


Cancer Care Ontario
Action Cancer Ontario

**“Clinicians Driving Technology” -
Developing ST CPOE Practice Guidelines
and Supporting Their Adoption**

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Objectives

1. Describe a provincial strategic plan for safety improvement in chemotherapy delivery based on guidelines development.
2. Describe the importance of guidelines in evaluating technology solutions in healthcare.
3. Describe the provincial measurement framework and process as it relates to computerized order entry systems (CPOE) for chemotherapy.

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Disclosures

None

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Cancer Care Ontario

As a Provincial Agency:


- CCO is accountable to the Government of Ontario in exercising its mandate, specifically, to the Minister of Health and Long-Term Care

As the government’s cancer advisor, CCO:

- Develops and implements quality improvements and standards
- Uses electronic information and technology to continually improve the safety, quality, efficiency, accessibility and accountability of Ontario’s cancer services
- Plans and develops Ontario Cancer Plan

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Context




Ontario
Population: 13.5 million people
Health Regions: 14
Distributed cancer system: 14 Regional Cancer Programs and one central cancer agency: Cancer Care Ontario (CCO)
New cancers: 75,000+ new cancer cases per year
Pathology: 116 hospitals (49 primary) and 2 large private laboratories
Facilities: 77 Systemic Treatment facilities in the region

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Chemotherapy Medication Errors

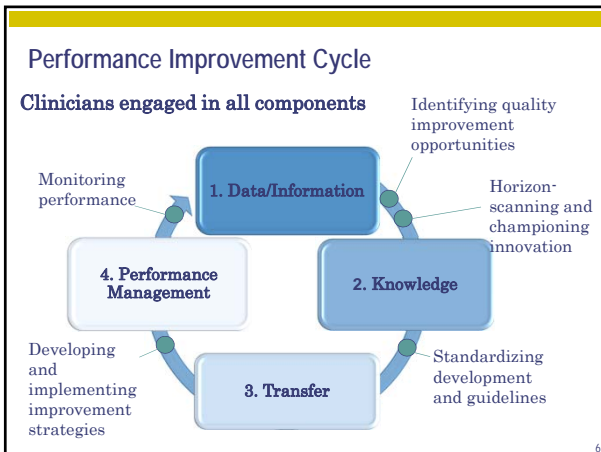
Unique Medication Class

- often prone to errors due to complex protocols
- dosing, monitoring and administration
- Narrow therapeutic index



High-risk alert medication institute for Safe Medication Practices (ISMP)

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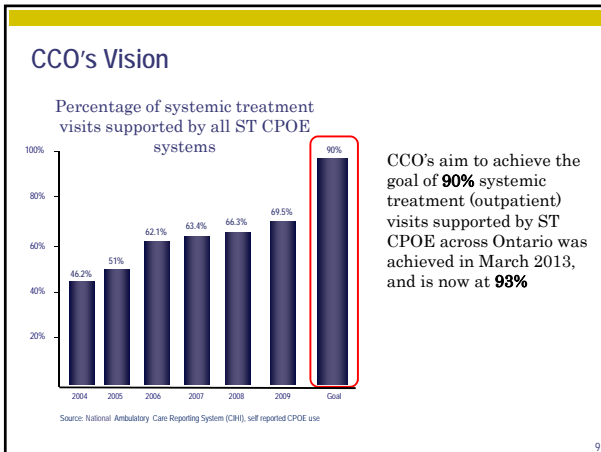


Why Systemic Treatment Computerized Prescriber Order Entry (ST CPOE)?

Organizations such as the Canada Health Infoway, Institute of Medicine (IOM), the Leapfrog Group, and Certification Commission for Health Information Technology (CCHIT) have advocated increased use of technology to improve patient safety.

