



Findings Report

Emergency Department Paediatric Readiness Initiative: Opportunities to Enhance Paediatric Care in Emergency Departments Across Ontario

October 2024

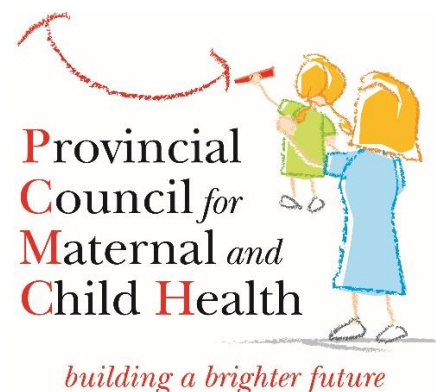


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Background

Children requiring emergency care have unique needs that are typically very different from those of adult patients, especially in serious or life-threatening situations. In 2022-2023, Ontario's emergency departments (EDs) saw approximately 1.2 million visits from children and youth, comprising 20% of all ED visits (Canadian Institute for Health Information [CIHI], 2023). Notably, 80% of these visits occurred in EDs outside specialized children's hospitals (CIHI, 2023). Ontario data demonstrates that while most paediatric ED cases are mild to moderate in severity, EDs should be ready to provide high-quality care to all paediatric patients. The lack of specialized paediatric care may result in patients not receiving treatment according to standardized clinical guidelines, leading to non-evidence-based treatment or potential harm.

Over five fiscal years (April 1, 2018 to March 31, 2023), medical-related ED visits in Ontario remained stable. However, there was an increase in visits among children aged 1 to 4 years (+18%) and 5 to 9 years (+12%) (CIHI, 2023). Despite a slight decline (-1.9%) in paediatric mental health ED visits from April 1, 2018 to March 31, 2023, there was an increase (+2.1%) in visits from children aged 10 to 14 years, along with a rise in more severe cases. During this period, Ontario also witnessed a 7.3% rate increase in self-harm-related paediatric ED visits.

To ensure safe, equitable, and quality care for all paediatric patients who present to any ED in Ontario, it is crucial for EDs to be ready. That is, ED healthcare professionals and systems must have the necessary skills, knowledge, equipment, and policies for providing a minimum standard of care. In 2017, the Provincial Council for Maternal and Child Health (PCMCH) launched the Emergency Department Paediatric Readiness (EDPR) initiative to assess the readiness of Ontario's EDs to provide safe and high-quality care to paediatric patients. It adapted questions and scores from the United States (U.S.) National Pediatric Readiness Project (NPRP), which has also been adopted in other jurisdictions (Institute of Medicine, 1993; Remick et al., 2023).

Recent U.S. studies show that hospitals with high paediatric readiness scores have lower mortality rates among critically ill or injured children (Ames et al., 2019; Balmaks et al., 2020; Newgard et al., 2023). After three launches from 2003 to 2021, the U.S. continued to see increases in their national paediatric readiness scores with the use of implementation initiatives such as an online toolkit and communities of practice. The EDPR initiative in Ontario aims to identify and drive quality improvement (QI) within organizations, regions, and the provincial system of emergency care, and monitor the provincial system's progress in paediatric readiness.

Methodology

PCMCH partnered with [Translating Emergency Knowledge for Kids \(TREKK\)](#), a national knowledge mobilization organization focused on enhancing emergency care for children across Canada, to launch the EDPR initiative (Translating Emergency Knowledge for Kids, 2023).

Survey Development

Ontario's ED Paediatric Readiness survey was adapted from the original NPRP Assessment to explore readiness for mental health and substance use-related visits. PCMCH developed its EDPR survey in three stages: first, by collaborating with U.S. NPRP experts to adapt the assessment components for Ontario-specific elements; second, by formulating mental health and substance use questions with input from an expert advisory panel; and third, by conducting pilot testing involving multiple hospitals to ensure user-friendliness, cultural appropriateness, and to inform the survey rollout. Out of the 170 survey questions, a subset was not scored but served to provide context for the scored questions and aid in generating recommendations.

Survey Launch

In April 2022, PCMCH launched the EDPR survey to determine hospitals' compliance with elements of the paediatric readiness checklist ([Appendix A](#)). Using an online database, ED sites were provided a unique link to respond to the survey. Hospital corporations with multiple sites were asked to complete a survey for each site, with each site receiving a unique link to participate. Out of 165 ED sites in Ontario, 66 participated in the EDPR survey. Participants were encouraged to complete the survey with a team of individuals within their hospital setting, including: the ED Chief/Medical Director, the ED Manager/Director, and any other members involved in child and youth ED care at their site. The opportunity to participate in the EDPR survey closed in June 2022.

