2023-2024 ANNUAL REPORT

Centre for Prehospital Care

Health Sciences North

CONTENTS

Centre for Prehospital Care

Health Sciences North

INTRODUCTION

On behalf of the staff, including the Medical Directors and Advisors, of Health Sciences North Centre for Prehospital Care (HSN CPC), it is our pleasure to present the annual report for fiscal year 2023-2024.

This report follows the template provided by the Emergency Health Regulatory and Accountability Branch, and demonstrates how our organization addresses the key performance indicators listed in the Performance Agreement.

We have completed another productive and successful year. Some key achievements during this fiscal year include:

- We certified **104** new paramedics
- We provided advice and online medical direction during **578** patch calls
- **86,428** ACRs were processed through our clinical filter identification system from April 1 to December 31, 2023.
    - **36,664** matched our clinical filters and were electronically audited
    - **3,203** were identified as requiring further review by a clinical auditor
- Data from January to March was not available at the time of reporting due to several services transitioning to new ePCR platforms.

We acknowledge the exceptional work of all our staff as we continue to seek new and innovative methods of delivering our services to our stakeholders while meeting and, in some cases, exceeding the expectations defined in our Performance Agreement.

DR. JASON PRPIC
REGIONAL MEDICAL DIRECTOR

NICOLE SYKES
REGIONAL MANAGER

OUR PURPOSE, COMMITMENTS AND VALUES

Our Purpose

To provide high quality health services, support learning and generate research that improves health outcomes for the people of Northeastern Ontario.

Our Commitments

Showing positive regard for each person's strengths, qualities and values.

We will partner with humility, valuing each person's and each community's strengths and ideas to bring the best care, education and research solutions forward.

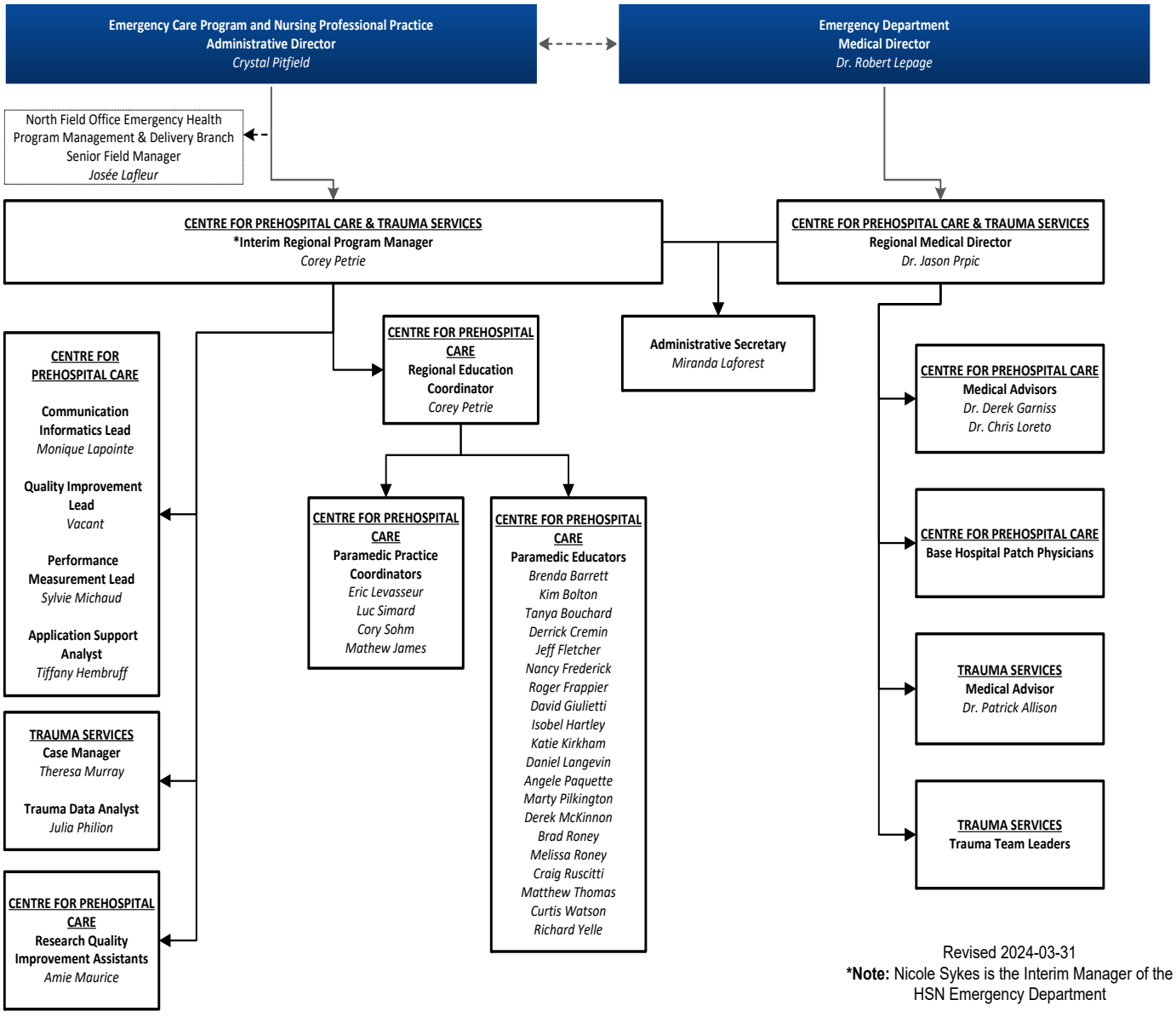
We will provide a physically, psychologically and culturally safe environment that promotes a positive care, working and learning experience.