BENEFITS	CHALLENGES
<ul style="list-style-type: none"> Standardization of ordering practices Legibility of information Changes are recorded Ability to transfer ordering information 	<ul style="list-style-type: none"> May lengthen ordering time May not match users' preferred workflows Interfacing of systems may be problematic Lack of engagement of end users

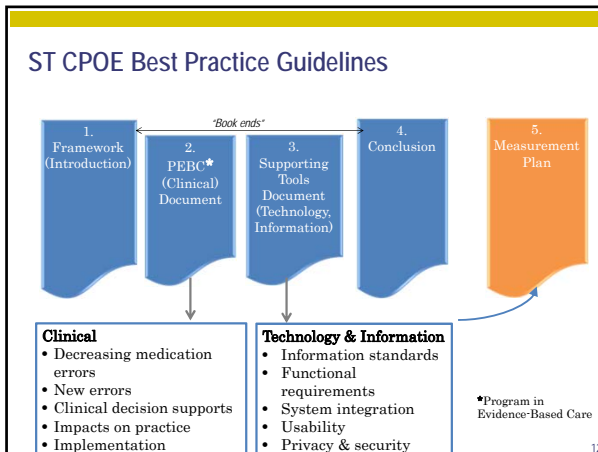
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Overall research question to be addressed by the Guideline

What are the features, functionalities and components of a ST CPOE system which are required to ensure safe, high quality systemic treatment?

- ### Benefits of Developing Guidelines for Systemic Treatment Computerized Prescriber Order Entry
1. Enable adherence to best practices to ensure benefits realization associated with ST CPOE systems
 2. Support planning, resource management and decision support in the implementation and maintenance of ST CPOE systems
 3. Provide mechanism for monitoring guideline concordance and associated clinical outcomes



Methodologies Used to Support Guideline and Indicator Development

- Review of the literature
- Environmental Scan: industry and professional reports
- Cancer Centre Consultations
- Engagement of content experts:
 - Expert Panels
 - Targeted Peer Reviewers
 - Professional consultations
 - Modified Delphi Exercise

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Supporting Tools Recommendations

Recommendations have been categorized as:

Essential

Must be included in the design/ implementation of the CPOE system in order to achieve desired quality, patient safety and user satisfaction.

Desired

Not absolutely necessary for success, but inclusion would increase the likelihood of success and/or achieving significant gains in quality and patient safety.

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PEBC (Clinical) Conclusions

The development and implementation of a risk assessment process to identify actual / potential unanticipated consequences and new errors generated, and the development of strategies to modify the system accordingly, are warranted

ST CPOE systems should be used in outpatient chemotherapy delivery to decrease chemotherapy related medication errors

Clinical, technical and leadership champions need to be identified to support the use of ST CPOE within the organization.

ST CPOE processes complement current practice and work flow processes to enhance adoption by clinicians should be ensured.

A multi-disciplinary team approach in the design, selection, workflow evaluation, implementation and/or evaluation and ongoing monitoring of the ST CPOE system should be used.

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Key Recommendations: Pre-Implementation Phase

Pre-Implementation Phase	
Category	Recommendation (Sample)
Usability	<ul style="list-style-type: none"> Incorporate a human centered approach in the design, implementation and evaluation of CPOE systems. Involvement of key stakeholders and end users in system design (e.g. physicians, pharmacists, nurses, information technology professionals, decision support, clinical informatics).
Functionality	<ul style="list-style-type: none"> The system must contain functionality to support the medication ordering, verification, dispensing and administration process. Functionality must include the ability to monitor patient entrance/exit screening processes; set minimum and maximum dose levels, dose ceilings and rounding values.
System Integration	<ul style="list-style-type: none"> Allows the patient to be uniquely identified across the continuum of care. Allows access, management and storage of patient laboratory orders and results through a jurisdictional Laboratory Information system. Provides clinicians with an improved ability to manage complete medication profiles through a jurisdictional drug information system.

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GUIDELINE MEASUREMENT AND MONITORING

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Measurement Plan

Measurement of ST CPOE adoption will be addressed in two distinct components, each consisting of indicators, a data collection plan, and a reporting plan:

1. Guideline Concordance



- Key Question:** Is my ST CPOE in concordance with best practice guidelines?
- Audience:** Intended to be used by ST CPOE system owners to evaluate their solution's functionality versus the guideline recommendations
- Main Source:** Categorized as "Essential" or "Desired" functionality based on literature recommendations

2. Clinical Practice Outcomes

- Key Question:** Is the use of my ST CPOE resulting in safe, effective, efficient, and integrated care?
- Audience:** Intended to be used at the facility, regional, and provincial levels to measure the outcomes relating to the use of ST CPOE systems
- Main Source:** Clinical outcome indicators cited in ST CPOE literature

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Indicators provide a quantitative, evidence-based foundation for clinicians, organizations, researchers and health system planners to monitor and evaluate what happens to patients as a consequence of *how well professional and organizational systems function* to provide for the needs of patients (Mainz, 2003).

