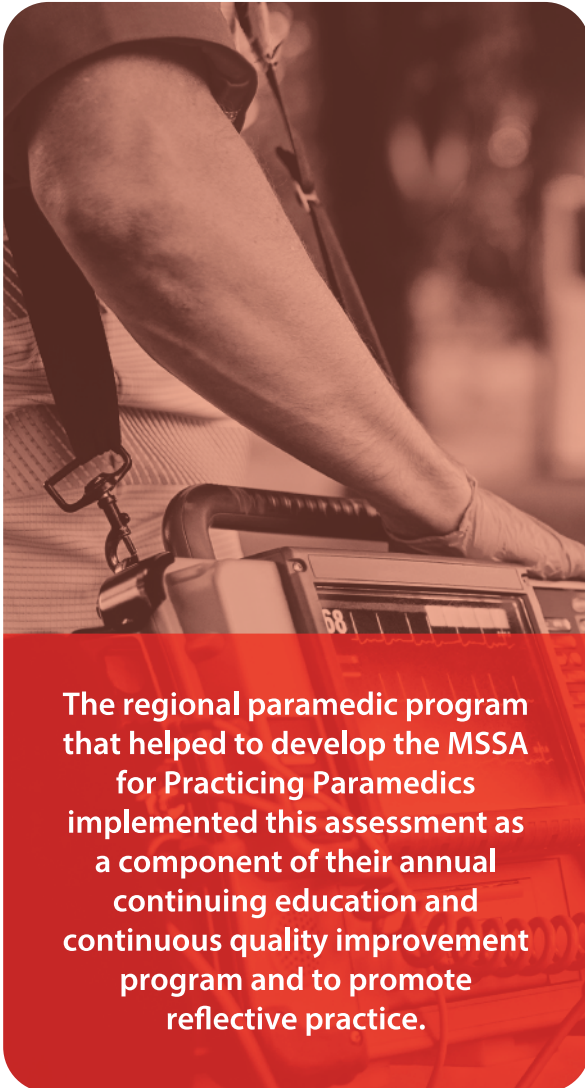


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The regional paramedic program that helped to develop the MSSA for Practicing Paramedics implemented this assessment as a component of their annual continuing education and continuous quality improvement program and to promote reflective practice.

Assessing Medication Safety in Canadian Paramedicine Practice

The role of paramedics in Canada is evolving rapidly, with expansion of the scope of practice and addition of new patient care models.¹ As the number and range of medications increase, so do the complexity of care and risk of medication errors, which can affect the safety and quality of patient care. This bulletin summarizes the analysis of aggregate data submitted by paramedics through a Medication Safety Self-Assessment (MSSA) focused on individual practice and reflections. Areas of strength and opportunities for improvement in paramedicine are highlighted.

BACKGROUND

The MSSA is an evidence-informed, proactive risk assessment and quality improvement resource that supports review of medication practices from a safety perspective. ISMP Canada collaborated with a regional paramedic program to develop the MSSA for Practicing Paramedics. The aim is to help individual paramedics assess their practices or the processes that affect their clinical practice. It was developed with support from an expert advisory panel that included paramedicine leaders from across Canada and the United States.* The MSSA for Practicing Paramedics evaluates 8 Key Elements of medication safety as outlined in Table 1.

Paramedics completing the MSSA reflect on each assessment item and assign a score ranging from 0 to 4 (as shown in Table 2), according to the perceived degree of medication safety in their everyday practice.

* An MSSA for Paramedic Organizations was also developed to provide a complementary MSSA for organizations to assess their entire operations from a medication safety perspective.

TABLE 1. MSSA for Practicing Paramedics Key Elements of Medication Safety.

# of Assessment Items in the Key Element	
Medication Safety Key Element	
I Patient Engagement and Partnership	4
II Interdisciplinary Care Team	2
III Medication Management	14
IV Medication Administration	19
V Equipment and Technology	7
VI Quality Assurance and Incident Management	6
VII Education and Training	2
VIII Evaluation	5

TABLE 2. Potential responses to individual MSSA assessment items and their corresponding numeric scores.

	Numeric Score
N - Not Implemented	0
R - Rarely	1
S - Sometimes	2
O - Often	3
A - Always	4
NA - Not Applicable	0

METHODOLOGY

Data submitted by paramedics through the MSSA for Practicing Paramedics over a 10-month period (February 1 to November 30, 2023) were analyzed by ISMP Canada. Mean scores were calculated for Key Elements 1 to 7 and for the individual assessment items. For certain MSSA items, the option of “not applicable” (NA) was available. For these items, any

NA responses were omitted from the calculation of mean scores. The scores were compared to determine the highest- and lowest-scoring Key Elements and individual assessment items.