Our Values

We believe in and will model:

Respect	Showing positive regard for each person's strengths, qualities and values.
Quality	Providing patient and family-focused services that are safe, reliable, accessible (timely), efficient, effective and equitable.
Transparency	Sharing information that is timely and truthful, working within the limits of law and policy.
Accountability	Taking personal responsibilities for our actions, behaviours and decisions.
Compassion	Responding to the needs of others, showing kindness and empathy.

ORGANIZATION CHART



Revised 2024-03-31

***Note:** Nicole Sykes is the Interim Manager of the HSN Emergency Department

MEET THE TEAM

Nicole Sykes

REGIONAL MANAGER

Corey Petrie

REGIONAL EDUCATION & CERTIFICATION COORDINATOR

Dr. Jason Prpic

REGIONAL MEDICAL DIRECTOR

Dr. Derek Garniss

MEDICAL ADVISOR

Monique Lapointe

COMMUNICATIONS & INFORMATICS LEAD

Tiffany Hembruff

APPLICATION SUPPORT ANALYST

Miranda Laforest

ADMINSTRATIVE SECRETARY

Dr. Chris Loreto

MEDICAL ADVISOR

Eric Levasseur

PARAMEDIC PRACTICE COORDINATOR

Cory Sohm

PARAMEDIC PRACTICE COORDINATOR

Luc Simard

PARAMEDIC PRACTICE COORDINATOR

Mathew James

PARAMEDIC PRACTICE COORDINATOR

Sylvie Michaud

QUALITY IMPROVEMENT LEAD

Casual Educators

- Brenda Barrett
- Kimberly Bolton
- Tanya Bouchard
- Derrick Cremin
- Jeffrey Fletcher
- Roger Frappier
- Nancy Frederick
- David Giulietti
- Isobel Hartley
- Katie Kirkham
- Dan Langevin
- Amie Maurice
- Derek McKinnon
- Angele Paquette
- Marty Pilkington
- Brad Roney
- Craig Ruscitti
- Matthew Thomas
- Curtis Watson
- Richard Yelle

HIGHLIGHTS

OBHG AGM

The 2023 Ontario Base Hospital Group (OBHG) Annual General Meeting (AGM) was hosted by our base hospital this past September in Sault Ste. Marie. Due to the global pandemic, this was the first AGM since SWORBH hosted the event in 2019. The AGM is a provincially supported initiative, which began in 2010. The AGM conference was originally designed to bring together staff from all base hospitals across the province to participate in interactive sessions focused on standardization of processes in program delivery. Program standardization has gained much traction through the years and is now more the norm than the exception. The AGM provides an opportunity to recruit speakers with a focus on evidence based emergency patient care, specific to the business of base hospitals. Besides the numerous expert speakers during the 4-day conference, the AGM also provides an opportunity to celebrate the accomplishments of base hospital colleagues. A total of 48 service recognition awards were handed out during this years gala. They ranged anywhere from 10-30+ years of dedicated service to the Ontario base hospital system.