Hospitals were able to use their unique link to the database to access a customized report once their survey entry was submitted. This report includes the hospitals' ED Paediatric Readiness score, how they compared against the average of similar-sized hospitals and against all hospitals that completed the survey, and areas for improvement based on their responses ([Appendix B](#), example of database screen). There was wide variation in participation across the province. Notably, 39 EDs from the Ontario Health (OH) West region participated, comprising 59% of the data set among 66 hospitals. Participation rates from other OH regions ranged from 7% to 38%. This could limit the geographical generalizability of the data. To address this potential limitation, the findings were reviewed with an Advisory Group that represented diverse regions across Ontario.

Data Analysis and Interpretation

PCMCH analyzed the survey responses to prepare them for interpretation by the EDPR-Advisory Group (AG). Convened in March 2023, the EDPR-AG is comprised of healthcare professionals, hospital administrators, family advisors, and others representing rural and urban areas from across Ontario (see entire [membership list here](#)).

The analysis primarily consisted of **median scores** to represent central tendency, not affected by outliers in the data set. Scored or unscored individual questions were analyzed by total values to determine the degree of compliance with items within the survey.

Findings from the survey will inform the development and implementation of ED improvement initiatives by PCMCH and other relevant parties including, but not limited to, government, provincial agencies, quality improvement and training organizations, [maternal-child health regional networks](#), and individual hospitals and healthcare providers.

Results

The survey findings were analyzed to assess the performance of EDs across the following domains:

1. Demographics and Infrastructure;
2. Coordination of Care;
3. ED Staffing and Training;
4. Quality Improvement and Patient Safety;
5. Policies and Procedures; and
6. Equipment and Supplies.

In addition, a seventh domain named *Challenges and Enablers* was added to capture qualitative feedback and further identify recommendations for improvement.

The EDPR-AG reviewed the overall reported data and data within each domain, using hospital types as comparators. The comparators included Paediatric Academic Health Sciences Centres (PAHSC), Academic Health Sciences Centres (AHSC), and Community Hospitals. Community Hospitals were further broken down into three groups by volume of annual paediatric ED visits: Volume 1 (0–1,999 visits), Volume 2 (2,000–4,999 visits), and Volume 3 (5,000–11,000 visits). Table 1 below summarizes the survey response rate by hospital type.

Table 1: Respondents to the EDPR Survey by Hospital Type

Hospital Type	Number of Respondents	Total Number of EDs in Province	% of Respondents to EDPR	Overall EDPR Median Score (Medical and Mental Health Combined)
PAHSC	4	4	100%	91%
AHSC	5	17	29%	65%
Community	57	144	40%	61%
Ontario Total	66	165	40%	63%

Ontario Median Scores by Medical and Mental Health Issue Types

Table 2 displays median scores by hospital type and issue type (i.e., medical health and mental health). The percentages presented in this table were calculated by dividing the median score corresponding to each hospital type and issue type by the maximum points allocated for that specific issue type.

Table 2: Median Scores by Hospital Type and Issue Type

Issue Type	Community Hospital – Volume 1 N = 28	Community Hospital – Volume 2 N = 17	Community Hospital – Volume 3 N = 12	AHSC N = 5	Paediatric AHSC N = 4	Ontario N = 66
Combined Medical Health & Mental Health (135 max points)	54%	59%	72%	65%	91%	63%
Medical Health (98.4 max points)	62%	58%	60%	63%	95%	63%
Mental Health (36.6 max points)	40%	56%	78%	79%	80%	57%

For further breakdown of median scores by domain, hospital type, and issue type, see [Appendix C](#).

Comparison with Other Jurisdictions

The overall median score for Ontario, specific to the medical health component of the survey, is 62.2 out of a maximum of 98.4 points, positioning the paediatric readiness of Ontario EDs higher than that of other Canadian provinces but lower than that of the U.S. and European countries (Aregbesola et al., 2022; Jensen et al., 2022; Remick et al., 2023; Stys et al., 2020). Scores for other jurisdictions can be found in [Appendix D](#). Note that no other jurisdiction has included the PCMCH-designed mental health component in their survey.

Domain 1: Demographics and Infrastructure

This domain has two components: demographics and infrastructure. Demographic information is collected to confirm patient volumes and age limits for paediatric patients. The infrastructure component focuses on ED configuration for paediatric patients, which is particularly important for those presenting to the ED with a mental health and/or substance use concern.

Patient volumes were derived from 2020-2021 total paediatric ED volumes reported by the Canadian Institute for Health Information (CIHI). The infrastructure component, which examines ED configuration for paediatric patients who present to the ED, is particularly significant for mental health considerations. Spaces that are designed to address medical health issues can pose danger for patients dealing with mental health and/or substance use issues. Designing a safe space will ensure a higher level of safety for both patients and staff in the ED.

Scoring: There is a maximum of 2.5 points for mental health and no medical health points in this domain. The scored questions were specifically related to ED infrastructure. [Appendix C](#) shows that PAHSCs had a median score of 2.5 while other hospital groups had a median score of 1.5 points.