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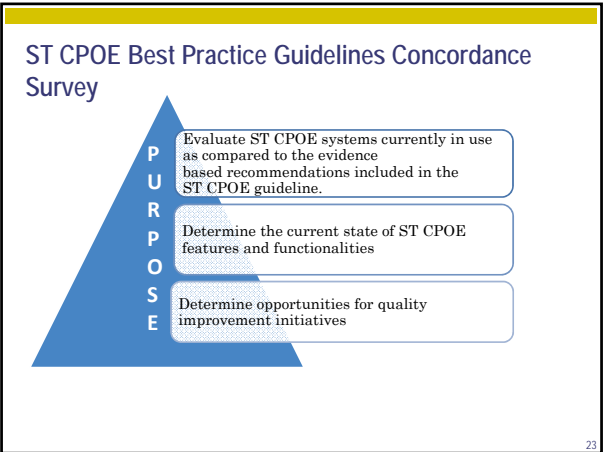
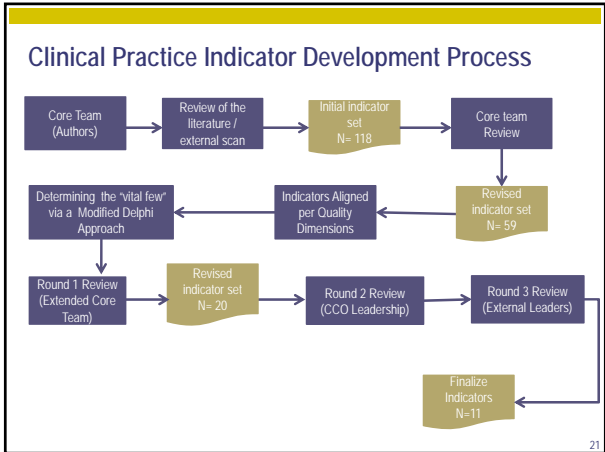
Quality Dimensions for ST CPOE Measurement

ST CPOE indicators are aligned to the Cancer System Quality Index (CSQI) Quality Dimensions



Quality Dimension	CSQI definition	ST CPOE-related definition
Safe	Avoiding, preventing, and ameliorating adverse outcomes or injuries caused by healthcare management.	Avoiding, preventing, and detecting adverse events related to the prescribing of chemotherapy.
Effective	Providing services based on scientific knowledge to all who could benefit.	Containing all the essential features, functions and components to enable safe delivery of chemotherapy.
Efficient	Optimally using resources to achieve desired outcomes.	Enabling optimal and complete chemotherapy workflow through CPOE implementation and usability.
Integrated	Coordinating health services across the various functions, activities and operating units of a system.	Linking information and decision support systems relevant to the prescribing of chemotherapy.