One of the highlights from the 2023 AGM was a drumming ceremony performed by the Nimkii Aanakwat drummers and singers. The group from Garden River First Nation took to the stage to perform the opening song which kick-started the dinner and awards ceremony.

Sudbury Paramedic Service New Hires

On May 19, 2023, the newly hired PCP's for Sudbury Paramedic Service completed their PCP autonomous IV training at our HSN CPC Office.

Engaging the Next Generation of Paramedics

Mathew James, PPC had the honour of addressing Cambrian College's Professional Issues, Research & Leadership class. Mat's presentation offered invaluable insights into the intricate workings of Ontario's base hospital system, providing students with a comprehensive overview of its functions and significance within the paramedic profession. Additionally, he shed light on HSN CPC's innovative program initiatives, showcasing our commitment to excellence in prehospital care. Drawing from his own experience and expertise, Mat shared personal anecdotes and career pathways, inspiring the next generation of paramedics with his passion for the field. This engagement not only fostered collaboration and knowledge exchange but also reinforced our commitment to nurturing future leaders in emergency medical services.

Mandatory Continuing Medical Education (CME) Highlights

The Centre for Prehospital Care's educational mandate is to ensure the education and standardization of practical skills necessary for the certification and delegation of specific advanced medical procedures (including controlled acts), as defined in the ALS Patient Care Standards.

The 2023-24 mandatory education events focused on the new Treat and Discharge Medical Directives. Primary Care Paramedics (PCP's) Advanced Care Paramedics (ACP's) were educated during the 23/24 training cycle on the Seizure T&D medical directive and Hypoglycemia T&D medical directive. ACPs were also trained on the Tachydysrhythmia medical directive. An online self-directed module with an associated knowledge check was assigned and further supported with an in-person practical skills review and case-based evaluations. These events also included a presentation on clinical improvement opportunities, updates on IQEMS, companion documents and information from the Medical Advisory Committee (MAC).

Below are some photos from the in-person skills training conducted across various regions in the Northeast.

Collaboration

OBHG Education SubCommittee

Advanced Life Support Patient Care Standards (ALS PCS)

Over the last few years, paramedic services and hospitals have faced unprecedented pressures to provide care, which have increased risks to patient safety. To address these pressures in a timely manner, the Ministry of Health (MoH) and the OBHG group began the ground work on three newly proposed Treat and Discharge medical directives (PCP/ACP Hypoglycemia, ACP SVT, PCP/ACP Seizure). The Education Subcommittee (ESC) worked to ensure the newly created treat and discharge education was ready to roll out in early 2023. The Data Quality Management Subcommittee (DQM) requested that the necessary codes be added to the ePCR. (The ALS PCS version 5.1 was posted for public consultation to the MoH website for 15 days, from December 21, 2022 to January 13, 2023 with an in force date of February 1, 2023.)

In addition to the implementation of the treat and discharge medical directives, updates were also made to the following directives: Medical and Trauma Cardiac Arrest, Newborn Resuscitation, Bronchoconstriction, Croup, Emergency Childbirth, Tension Pneumothorax, Combative Patient, Suprglottic Airway, Nausea/Vomiting, Central Venous Access Device, Procedural Sedation.

Newly Created and Updated Certification Scenarios for ACP and PCPs

During this year's AGM in Sault Ste. Marie, our base hospital organized a scenario-working group to create scenarios specific to the treat and discharge (T&D) medical directives. Primary Care Paramedics (PCPs) and Advanced Care Paramedics (ACPs) were educated during the 23/24 training cycle on the Seizure T&D medical directive and Hypoglycemia T&D medical directive. The Tachydysrhythmia medical directive was only for ACPs.

