MSc(T),\* K. Vu BScPharm PharmD,\*<sup>‡</sup> V. Kukreti MD MSc,\*<sup>‡§</sup> and M.K. Krzyzanowska MD MPH\*<sup>‡§</sup>*

## ABSTRACT

The second Systemic Treatment Safety Symposium, which took place February 21, 2014, in Toronto, aimed to identify opportunities for improving the delivery of systemic cancer treatment in Ontario based on regional needs, while providing a venue for collaboration and knowledge-sharing. The agenda included a series of panel sessions followed by discussions, presentations of regional improvement projects and results, and breakout sessions.

Based on the discussion that took place at the symposium, a provincial goal of zero handwritten or verbal oral chemotherapy orders by June 30, 2015, has now been established, and regions will be provided with funding for safe prescribing initiatives to support achievement of that aim. Building on the lessons learned from the 2014 System Treatment Safety Symposium, a common measurement strategy will be identified, and Cancer Care Ontario (cco) will also support the work by identifying the recommended key elements of a safe oral chemotherapy prescription. Additionally, cco will identify areas for improving systemic treatment computerized prescriber order entry systems to better enable prescribing of oral agents within such systems.

Among the most prominent of the lessons learned during the symposium was the importance of having a focused topic (such as oral chemotherapy) while maintaining a province-wide scope. Another significant takeaway was that attendees appreciate the opportunity to hear from colleagues across the province about the work underway in various regions. Future safety symposia will also explore opportunities for enhanced engagement with participants through greater use of technology.

## KEY WORDS

Oral chemotherapy, chemotherapy, quality, safety

## 1. INTRODUCTION

Cancer Care Ontario (cco) is the government agency responsible for the planning and quality improvement of Ontario's cancer system. For the purpose of cancer care delivery, Ontario is divided into 14 regions, within which systemic treatment (chemotherapy and hormonal therapy) is currently delivered in 77 facilities. An important goal for cco is to use guideline development and collaborative implementation to improve the safe delivery of cancer treatment across the province. To support the goal of safe delivery of care through collaboration, cco holds systemic treatment safety symposia that bring together providers and knowledge experts from across the province.

The first Systemic Treatment Safety Symposium was held in 2012. It covered a variety of topics, including chemotherapy incident reporting and analysis, computerized prescriber order entry guidelines, and oral chemotherapy, among others. An evaluation at that event identified quality gaps in oral chemotherapy<sup>1</sup> as a priority for future work. In particular, a need was noted to better understand opportunities related to three areas relevant to oral chemotherapy: safe prescribing, patient education, and pharmacist education. Because the use of oral chemotherapy is increasing, with an estimated 25% of new anticancer drugs expected to be oral medications<sup>2</sup> and the annual growth rate in oral anticancer drugs predicted to be 30%–35%,<sup>2</sup> those quality concerns became the focus of the 2014 System Treatment Safety Symposium.

Several activities provided input to the development of the 2014 symposium. A year in advance of the symposium, cco conducted an environmental scan to assess the current state of oral chemotherapy in Ontario. The scan confirmed the presence of gaps and areas of opportunity within the identified priority areas<sup>3</sup>. After release of the environmental scan, cco provided funding to each region in 2013–2014 to support quality improvement efforts in the area of oral chemotherapy, supporting and enabling regional collaboration through regular teleconferences. The

results of the regional efforts were presented at the 2014 Systemic Treatment Safety Symposium. The regional work also aligned with guideline development activities at other organizations such as the Canadian Association of Provincial Cancer Agencies (Logan H. Oral chemotherapy material for internal consultation [e-mail message], 2014) and the American Society of Clinical Oncology (ASCO)<sup>1</sup>.

The second Systemic Treatment Safety Symposium aimed to identify opportunities for provincial improvements based on regional needs and to provide a venue for collaboration and knowledge sharing. The agenda included a series of panel sessions followed by discussions, presentations of regional improvement projects and results, and breakout sessions.

## 2. MEETING SESSIONS

### 2.1 Keynote

**Speaker:** Joseph Jacobson MD, Chief Quality Officer, Dana Farber Cancer Institute

Dr. Joseph Jacobson emphasized the importance of standards development and quality improvement initiatives as mechanisms to address safety and quality gaps related to oral chemotherapy treatment. He described the development and release of the ASCO chemotherapy safety standards as an example of a standards development initiative. Since the initial release of the ASCO chemotherapy safety standards, two updates have incorporated inpatient care<sup>4</sup> and oral chemotherapy<sup>1</sup>. Similarly, Jacobson presented a relevant example of a large-scale quality improvement initiative, the Quality Oncology Practice Initiative certification program. The program “evaluates individual facilities’ performance in areas that affect patient care quality and safety”<sup>5</sup>.