ANALYSIS FINDINGS

A total of 196 paramedics completed the MSSA for Practicing Paramedics. 68% of respondents indicated that they might or would make practice changes based on learning from the MSSA.

Demographics

The following demographic features were noted:

- More than two-thirds of participants (135 of 196) practiced in a community with a population of at least 100,000.
- Most participants worked in the emergency setting, as first responders to emergency calls (184), whereas the remainder worked as non-emergency community paramedics[†] (12).
- Most participants worked primarily as land ambulance paramedics (174); the others worked primarily in either a supervisor role (19) or a management/educator role (3).
- Most participants were certified as primary care paramedics (121), whereas the rest were certified as advanced care paramedics (75). None of the participants were certified as critical care paramedics or emergency medical responders.[‡]

Participant overall scores for all Key Elements are shown in Figure 1.

Table 3 and Table 4 highlight select high- and low-scoring assessment items and their corresponding average scores.

[†] Community paramedics typically work as non-emergency, community-based service providers assisting with public health, primary health care, and preventive services (source <https://www.communityparamedics.ca/for-clinicians>).

[‡] The Paramedic Association of Canada defines 4 paramedic scopes of practice in the National Occupational Competency Profile (NOCP): emergency medical responder, primary care paramedic, advanced care paramedic, and critical care paramedics. These scopes of practice are used by most jurisdictions in Canada (source <https://paramedic.ca/competencies/nocp/>; see page 8 of NOCP).

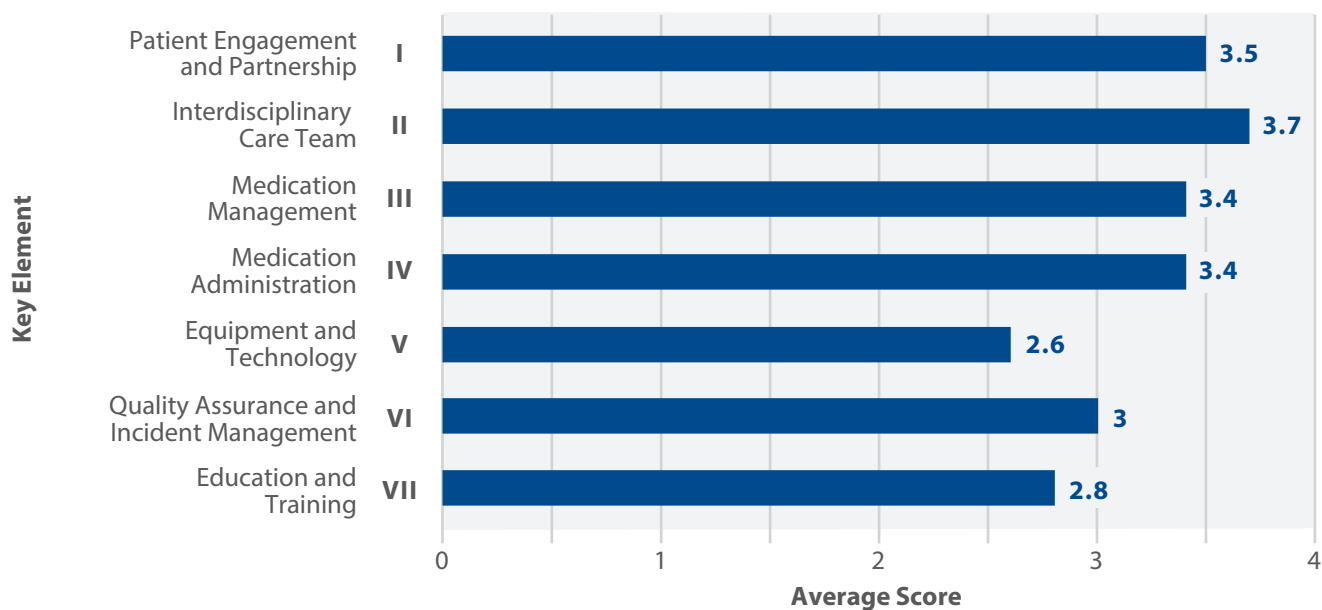


FIGURE 1. Average score for each Key Element (highest achievable score is 4).

TABLE 3. High-scoring assessment items.

Key Element	Assessment Item	Average Score
I Patient Engagement and Partnership	• gathering complete health history	3.8
	• shared decision-making with patient/family/caregiver	3.3
	• disclosure of medication incidents	3.2
II Interdisciplinary Care Team	• ability to contact physician or prescriber to support clinical decisions	3.7
III Medication Management	• awareness of look-alike, sound-alike names and packaging	3.8
	• proper storage of controlled medications	3.7
IV Medication Administration	• following standard protocols, medical directives, or clinical guidelines	3.9
VI Quality Assurance and Incident Management	• reporting medication incidents	3.7

TABLE 4. Low-scoring assessment items.