Additionally, during the AGM, we created scenarios for new medical directives that will be included in the 2024/25 training cycle. These scenarios will support the Lateral Patellar Dislocation medical directive, Traumatic Hemorrhage medical directive and the PCP Tachydysrhythmia medical directive.

Following the creation of all these scenarios last September, our base hospital organized a beta-testing session in November. Representatives from the scenario-working group travelled to Sudbury to assist with the testing, and we recruited paramedics from various EMS services. Once finalized, the scenarios were distributed to all base hospitals in January to support the ALS PCS.

Certification Standards Working Group

A Certification Standard Working Group was assembled in September 2018 to review the Certification Standards. The Working Group consists of one representative from each of the five regions of OAPC, one representative from Toronto EMS, Ornge operations, and each Base Hospital. Greg Sage (OAPC) and Maud Huiskamp (MAC) co-chair this working group.

This work has temporarily been paused.

Annual Curriculum and Storage Working Group (ACWG)

The annual curriculum-working group has been consistently creating education during 2023/24 to support the anticipated release of the new ALS PCS medical directives. These detailed self-directed education packages, listed in the chart below, will be delivered during the 2024/25 training cycle. The self-directed, asynchronous packages will support the scheduled fall synchronous learning. HSN CPC ACWG members have assumed expanded roles as team leads, spearheading the development of lateral patellar reduction techniques and Suboxone education, poised for provincial rollout.

SCOPE & CORE vs *AUXILIARY*	MEDICAL DIRECTIVE
ACP - Core	Analgesia
PCP/ACP - Core	Lateral Patellar Dislocation Reduction
PCP/ACP - Core	Advanced Airway & Tracheostomy Suctioning & Reinsertion
PCP/ACP - Core	Traumatic Hemorrhage
PCP - Core	Tachydysrhythmia
PCP - ***Auxiliary***	Tachydysrhythmia (Treat & Discharge)

Supporting the work of the annual curriculum-working group is the OBHG storage-working group. The storage-working group has enabled a centralized location to house educational documents created by each base hospital as well as the curriculum-working group. This site supports ongoing sharing and ensures optimal organization of the educational materials.

Autonomous Intravenous Working Group

The Autonomous Intravenous Working Group met during 2023/24 and is in the process of uploading all IV program materials. This will ensure all materials reflect the updates contained within ALS PCS v5.3.

Documentation Standard/ACR/ACR Completion Manual

Significant work continued over the 2023/24 campaign in collaboration with the MoH. It is anticipated that the MoH will soon post the Ontario Ambulance Documentation Standards (OADS) and associated documents/standards for public consultation.

OBHG Data and Quality Committee

The DQM continues to collaborate provincially with other Regional Base Hospital Programs (RBHP) on matters related to data management and quality improvement in Ontario. Current projects include:

1. Data Quality
1.1. The ACR Code Request Working Group continually reviews and provides recommendations to the Ministry of Health (MoH) on ACR code requests. Work continues on improving the consultation and response processes.
1.2. Work continues on the development of the ACR data elements for past medical history, medications and allergies to align with the Advanced Life Support Patient Care Standards and update the Ontario Data Dictionary for paramedic services referenced in the Ontario Documentation Standards.
1.3. The committee continues to work with the MoH to access Dispatch Data.
2. Quality Assurance and Quality Improvement
2.1. The committee is collaborating with the MoH to develop a quality framework for new patient care models.
2.2. The base hospitals are reviewing the Regional Base Hospital Annual Report Guidelines to develop standardization of the terms and data collection amongst the base hospitals to improve future reporting and knowledge translation.
3. OBHG Strategic Plan
3.1. The committee continues to work on the strategic road map.
4. Medical Directive Development Group
4.1. Members continue to develop an evaluation framework that ensures effectiveness, data capture and measurement for all new or changes to medical directives.