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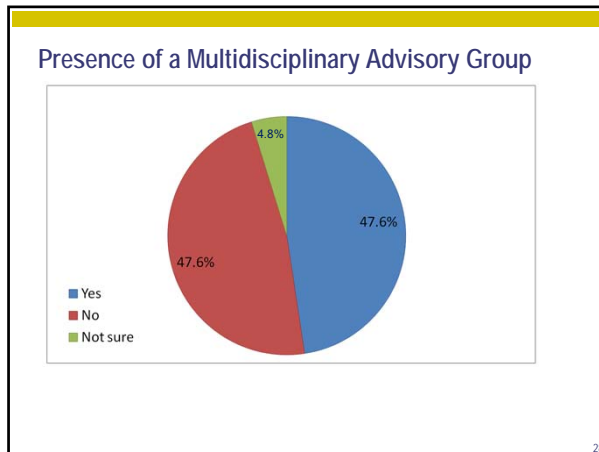
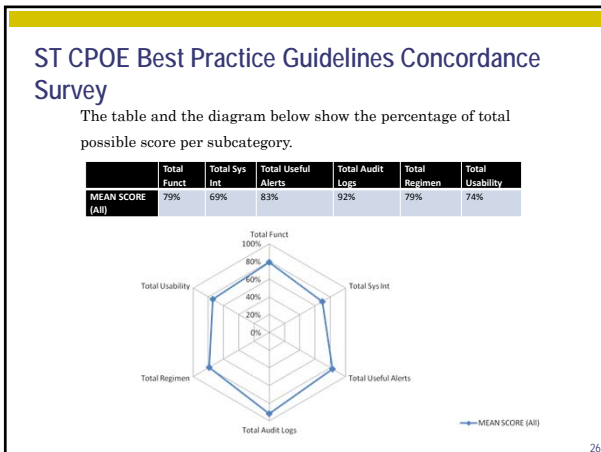
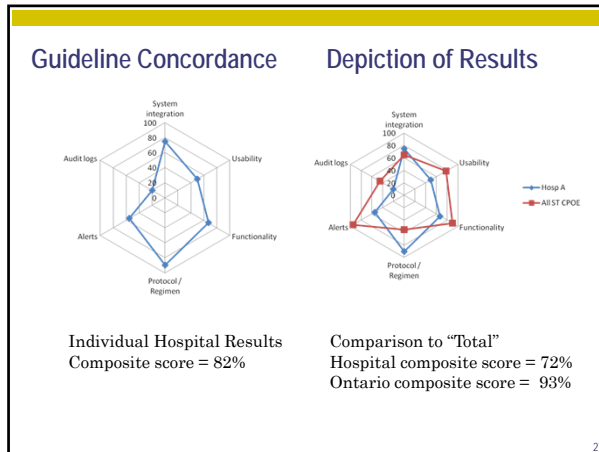
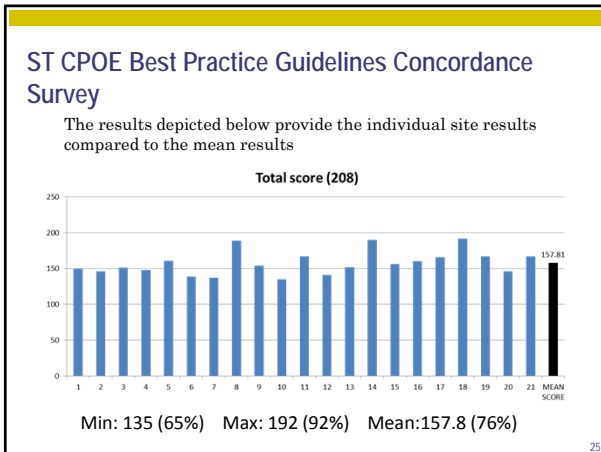
Clinical Practice Indicators