Jacobson reinforced the message that “the aim of quality improvement is to reduce avoidable suffering due to dysfunction in the care delivery system.” He said that, in oral chemotherapy administration, the dysfunction in the delivery system is primarily a result of a lack of systems to track and learn from failures, poor transition of care between providers, and a lack of processes and tools to assess adherence and toxicity. Therefore, although standards development and quality improvement initiatives help to minimize quality and safety issues, addressing dysfunction also requires that those efforts be augmented by improvements in systems and processes.

Opportunities to improve systems and processes include the use of event reporting systems combined with “root cause” analyses for both errors and near misses, and a system that encourages and rewards case identification. Additional improvements could include broad sharing of findings, built-in redundancies such as independent double-checks to reduce errors, and the embedding of frontline workers, patients, and caregivers into project teams and decision-making.

Initiatives in oral chemotherapy quality improvement that encompass those opportunities to address the dysfunction that occurs in the care delivery system should result in measurable reductions in avoidable suffering for patients. Tools such as the Quality Oncology Practice Initiative certification program and the ASCO chemotherapy safety standards will help to enable quality improvement in oral chemotherapy delivery and in oncology more broadly.

### 2.2 Safe Prescribing Panel Discussion

**Moderator:** Monika Krzyzanowska MD MPH, CCO Clinical Lead, Quality Care and Access

The unique challenges related to the safe prescribing of oral chemotherapy and the subsequent opportunities formed the focus of a panel discussion led by Dr. Monika Krzyzanowska. The panel speakers provided an overview of several initiatives that have focused on safe prescribing. One such example is the process of developing national oral chemotherapy prescribing guidelines, led by the Canadian Association of Provincial Cancer Agencies. The panel also highlighted challenges related to the safe prescribing of oral chemotherapy, such as a lack of education for health care providers about oral chemotherapy; poor communication, particularly between hospitals and community pharmacies; issues related to the usability of systemic treatment computerized prescriber order entry (ST CPOE) systems for oral chemotherapy; and the limited ability to monitor adherence once a patient leaves the hospital.

Although those challenges persist, the panel and subsequent dialogue with participants also identified opportunities for improvement. It was noted that the existing safety culture and infrastructure with respect to quality improvement efforts in intravenous chemotherapy form a solid foundation for quality improvement in oral chemotherapy. Opportunities to enhance ST CPOE functionality to improve usability for oral prescriptions and to develop a provincial repository of preprinted orders aligned with prescribing guidelines were also highlighted. Finally, it was noted that there are opportunities to better apply technology to improve provider and patient knowledge and to enhance monitoring for side effects. Current resources that support the safe prescribing of oral chemotherapy include the Multinational Association of Supportive Care in Cancer oral agent teaching tool and the cco Drug Formulary mobile application.

In summary, it was recommended that regions collectively work toward a provincial goal of ensuring that all patients receive either a standardized prescription through ST CPOE or a preprinted order, thereby eliminating verbal and handwritten orders for oral chemotherapy. Further, it was agreed that development of guidelines for what to include in a standardized prescription for oral chemotherapy is necessary.

### 2.3 Patient Education Panel Discussion

**Moderator:** Esther Green RN MSc(T), Program Head, Nursing and Psychosocial Oncology, CCO

Education has been identified as a focal area for addressing and supporting improvements in patient adherence to medication administration. A panel led by Esther Green discussed various strategies using electronic tools and other resources to support improved education and monitoring of patients receiving oral chemotherapy<sup>1</sup>. The panelists included a family physician with knowledge about the development of a patient care collaboration tool, a patient education manager, and a patient who shared his experience receiving chemotherapy treatment. The panel identified common challenges related to patient education such as language barriers, health literacy levels, and the amount of education necessary for safe medication self-management. Although those challenges significantly affect the ways in which patients receive quality care, many opportunities for improvement were identified by the panel, including involving patients in the development of education tools, educating caregivers, partnering with recognizable and trustworthy sources to develop tools, enhancing the patient support team, and exploring patient-centred communication platforms for patients and health care providers.