Key Findings: Demographics

Findings in Ontario are consistent with those from other Canadian provinces, indicating a slight correlation between high paediatric patient volumes and higher overall ED readiness scores. The majority of hospitals (82%) indicated that the age range for paediatric patients who present to their ED with a medical or mental health issue was from birth to the 18th birthday. The remaining hospitals varied in their definitions, with some defining paediatric patients as those from birth up to the 14th, 16th, 17th, 19th, or 22nd birthday. A positive correlation exists between EDPR scores and ED paediatric volumes in Ontario, consistent with findings from the U.S. and Alberta, where scores tend to increase as volumes increase (Gausche-Hill et al., 2015; Stys et al., 2020).

Key Findings: Infrastructure

Most Community Hospital and AHSC EDs (61%) lacked a separate quiet space for paediatric patients presenting with mental health issues, a feature that was present in all PAHSC EDs. Qualitative feedback highlighted the desire for a dedicated physical space in the ED for such paediatric patients. However, limitations in ED size and constraints within existing spaces posed a challenge in fulfilling this need. Space limitations were identified as a key barrier in providing care to paediatric patients with mental health and/or substance use issues in the ED, attributed to a longer length of stay and limited transfer and discharge options for paediatric patients.

Opportunity for Improvement

Hospitals could benefit from understanding the elements of a safe space for paediatric patients and applying specific elements where feasible in their existing ED space.

Domain 2: Coordination of Care

This domain focuses on whether an ED has a Paediatric Emergency Care Coordinator (PECC). The PECC can be a nurse and/or physician responsible for the coordination of paediatric emergency care. This role includes the oversight of various aspects of paediatric emergency care, such as QI, collaborating with staff regarding paediatric initiatives, ensuring opportunities for the development and maintenance of paediatric skills, developing and periodically reviewing policies, among other responsibilities. The PECC role can be integrated into an existing position (e.g., clinical educator or department head) with dedicated administrative time for PECC-specific tasks. Assigning nurse and/or physician coordinators is the most important step in improving paediatric readiness, as the presence of PECCs is strongly correlated with improved paediatric readiness in other jurisdictions (Remick et al., 2023).

Scoring: There is a maximum of 19 points in this domain. [Appendix C](#) shows that PAHSCs had a median score of 19 while AHSCs had a median score of 9.5 and Community Hospitals had a median score of zero.

Key Findings: Most of the Community Hospital and AHSC EDs (71%) did not have a nurse or physician PECC, while all PAHSC EDs had both a physician and a nurse PECC. Of the 22 sites that had a PECC, the majority indicated that they allocated 6-25% of PECC time to performing administrative duties. Useful resources such as a PECC job description, specialized training, and data demonstrating the importance of paediatric readiness can facilitate the establishment of PECC roles at hospitals.

Opportunity for Improvement

Hospitals could significantly enhance paediatric readiness by adding Paediatric Emergency Care Coordinator roles to their teams. The presence of PECCs is strongly correlated with improvements in other domains in EDPR.

Domain 3: Staffing and Training

This domain captures ED staffing, training, and ongoing competency requirements. It includes competency and training considerations to ensure that staff possess the necessary knowledge and skills to provide optimal clinical care for children. This domain also examines existing hospital resources, including the availability of in-house paediatricians or other specialized staff, to support paediatric patients presenting with mental health and/or substance use issues. Additionally, it addresses disposition options for those presenting with a mental health concern, training in child- and family-centred care, and training in culturally competent care.

Scoring: There is a maximum of 10 medical health points and 16.1 mental health points in this domain. As seen in [Appendix C](#), PAHSCs scored higher than all other hospital types for the medical health component. For the mental health component, PAHSCs, AHSCs and Volume 3 Community Hospitals had high scores while Volume 1 and 2 Community Hospitals scored lower. Community Hospitals had significant variability in scores, with some sites receiving very high scores while other sites scoring considerably lower.

Key Findings for the Medical Health Component:

Hospitals more often required registered nurses (RNs) to have paediatric-specific competencies to work in the ED (64%) compared to other disciplines such as physicians (MDs), registered practical nurses (RPNs), nurse practitioners (NPs), and physician assistants (PAs). Maintenance of specialty board certification for RNs and MDs was low (0-42%) across all Community Hospital volume types and AHSCs, though higher at PAHSCs (50-75%). Access to additional paediatric consultation was higher among AHSCs and Volume 1 and 2 Community Hospitals (80-100%) compared to Volume 3 Community Hospitals (67%). Most hospitals expressed a need for simulation-based education in paediatric ED care. Over half provided such education for MDs (64%), RNs (65%), and RPNs (66%), with lower rates for PAs (50%) and NPs (28%). External evidence-based resources like TREKK, UpToDate, and PAHSCs' publicly accessible resources were widely used across all hospitals, with varying degrees of access to resources offered by Maternal-Child Health Regional Networks.