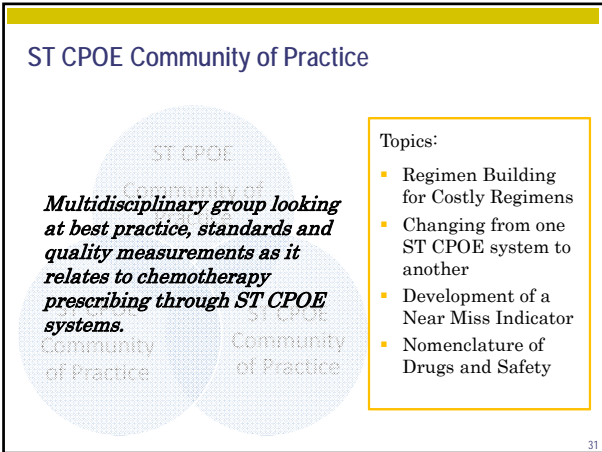
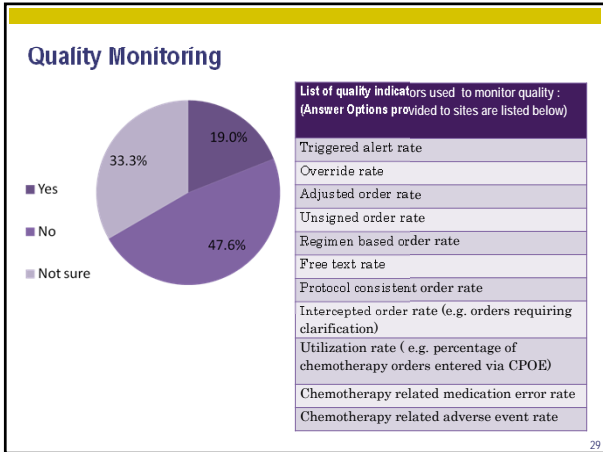
Reporting Priorities	Final Clinical Indicators / Subset of Reporting Indicators	Quality Dimension
Future	Triggered Alert Rate (per order, per visit, per patient)	Safety
Future	Override Rate	Safety
Future	Adjusted Order Rate (per order)	Safety
Future	Unsigned Order Rate (per order)	Efficient
Future	Order Set Rate (per order)	Effective
Future	Free Text Rate (per order)	Effective
Future	Protocol-Consistent Order Rate (per order)	Effective
Near to Midterm	Intercepted Order Rate (per order) / Proxy for Near Miss Rate	Safety
Near to Midterm	Utilization Rate (per order) / Utilization Rate (per prescriber)	Effectiveness
Near to Midterm	Chemotherapy Medication Error Rate (per order)	Safety
Near to Midterm	Adverse Drug Event Rate – related to Chemotherapy	Safety

ST CPOE Best Practice Guidelines Concordance Survey

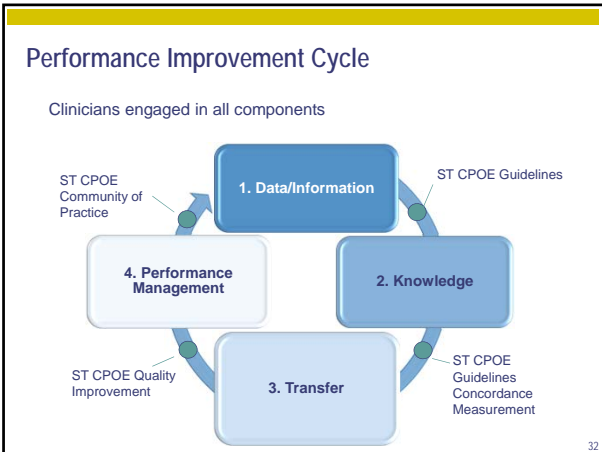
Subcategory	Number of items	Total possible score
Regimen and Protocols	4	16
Functionality	22	88
Useful Alerts	10	40
Audit logs	1	4
System Integration	10	40
Usability	5	20
Total	52	208

Responses on a 4 point Likert Scale:
Don't know, Not Available, Partially Implemented, Fully Implemented





- ### Site Interviews to Establish a Quality Improvement Agenda
-
- Sites to decide on quality improvement plan
 - Develop Quality Indicator
 - Some of the sites who have not yet implemented the following features have been recommended to:
 - Implement pharmacy verification
 - Implement improvements in labeling
 - Implement the take home prescription functionality in OPIS
 - Initiate Multidisciplinary Team



Conclusions – “Clinicians Driving Technology and Not the Other Way Around”

- 1 Ability to create guidelines merging clinical practice and information technology
- 2 Guidelines have highlighted the importance of clinical practice driving IT solutions
- 3 In Ontario:
 - A provincial program to evaluate ST CPOE systems, how they are used and are they effective
 - Guidelines provide basis for IT solution enhancements and product development
 - Better accountability of the quality of IT solutions like ST CPOE systems for chemotherapy delivery
 - Community of Practice established – focus on clinical practices

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eHealth Ontario plays the leading role in harnessing technology and innovation to improve patient care, safety and access in support of the government's health strategy. The agency is responsible for implementing the government's eHealth agenda and creating electronic health records for Ontarians.

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