The panel sparked discussion about the optimal ways to present information to patients and the need to educate caregivers and to develop individualized treatment plans. The group agreed that further focused discussion is needed in this area, leading to a strategy that ensures the provision of an appropriate quantity and quality of education. As part of the strategy, it was agreed that CCO, in concert with patients and regional partners, would review available tools and key components of patient education for validation and endorsement. Furthermore, processes to measure comprehension by patients or caregivers (or both) and patient adherence would be identified and implemented.

### 2.4 Pharmacist Education Overview

**Presenter:** Rick Abbott BSc Pharm

The rise in the use of oral chemotherapy presents unique challenges to pharmacists in hospital and community settings alike. Those challenges include the ongoing use of handwritten prescriptions, the lack of forced redundancies (double-checks), dispersed knowledge about if and where a prescription was filled, variation in education provided to patients, and frequently, inadequate toxicity management. Rick Abbott is the lead author of a study that looked at the self-reported readiness of community pharmacists to dispense oral chemotherapy. That study revealed a gap in knowledge with respect to oral chemotherapy among community pharmacists<sup>6</sup>. For example, the

survey showed that fewer than 20% of pharmacists across Canada felt comfortable dispensing oral chemotherapy, and just 17.6% felt comfortable managing the side effects of oral chemotherapy<sup>6</sup>.

The survey also identified a deficiency in opportunities for oncology-related education for pharmacists, in both undergraduate and continuing education programs<sup>6</sup>. A collaboration between CCO and the Ontario Pharmacists Association led to the development of an online oncology-specific continuing education program for pharmacists, with a focus on oral chemotherapy. Cancer Care Ontario is also exploring collaborative efforts with the Leslie Dan Faculty of Pharmacy at the University of Toronto and the de Souza Institute to develop a comprehensive education program to deliver oncology education to pharmacists. The concept of an Oncology Pharmacist designation to enable consistent delivery of care was discussed.

Although questions remain, the development of standards for the prescription of oral chemotherapy, including the key information that should be included on a prescription was again noted as an actionable step for improving safety during dispensation of oral chemotherapy to patients. This recommendation was well aligned with the morning prescribing session.

### 2.5 Regional Rapid-Fire Presentations

An important goal of the Systemic Treatment Safety Symposium was to enable collaboration and knowledge sharing by regional stakeholders. To that end, representatives from each of the 14 regional cancer programs in Ontario provided an overview of the oral chemotherapy safety initiatives taking place within their region. This “rapid-fire” presentation format was augmented by poster presentations, which were available in the room for more detailed review and to facilitate discussion among participants.

Regional improvement projects reflected four different themes: safe prescribing, patient education or self-management, patient adherence, and community pharmacy engagement.

Safe prescribing was addressed by a move from written orders to ST CPOE at some facilities and to preprinted orders at others. An example of an initiative that addressed the theme of patient education or self-management was the development of a nurse-led oral chemotherapy clinic that provides education, coaching, and navigation to patients undergoing oral chemotherapy treatment and to their caregivers. An initiative dealing with patient adherence was the launch of a callback program, in which a nurse follows up with patients to ensure that medications are being taken as directed. Other facilities have engaged community pharmacies by developing a community pharmacy communication and information tool. Table 1 illustrates the initiatives underway in the regions for each area of focus (notably, some regions have initiatives in multiple areas).

The regional results presented at the Systemic Treatment Safety Symposium were wide-ranging. Some initiatives were further evolved and had demonstrable outcomes; others had yet to reach that stage. Table II describes a sample of some of the improvement results presented at the symposium.

The progress being made through quality improvement initiatives across the province was significant, but opportunities are available for further enhancement. A noted limitation in the regional quality improvement initiatives was the lack of a common measurement approach. In the future, provincial quality improvement initiatives will include a provincial evaluation plan, with common indicators that all regions will measure. This approach will be supported by knowledge sharing on the topic of quality improvement measurement.

TABLE I Regional quality improvement initiatives: areas of focus

<i>Area of focus</i>	<i>Related initiatives (n)</i>
Patient education/self-management	10
Patient adherence	8
Safe prescribing	7
Community pharmacy engagement	4
Other <sup>a</sup>	3
TOTAL	32

<sup>a</sup> Includes audit of oral chemotherapy practices, and toxicity and adherence monitoring.