Key Findings for the Mental Health Component:

Approximately half of participating hospitals (51%) reported they had consistent access to at least one mental health clinician in the ED, though not necessarily specialized in the paediatric population (e.g., an adult mental health nurse, generalist psychiatrist, or specialized adult crisis intervention team). Hospitals were asked which of the four discharge plans for varying acuity levels were provided. These included (1) referral to a community mental health agency crisis intervention program, (2) discharged home with a recommendation to follow up with a primary care provider, (3) discharged home with a recommendation to follow up with a children's mental health agency where the patient is already involved, and (4) discharged home with a recommendation to follow up with a children's mental health agency where the patient is not yet involved. All hospitals had at least one of these four options available for children/youth presenting to the ED with mental health and/or substance use issues. Most hospitals offered follow-up care with primary care physicians (82%) but faced challenges in providing inpatient beds and outpatient follow-up. Less than half provided child- and family-centred care training for ED staff, with even fewer making it a requirement. Over half offered cultural competence training, but only 40% required it, with higher-volume centres more likely to make it mandatory.

Opportunities for Improvement

Healthcare providers who staff the ED could greatly benefit from support to maintain paediatric specialty certifications and access to learning opportunities such as simulation training (e.g., [SimBox](#), [Practiss](#)), virtual education modules (e.g., [ED Nursing Education, Retention, and Workforce Program](#)), and workforce development programs (e.g., [Clinical Scholar Program](#), [WeRPN Bridging Program](#)). Additionally, access to consultation services (e.g., [CertiCall](#), [Emergency Department Peer-to-Peer Program](#), [Ontario Telemedicine Network \(OTN\)](#), mobile crisis teams) and training on cultural competence and child- and family-centred care would be valuable for ED staff.

Establishing standardized discharge planning for patients with mental health and/or substance use issues would greatly benefit the staff supporting these children/youth and their families. These discharge plans should be developed in collaboration with local crisis intervention programs and agencies, while also considering whether existing adult services could be adapted and expanded to accommodate children/youth.

Domain 4: Quality Improvement and Patient Safety

This domain encompasses structures and processes for enhancing QI and patient safety for paediatric patients in the ED. QI efforts should assess each of the six Institute of Medicine (IOM) domains of healthcare quality: effectiveness, safety, efficiency, timeliness, equitability, and patient centredness (Institute of Medicine, 2001). Specific approaches for paediatric emergency care include integrating paediatric-specific elements into the ED QI/performance improvement (PI) plan, conducting reviews of paediatric patient care, and participating in QI collaboratives which offer cyclical series of learning sessions with action periods, measurement, and evaluation (Remick et al., 2018).

Paediatric patient safety considerations include weighing children in kilograms (as opposed to pounds), recording a full set of vital signs, establishing safe medication processes, and providing culturally and linguistically appropriate services, among other elements of care (Remick et al., 2018). To ensure paediatric patient safety during disasters, including infectious disease outbreaks, disaster planning needs to address the distinct needs of children (Joseph et al., 2022).

Scoring: There is a maximum of 20.9 points for medical health and no mental health points in this domain. As per [Appendix C](#), overall median scores by hospital type indicate that high-volume centres (i.e., PAHSCs and Volume 3 Community Hospitals) scored highly in this domain.

Key Findings:

The presence and content of ED QI/PI plans varied significantly among comparator groups. All PAHSC and most Volume 3 Community Hospital EDs (75%) reported having such plans for paediatric patients. However, AHSC, Volume 1, and Volume 2 Community Hospital EDs generally lacked such plans. Half of the sites identified the absence of paediatric-specific QI/PI plans as a barrier in providing care to children with medical concerns in the ED.

Among the 28 hospitals with QI/PI plans for paediatric patients, all had a patient care review process. However, there was substantial variation in the identification of quality indicators for paediatric patients, the collection and analysis of paediatric emergency care data, the development of a plan for improvement in paediatric emergency care, and the re-evaluation of performance using outcomes-based measures.

To ensure patient safety for paediatric patients, most EDs implemented vital sign monitoring, assessment documentation, protocols for notifying physicians about abnormal vitals, and pre-calculated drug dosing. 24/7 access to interpreter services was available in all EDs except for those in Volume 1 Community Hospitals, where 39% reported a lack of this service.

When asked about barriers and enablers in this domain, hospitals highlighted the need for evidence-based clinical pathways tailored for paediatric patients, as well as templates for paediatric QI/PI plans, paediatric disaster plans, and paediatric surging. Some hospitals noted the significance of accessing paediatric expertise through telemedicine (42%) and participating in QI collaboratives and communities of practice (53%) as a means to improve the paediatric readiness of their EDs.