Key Element	Assessment Item	Average Score
III Medication Management	• labelling prepared medications with name and dose/concentration	2.8
IV Medication Administration	• using machine-readable coding at point of care	0.3
V Equipment and Technology	• medication device training and checking for competence before use	2.7
	• access to prescription safety glasses	2.1
	• labelling distal end tubing for patients receiving multiple solutions	1.6
VI Quality Assurance and Incident Management	• just culture	2.7
VII Education and Training	• receiving information about medication incidents	2.3

DISCUSSION

The mean scores tended to be higher for Key Elements I to IV, which are associated with day-to-day activities, whereas mean scores were lower for the more administrative Key Elements V to VII.

The assessment item for disclosure of medication incidents occurring during care (in Key Element I) represents an opportunity for improvement. Paramedics should feel comfortable disclosing information relevant to care in the moment.

Participants gave high scores to medication safety practices to prevent and detect incidents, such as completing double checks and ensuring proper documentation and appropriate storage of medications. The use of bar-coding at the point of care (to verify medication selection before administration) represents an opportunity to enhance the safety of medication administration. The use of bar codes and other machine-readable coding to reduce medication selection errors is available in hospitals and community pharmacies. Absence of bar-coding is a gap in paramedicine system technology which could be addressed through adapting electronic verification systems to the paramedic environment, including at the point of care.

For Key Element V: Equipment and Technology, scores were relatively low for assessment items pertaining to medication-related device training. There may be an opportunity for organizational review of training and competence assessment for use of medical devices, as well as labelling of tubing. In addition, a need for better access to prescription safety glasses is an important finding.

Recognizing the importance of a just culture (a safety-supportive model of shared accountability) is a cornerstone of Key Element VI (Quality Assurance and Incident Management). This element focuses on the systems in place to support continuous quality improvement in medication safety. The reporting of medication incidents had a relatively high mean score of 3.7. The participants who had a supervisory/ managerial or educator role ($n = 22$) gave higher scores to this item than front-line paramedics ($n = 174$).

The MSSA for Practicing Paramedics is intended as a longitudinal analysis tool to monitor progress over time and to track improvements.

RECOMMENDATIONS FOR PARAMEDIC ORGANIZATIONS

The responses of individual paramedics indicate that many leading practices for medication safety are in place in this region. The following recommendations are offered to paramedic organizations more generally to help support and enhance individual paramedic medication safety practices:

- Establish and nurture a just culture²⁻⁴ by implementing the following activities, among others:
 - share aggregate data, from reports of medication incidents, with paramedics
 - use learning from incident analyses for continuous quality improvement
 - incorporate information about a just culture in education programs for paramedics
- Disseminate learning from medication incidents throughout the organization.
- Provide mentoring, training, and resources to support paramedics in appropriate disclosure of medication incidents to patients and their caregivers.
- Consider the use of machine-reading technology (e.g., bar-coding) at the point of care to ensure correct selection of medications.
- Strengthen training and ongoing competence assessment for use of medication devices (e.g., infusion pumps and tubing, inhalers, syringes, pen devices that contain medication, robotics, and other related devices that are used for medication preparation, dispensing, and administration).

CONCLUSION

The MSSA for Practicing Paramedics aims to raise awareness and understanding of leading medication safety practices. Analysis of aggregate data submitted through a regional continuing education and continuous quality improvement program identified strengths and opportunities that may be relevant to the broader paramedicine sector. Continuous quality improvement opportunities include promoting a just culture, reporting of and learning from medication incidents, and ensuring medication-related device competencies.

ACKNOWLEDGMENTS

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The Canadian Medication Incident Reporting and Prevention System (CMIRPS) is a collaborative pan-Canadian program of Health Canada, the Canadian Institute for Health Information (CIHI), the Institute for Safe Medication Practices Canada (ISMP Canada) and Healthcare Excellence Canada (HEC). The goal of CMIRPS is to reduce and prevent harmful medication incidents in Canada.

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The Institute for Safe Medication Practices Canada (ISMP Canada) is an independent national not-for-profit organization committed to the advancement of medication safety in all healthcare settings. ISMP Canada's mandate includes analyzing medication incidents, making recommendations for the prevention of harmful medication incidents, and facilitating quality improvement initiatives.

Report Medication Incidents

(Including near misses)

Online: www.ismpcanada.ca/report/

Phone: 1-866-544-7672

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