TABLE II Examples of improvement results

<i>Hospital</i>	<i>Identified goal or goals</i>	<i>Initiative results (at time of symposium)</i>
Trillium Health Partners	To ensure that all 12 components of an oral chemotherapy plan are documented as defined by ASCO/ONS on the paper medical record	Baseline evaluation noted that 67% of components were documented ( <i>n</i> = 24 patients) After creation of an Interdisciplinary Flow Chart, documentation of components increased to 91% ( <i>n</i> = 22 patients)
Royal Victoria Hospital	To reduce the number of adverse events by implementing a nurse-led oral chemotherapy clinic To provide education, coaching, support, and navigation to patients and their caregivers in a nurse-led oral chemotherapy clinic	Adverse events were reduced from 14 before creation of the clinic to 3 after its launch. Before attending the nurse-led oral chemotherapy clinic, surveyed patients reported a high or very high level of knowledge 48% of the time. After attending the clinic, the survey result increased to 80%.
Northeast Cancer Centre	To develop an oral chemotherapy ordering policy and electronic prescription To improve patient adherence by developing an electronically generated diary that automatically prints when an oral chemotherapy prescription is entered electronically	Initially, 37% of physicians were using the new electronic prescriptions; 18 months later, use had increased to 78% Of patients surveyed, 50% bring their diary back to clinic for review most or all of the time, 88% report using the diary to track adherence, and 76% state that the diary is useful in helping them remember to take their medication.

ASCO = American Society of Clinical Oncology; ONS = Oncology Nursing Society.

### 3. BREAKOUT SESSIONS

In addition to the plenary and rapid-fire presentations, participants were invited to participate in one of three breakout sessions.

#### 3.1 Exploring e-Tools and Technology

**Presenter:** Vishal Kukreti MD, CCO Clinical Lead, e-Tools and Technology

Technology can help to support the safe, high-quality delivery of chemotherapy<sup>7</sup>. This session explored e-tools and technology as a means of reducing or preventing the occurrence of safety incidents. Many errors related to the ordering, transcribing, dispensing, and administering of oral chemotherapy are preventable, and the role of technology solutions in reducing errors is an important area of consideration. Several technology solutions that facilitate pharmacy dispensing and verification or patient education and adherence were discussed, but the focus was the prescribing phase of the process.

An information technology solution consistently shown to reduce errors for chemotherapy prescribing is a ST CPOE system. Currently, 93% of outpatient intravenous chemotherapy prescriptions in Ontario are ordered by ST CPOE<sup>7</sup>. However, a ST CPOE best practice guidelines concordance exercise that evaluated features and functionalities supporting safe and effective care delivery and that was completed by facilities across Ontario showed that the average concordance rate for facilities was variable: the

mean total concordance scores ranged from 65% to 92%<sup>8</sup>. Several issues were identified:

- Continuous product development is needed so that features and functionality support best practice.
- Features of ST CPOE systems are not always used or are only partly implemented.
- Quality evaluation must continue after system implementation.

Technology should be considered an important component in the delivery of safe and high-quality chemotherapy treatments to patients. Although new technological advances are around the corner, it is also important to better leverage and maximize the use of existing technologies such as ST CPOE. The group at this session felt that the highest priority with respect to using technology for oral chemotherapy prescribing should be the use of ST CPOE systems.

### 3.2 Incident Reporting

**Presenters:** Kathy Vu PharmD, CCO Clinical Lead, Systemic Treatment Safety Initiatives, and Spencer Ross, Canadian Institute for Health Information

This session demonstrated the analytical capabilities of the National System for Incident Reporting (NSIR) and discussed barriers to incident reporting across facilities. Increased reporting of near misses and actual errors is thought to improve the quality of systemic treatment delivery, including the administration of oral agents, because valuable lessons can be learned.

The NSIR collects information on medication incidents and relies on voluntary participation to facilitate knowledge sharing<sup>9</sup>. The system provides leaders with the tools, access, and knowledge to implement local solutions. A component of the Canadian Medication Incident Reporting and Prevention System, NSIR aims to reduce and prevent harmful medication incidents in Canada.

The NSIR minimum data set aligns with the World Health Organization's conceptual framework for patient safety. Currently, the system contains more than 17,000 incident records, and approximately 290 facilities are registered to submit incidents. The system can show the number of incidents reported and their associated details. In addition, users can drill down to a deeper, more detailed analysis, such as specific information on the degree of harm<sup>9</sup>.

Although the NSIR is in use at many facilities to report critical incidents as mandated by the Ontario Ministry of Health and Long-Term Care, the system is not commonly used to report systemic treatment incidents, including those associated with oral chemotherapy agents. The implementation of batch uploading of incidents has been cited as the major challenge for systemic treatment adoption in Ontario.