Additionally, Community Hospitals identified additional supports that would enhance the quality of paediatric care in their EDs. These include implementing mandatory Pediatric Advanced Life

Support (PALS) Certification training for RNs, requiring paediatric-specific education for all nurses, ensuring adequate funding for ED staffing and resources, enabling bypass for children and youth with mental health emergencies to a designated psychiatric facility (i.e., Schedule 1 facility), and employing specialized crisis workers trained in paediatric mental health emergencies and interventions.

Opportunities for Improvement

Hospitals could benefit from implementing best practices and evidence-based clinical pathways (e.g., those available via [TREKK](#)), adopting ongoing QI/PI activities, and ensuring 24/7 access to interpreter services within the ED. Targeted work on supporting paediatric patients and their families is important for preparing for future operational capacity challenges, paediatric patient tracking and family reunification, access to mental health and social services, and care of children with special healthcare needs, especially in the event of a disaster.

Maternal-Child Health Regional Networks could play a role in leading QI collaboratives and communities of practice to facilitate communication among hospitals and other key system partners (e.g., Ontario Health regions) and enable ongoing QI/PI discussions. For example, QI collaboratives in paediatric readiness present a significant opportunity to empower ED-based teams to actively improve care in targeted areas by implementing and assessing local improvement efforts through cycles of planning, action, measurement, and learning (Emergency Medical Services for Children Innovation and Improvement Center, 2023).

Domain 5: Policies and Procedures

This domain assesses an ED's policies, procedures, and plans for meeting the needs of paediatric patients. Policies for medical care in the ED encompass paediatric patient assessment and reassessment, illness and injury triage, child maltreatment, and death of a child in the ED, among others. Family-centred care policies emphasize shared decision-making, family presence, discharge planning, and bereavement counselling to optimize care with the active participation of the child/youth and family. Components of policies or plans were explicitly referenced in the survey specific to inter-facility transfer agreements and disaster preparedness plans. Additionally, policies regarding mental healthcare in the ED focus on a triage process that includes screening tools for mental health and/or substance use assessments. These policies also address target timeframes for mental health assessments, holding patients in the ED, and non-violent crisis intervention.

Scoring: There is a maximum of 15.5 medical health points and 18 mental health points in this domain. As indicated in [Appendix C](#), overall median scores by hospital types reveal higher scores for high-volume centres (i.e., PAHSCs and Volume 3 Community Hospitals) in this domain.

Key Findings for the Medical Health Component:

Over half of participating EDs (55%) had triage policies for ill and injured children/youth, including those with mental health and/or substance use issues. All EDs with a triage policy used either the Canadian Triage and Acuity Scale (CTAS) or the eCTAS (electronic CTAS) triage tool for paediatric patients. Regarding inter-facility patient transfer agreements, 59% of hospitals had written policies with other hospitals covering patients of all ages, addressing both medical and mental health and/or substance use issues. However, hospitals with these agreements often lacked plans for transferring a copy of the signed transport consent, in addition to providing directions and referral institution information to the family.

The majority of hospitals (79%) did not have elements tailored to paediatric patients within their disaster plans. Among hospitals that addressed paediatric-specific issues in their disaster plans, the most frequently missing components were care for children with specialized healthcare needs, access to mental health resources, and inclusion of paediatric patients in all disaster drills.

The survey captured ED policies, procedures, and plans specifically for paediatric patients presenting with a medical health issue. Many hospitals (76%) had paediatric patient assessment and reassessment. The least commonly reported policies or procedures included immunization assessment and management of the under-immunized child (36%) and boarding in the ED due to no beds being available either in the hospital or externally (41%).

Key Findings for the Mental Health Component:

Most hospitals (83%) included a basic mental health assessment for children/youth in their EDs, either during triage or after the patient was in a room. There was significant disparity in the use of screening tools to assess children/youth presenting with mental health and/or substance use issues. While all PAHSCs used them, 58% of AHSCs and Community Hospitals did not. The most commonly reported screening tool was the Ask Suicide Screening Questions (ASQ).

Only four out of 66 hospitals implemented the [ED Clinical Pathway for Children and Youth with Mental Health Conditions](#), developed in 2013 by PCMCH. All sites indicating a lack of

implementation or awareness of this pathway have expressed interest in learning more about it or other similar pathways.

ED policies, procedures, and plans specifically for paediatric patients with mental health and/or substance use issues most frequently covered non-violent crisis intervention (89%), physical restraints (82%), and child maltreatment (82%). However, fewer hospitals had policies or procedures for the use of pre-printed order sets for chemical restraints (17%) and target time for mental health assessment within the ED (32%).

Most EDs (77%) lacked a formal agreement with community agencies for the referral of paediatric patients with mental health and/or substance use issues. Volume 3 Community Hospitals were more likely to have formal agreements, while AHSCs and Volume 1 and Volume 2 Community Hospitals relied more on informal agreements.

While family-centred care policies were prevalent (64%), many lacked components related to family and caregiver involvement in medication safety and bereavement counselling. Culturally competent care resources, such as culture-specific patient care navigators, community elders, traditional healers, and cultural or spiritual ceremonies, were lacking in 64% of hospitals. Only two sites had culture-specific care pathways for paediatric patients in the ED, both tailored for Indigenous populations.

Opportunities for Improvement

A comprehensive list and sample of resources can be shared with hospitals to inform them about the essential components for policies, procedures and/or plans concerning paediatric patient care, the promotion of cultural perspectives to care, family-centred care, disaster plans, mental health clinical pathways, and inter-facility transfer guidelines. The specific elements within ED policies and procedures addressing these aspects of paediatric care are detailed in [Appendix A](#), section Policies and Procedures.

Hospitals could enhance the care experienced by patients and their families by incorporating resources that support a cultural perspective to care, such as culture-specific care navigators and traditional healers.

Domain 6: Equipment and Supplies

This domain collects information on the ED's paediatric-specific equipment and supplies, as well as how these items are stored and replenished. This encompasses monitoring equipment (e.g., various sizes of blood pressure cuffs), fluid resuscitation equipment (e.g., paediatric intra-osseous needles, venous catheters), and airway equipment (e.g., various sizes of endotracheal tubes, laryngoscope blades, tracheostomy tubes, laryngeal masks). Staff education on equipment location and the implementation of daily checks to ensure equipment functionality are crucial in preventing care delays and potential complications for critically ill children of all ages.

Scoring: There is a maximum of 33 medical health points and no mental health points in this domain. Equipment and supplies received high scores across all hospital types. This domain's scores surpass those of other domains and contribute the most to the overall median score for a hospital site. As depicted in [Appendix C](#), over 79% of hospitals achieved 30 or more points in this domain.

Key Findings:

Most hospitals had staff trained on the location of all equipment and medications (94%), implemented daily checks to verify the proper location and stock of paediatric equipment and supplies (86%), had a separate paediatric cart (i.e., Broselow cart) (97%), and had a standardized tool readily available to estimate weight during resuscitation (98%). However, low-volume centres (i.e., AHSCs and Volume 1 and 2 Community Hospitals) had a significantly lower availability of safe paediatric beds and cribs in their EDs (20-41%) compared to the 83-100% found in high-volume centres (i.e., PAHSCs and Volume 3 Community Hospitals). All Community Hospitals faced inconsistencies in equipment availability, with a notable absence of central venous catheters.

Equipment that was most commonly missing included tracheostomy tubes of all sizes (neonates, children, and adolescents), paediatric cervical collars (i.e., Aspen collars in sizes PD 1-5), percutaneous over-the-wire chest tube insertion kit (i.e., Cook Medical Kit), nasopharyngeal airways, and supplies/kits for paediatric patients with difficult airways (including all sizes of supraglottic airways, needle cricothyrotomy supplies, surgical cricothyrotomy kits, and/or video laryngoscopy).

Opportunities for Improvement

Healthcare providers who staff the ED should be trained on the location of paediatric equipment, supplies, and medication and ensure daily checks are in place, so these items are readily available. Hospitals could consider supplying paediatric beds and cribs in the ED to improve patient safety and caregiver experience. A comprehensive list of recommended equipment and supplies is found in the checklist ([Appendix A](#)).

Domain 7: Challenges and Enablers

This domain has an open text, optional questions that welcomed comments about hospitals' readiness to care for paediatric patients in the ED that was otherwise not reflected in their responses in other parts of the survey. Key findings for this domain were analyzed and reviewed alongside its corresponding domains, from 1 to 6, to inform recommendations.

Few comments noted the capacity constraints at small, rural, and remote hospitals, along with challenges in incentivizing and maintaining the recruitment of physicians and nursing staff. These centres typically utilize generalist models of care that are not specifically tailored to serve paediatric patients. Low volume and rural sites expressed challenges as illustrated in the quotes below:

"We have identified from both an ED and an ICU perspective that critically ill paediatric presentations are difficult to maintain comfort and competency due to low volumes and the size of the teams."

"As a rural centre with minimal specialty care or resources in hospital, providing appropriate and timely disposition, in particular around child and youth mental health, is our top priority and current struggle."

However, two respondents mentioned their Maternal-Child Health Regional Network as a key source for supporting education and training and fostering relationships with higher levels of care (i.e., PAHSC or higher volume centres) to ensure their hospitals can provide quality paediatric care. This vital support was summarized by one of the respondents as follows:

"The relations that we have created with the Maternal, Newborn, Child and Youth Network (MNCYN) have been extremely valuable in building resources, education, and relationships with our tertiary and regional care partners."

In addition, respondents were asked if they had any feedback on the implementation of the survey, such as their experience with the online database for collecting responses. Respondents who provided feedback noted that the online tool was user-friendly and appreciated its organization in sections, allowing easy reference. One respondent recommended rewording some questions for future launches of the survey.