Although challenges were discussed, the group also agreed that the use of NSIR as a central incident reporting tool has the ability to significantly contribute to the reduction and prevention of harmful medication incidents in Canada, including those related to oral chemotherapy. As such, strategies to enhance its use should be further explored.

### 3.3 Safe Handling Guidelines

**Presenter:** Tony Easty PhD PEng, Senior Scientist, Division of Support, Systems and Outcomes—Communities of Health, Toronto General Research Institute

In this breakout session, Dr. Tony Easty, one of the authors of the recently released CCO safe handling of cytotoxics guideline<sup>10</sup>, led a discussion of updates to the guideline and their implications for health care professionals and patients.

The recommendations for the safe handling of parenteral cytotoxics were updated in 2013 (from the original 2007 publication) to address all elements of systemic treatments, including oral agents. The guideline is currently being distributed, and facilities have been asked to review it and to begin implementing the recommended changes as soon as possible. In particular, the guideline recommendations include a focus on home delivery of systemic treatment and the safe handling of oral agents for patients and families as well as for health care providers.

Although the guideline includes many new recommendations, some topics have not yet been addressed: for example, education on safe handling in the community pharmacy. Given the growth in oral chemotherapy prescriptions, that topic will likely be addressed in the next version of the guideline. Several potential means to increase community awareness were discussed, including engaging with the Ontario Pharmacists Association and the Ontario College of Pharmacists.

## 4. FUTURE DIRECTIONS

Based on the discussion that took place at the 2014 Systemic Treatment Safety Symposium, a provincial goal of zero handwritten or verbal oral chemotherapy orders by June 30, 2015, has now been established, and regions will be provided with funding for safe prescribing initiatives to support achievement of that aim. Building on the lessons learned from the symposium, a common measurement strategy will be identified, with CCO also supporting that work by defining the recommended key elements of a safe oral chemotherapy prescription. That definition will establish criteria for a preprinted order and a centralized repository of preprinted orders housed within the CCO's Drug Formulary Web site. Additionally, CCO will identify improvements for ST CPOE systems that will better enable the prescription of oral agents within such systems.

It has been recognized that the other recommendations discussed at the symposium will require a longer-term approach. As part of a broader provincial planning exercise, the following recommendations have been identified for achievement by 2019:

- All patients on oral chemotherapy will receive an individualized, proactive monitoring plan that enables regular assessment of patient adherence and monitoring and of drug interactions with other substances for side effects and toxicity.
- Patients and families will experience high-quality education with consistent messaging on the safe handling, storage, administration, adherence, and disposal of oral anticancer medication.
- Medication incidents and near misses by patients will be reported through a recognized system to improve patient safety within both systemic treatment hospitals and community pharmacies.

## 5. CONCLUSIONS

An evaluation conducted at the end of the Systemic Treatment Safety Symposium and completed by 70% of attendees indicated that the symposium met or exceeded expectations for 98% of respondents. In addition, 100% of respondents indicated that they would attend future safety symposia. The evaluations revealed that the regional rapid-fire presentations were the most popular component of the symposium, with the suggestion that an even greater focus be placed on this important knowledge transfer and exchange component in the future. Plenary presentations and breakout sessions were also well received.

The Systemic Treatment Safety Symposium led to many lessons learned, one of the most prominent being the importance of having a focused topic, such as oral chemotherapy, while maintaining a province-wide scope. Another significant takeaway is that attendees appreciate the opportunity to hear from their colleagues across the province about the work underway in various regions. Future symposia will explore opportunities for enhanced engagement with participants through a greater use of technology.

Finally, it has been decided that the next safety symposium will continue to focus on oral chemotherapy, with an emphasis on patient engagement tools to support patient safety. It will also share and discuss results from 2014–2015 safe prescribing initiatives and help to identify other longer-term provincial safety priorities.

## 6. ACKNOWLEDGMENTS

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## 7. CONFLICT OF INTEREST DISCLOSURES

The authors have no financial conflicts of interest to declare.

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**Correspondence to:** Vicky Simanovski, Cancer Care Ontario, 620 University Avenue, 15th Floor, Toronto, Ontario M5G 2L7.

**E-mail:** Vicky.Simanovski@cancercare.on.ca

\* Cancer Care Ontario, Toronto, ON.  
† Credit Valley Hospital, Mississauga, ON.  
‡ University of Toronto, Toronto, ON.  
§ Princess Margaret Cancer Centre, Toronto, ON.