Opportunities for Improvement

Hospitals could benefit from targeted efforts aimed at recruiting and retaining healthcare providers in the ED, as well as engagement with Maternal-Child Health Regional Networks.

PCMCH should explore updating the survey to ensure it remains relevant and easy to use.

Conclusion

The provision of accessible, equitable, high-quality care for paediatric patients in EDs, irrespective of their condition or location, is paramount, considering the distinct needs of children and youth compared to adults. In 2022/2023, four out of every five paediatric ED visits in Ontario occurred outside specialized children's hospitals. Findings of the EDPR survey have identified several areas of improvement and development for EDs for better readiness to meet the needs of Ontario's paediatric patients. The scores from participating hospitals represent a snapshot in time and each hospital has a customized report to inform its next steps towards improving ED paediatric readiness.

At a system level, the scores provide baseline information and present clear opportunities for targeted interventions to support the betterment of all Ontario EDs. Where opportunities for improvement have been identified, there will be collaborative efforts between PCMCH and other relevant parties to ensure every child receives optimal, high-quality ED care, regardless of their presenting health concern or where they live in the province.

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Emergency Department Paediatric Readiness Advisory Group Membership (2023-2024)

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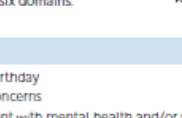
Image below shows a sample of page one of the checklist. The full version is [available online here](#).

PROVINCIAL COUNCIL FOR MATERNAL AND CHILD HEALTH

Emergency Department Paediatric Readiness Checklist

The Emergency Department Paediatric Readiness (EDPR) Initiative gauges an emergency department (ED)'s capability to provide high-quality care for children. To learn more about this initiative, please [visit the EDPR website here](#).

Use this checklist to assess if your hospital ED has the most critical components listed under the six domains.



Domain 1 – ED Demographics and Infrastructure

☐ The age range used to define paediatric patients who present to the ED is 0 up to the 18th birthday
☐ The ED has a separate quiet space for paediatric patients who present with mental health concerns
☐ The ED has a room that provides a safe environment for the observation for those who present with mental health and/or substance use issues and deemed at risk for self-harm

Domain 2 – Coordination of Patient Care

☐ Physician Coordinator for Paediatric Emergency Care (PECC)
☐ Nurse Coordinator for Paediatric Emergency Care (PECC)

Note: An advanced practice provider may serve in either of these roles.

Domain 3 – ED Staffing & Training

Domain 4 – Quality Improvement & Patient Safety

☐ Healthcare providers who staff the ED maintain specialty certifications or board certification
☐ Healthcare providers who staff the ED have periodic paediatric-specific competency evaluations for children of all ages. Areas of paediatric competencies include:

- Assessment and treatment (e.g., triage)
- Medication administration
- Device/equipment safety
- Critical procedures
- Resuscitation (e.g., ACLS, PALS, NRP)
- Trauma resuscitation and stabilization
- Disaster drills that include children
- Patient- and family-centred care
- Culturally competent care
- Team training and effective communication

☐ Healthcare providers who staff the ED are offered simulation-based education specific to the care of paediatric patients
☐ Healthcare providers who staff the ED have access to the following resources if they require additional consultation for paediatric patients presenting to the ED with medical health issues:

- Telephone consultation services with a paediatrician
- Tele-Medicine consultation with the patient present

☐ At least one mental health clinician is always available in the ED (e.g., mental health nurse, psychiatrist, paediatric social worker with training in child/youth mental health/substance use, and crisis intervention worker/team)

Quality improvement plans incorporate paediatric-specific components, including:

☐ Patient care review process (i.e., chart reviews)
☐ Paediatric-specific quality indicators (e.g., timely administration of steroids in acute asthma exacerbation, time to administration of antibiotics in a septic patient, etc.)
☐ Collection and analysis of paediatric emergency care data (e.g., admissions, transfers, deaths in the ED, or return visits)
☐ Development of a plan for improvement in paediatric emergency care (e.g., process to ensure that variances in care are addressed through education or training and reassessed for evidence of improvement)
☐ Re-evaluation of performance using outcomes-based measures (e.g., how often was pain rapidly controlled or fever properly treated)

Paediatric patient and medication safety needs are addressed in the following ways:

☐ Children are weighed in kilograms only
☐ Weights are recorded in kilograms only
☐ For children who require emergency stabilization, a standard method for estimating weight in kilograms is used (e.g., a length-based system)
☐ Infants and children have a full set of vital signs recorded (including temperature, heart rate, respiratory rate, pulse oximetry, blood pressure, pain, and mental status when indicated in the medical record)
☐ End tidal CO₂ monitoring for children of all ages
☐ Process for safe medication delivery that includes prescribing, administration, and disposal*
☐ Pre-calculated drug dosing and formulation guides (e.g., IV drug library, order sets, etc.)
☐ 24/7 access to interpreter services in the ED
☐ Timely tracking and reporting of patient safety events*

Discharge plans for children/youth who have been assessed by the ED as having a mental health and/or substance use issue include the following:

☐ Referral to a community mental health agency crisis intervention program
☐ Discharged home with a recommendation to follow up with primary care provider
☐ Discharged home with a recommendation to follow up with a children's mental health agency where the patient is already involved
☐ Discharged home with a recommendation to follow up with a children's mental health agency where the patient is not yet involved

05.27.2019

Appendix B: EDPR Database

PCMCH developed a database for administering the EDPR survey in 2022. Users were able to navigate the survey by domain or view it by issue type (i.e., medical health, mental health, or both). Hospital reports were made available upon survey completion to provide further information on the analysis of the scored questions and the overall EDPR score, among other elements described below.

Issue Type	Children's Hospital of Eastern Ontario Current Score FY 2020/21	Possible Points	Average Overall Score	Average Overall Score	Average Overall Score	Average Overall Score
			Paediatric Academic Health Sciences Centres (N=1)	Academic Health Sciences Centres (N=2)	Community Hospitals (N=2)	All Hospitals (N=5)
Medical Health Only	0.000	98.400				
Mental Health Only	1.000	56.500				
Overall	1.000	154.900				

Hospital Reports include:

- (1) Comparative scores by medical and mental health issue type and by like hospitals and other hospital types
 - Paediatric Academic Health Sciences Centres
 - Academic Health Sciences Centres
 - Community Hospitals
- (2) Analysis of scored questions by each domain
- (3) Identifies gaps in service and an *importance statement* to encourage implementation

Appendix C: EDPR Overall Scores

Median Scores by All Domains, Hospital Types, and Issue Types

Domain	Community Hospital Volume 1 (N = 28)		Community Hospital Volume 2 (N = 17)		Community Hospital Volume 3 (N = 12)		AHSC (N = 5)		Paediatric AHSC (N = 4)	
	Medical Health	Mental Health	Medical Health	Mental Health	Medical Health	Mental Health	Medical Health	Mental Health	Medical Health	Mental Health
Demographics/Infrastructure (2.5 Mental Health Points)	--	60% (1.5)	--	60% (1.5)	--	60% (1.5)	--	60% (1.5)	--	100% (2.5)
Coordination of Patient Care (19 Medical Health Points)	0% (0)	--	0% (0)	--	0% (0)	--	50% (9.5)	--	100% (19)	--
ED Staffing & Training (10 Medical Health Points, 16.1 Mental Health Points)	50% (5)	37% (6)	25% (2.5)	37% (6)	25% (2.5)	100% (16.1)	0% (0)	100% (16.1)	88% (8.75)	91% (14.6)
Quality Improvement & Patient Safety (20.9 Medical Health Points)	56% (11.75)	--	57% (12)	--	81% (16.9)	--	60% (12.5)	--	100% (20.9)	--
Policies & Procedures (15.5 Medical Health Points, 18 Mental Health Points)	55% (8.6)	42% (7.5)	60% (9.3)	42% (7.5)	60% (9.3)	67% (12)	74% (11.5)	50% (9)	79% (12.3)	75% (13.5)
Paediatric Equipment & Supplies (33 Medical Health Points)	95% (31.3)	--	99% (32.5)	--	99% (32.5)	--	96% (31.8)	--	100% (33)	--

Appendix D: Overview of Completed Paediatric Readiness Assessments

Study Year and Jurisdiction	Year	Median Paediatric Readiness Score	Number of EDs Assessed
Canadian ED Readiness Studies			
Ontario	2022	62*	66
Alberta (Stys et al., 2020)	2019	48.4	64
Manitoba (Aregbesola et al., 2022)	2019	52.3	27
American ED Readiness Studies[†]			
U.S. National Readiness Study (Gausche-Hill et al., 2007)	2003	55	1489
U.S. National Readiness Study (Gausche-Hill et al., 2015)	2013	68.9	4137
U.S. National Readiness Study (Remick et al., 2023)	2021	69.5	3557
International ED Readiness Studies			
Europe [‡] (Johnson, 2013)	2013	64	47
Latvia (Balmaks et al., 2020)	2018	31	16
Denmark (Jensen et al., 2022)	2021	72	16
<p><i>Note.</i> *The medical health component of Ontario's paediatric readiness survey had a maximum score of 98.4, while all other jurisdictions measured paediatric readiness on a 100-point scale. Number represented in this table is with an adjusted denominator of 100.</p> <p>[†]After three launches, the U.S. continued to see increases in their readiness scores with the use of implementation initiatives such as an online toolkit, communities of practice, etc. The paediatric readiness score has not shown significant overall improvement since 2013, likely due to the COVID-19 pandemic (Remick et al., 2023).</p> <p>[‡]Hospital respondents in the 2013 European study were predominantly from France and Spain.</p>			