Paramedic Portal of Ontario (PPO)

Health Sciences North Centre for Prehospital Care, Southwest Ontario Regional Base Hospital Program, ORNGE Base Hospital and Sunnybrook Center for Prehospital Medicine continue to collaboratively pursue standardization of paramedic certification management as well as enhancing the delivery of education through its established Paramedic Portal of Ontario (PPO). Several enhancements to workflows and administrative processes were made. New reports were developed, including a history of certification status, and the Service Summary report. In 2023-24, the focus on development was upgrading the current system to a new version of Moodle.

IQEMS

Health Sciences North Centre for Prehospital Care, London Health Sciences Centre, Southwest Ontario Regional Base Hospital Program and Sunnybrook Center for Prehospital Medicine continue to work collaboratively pursuing standardization of quality assurance software and work toward the delivery of a centralized data quality management solution using Intelligent Quality Evaluation and Management Suite (IQEMS). This web based software supports the management of many Base Hospital's Continuing Quality Improvement endeavors including data mining, peer review and compliance auditing, secure communication with stakeholders, investigation and self-reporting, efficient work flow and document management, statistical reporting and data visualization.

There has been a delay in seeking a new platform for quality assurance as we need to focus on mapping the data from the new ePCR platforms. (5 of 9 services have transitioned to a new ePCR platform between January and March 2024)

Quality Programming

CorHealth Ontario - Prehospital STEMI Data

ST-segment elevation myocardial infarction (STEMI) is a form of heart attack that can cause death if not treated quickly. Approximately one-third of acute coronary syndromes are classified as STEMI. Data from the Canadian Institute for Health Information (CIHI) Discharge Abstract Database (DAD) suggest that the incidence of STEMI in Ontario is approximately 68 of every 100,000 adult residents, a total of about 7,000 STEMIs per year. Working with key stakeholders, including Base Hospital Programs and Paramedic Services, CorHealth is responsible for the Ontario Cardiac and Vascular Registries. (source: https://www.corhealthontario.ca/)

The data collected include specific clinical parameters required to evaluate key components of care and determine risk-adjusted outcomes. In order to facilitate the inclusion of prehospital data, the Base Hospital coordinates their efforts with the HSN CorHealth Coordinator and the Paramedic Services to ensure important key information is included in the provincial registry.

Opioid-related harms in Canada – Provincial Reporting

The Government of Canada works closely with the provinces and territories to collect and share data on apparent opioid-related deaths. Accurate information about the crisis is needed to help guide efforts to reduce opioid-related harms, including deaths. Emergency Medical Services data in this report is collected by the Ontario Base Hospital Group, updated four times a year and have been shared through the Special Advisory Committee on the Epidemic of Opioid Overdoses. (source: https://www.canada.ca)

The Base Hospital exports this data from the paramedic services ePCR databases and analyzes the information for accuracy and reporting purposes. The report is sent to the MoH via the OBHG Data Quality Management Subcommittee.

Patient Care Models

Patient care models provide eligible patients with appropriate community-based care options to improve patients' timely access to care needed, and to reduce pressures on hospital emergency departments and ambulance services. They follow specific standards that enable select 9-1-1 patients with alternative care options for prehospital care other than transport to the emergency department.

Treat and Refer - Palliative Care

This model provides the ability for paramedics to treat palliative patients on-scene and referring the appropriate health care providers for follow-up care. In the north-east region, eligible palliative care patients calling 9-1-1 have the option to be treated by paramedics on-scene for symptom management including for pain or dyspnea, hallucinations or agitation, terminal congested breathing, and nausea or vomiting, and then receive follow-up care from their palliative care team. Services currently using this patient care model include:

- City of Greater Sudbury Paramedic Service
- Cochrane District Paramedic Service

Treat and Discharge

The Treat and Discharge Standard allows paramedics to treat and discharge the patient on-scene with recommendation for appropriate follow-up care if needed. In the northeast region, eligible patients who experience symptoms of hypoglycemia, seizure and/or tachydysrhythmia have the option to be treated by paramedics on scene as needed, and then be discharged on scene with recommendations for seeking follow-up care as required. All north-east services are currently using this patient care model.

Alternate Destination - Mental Health and Addictions

Patients calling 9-1-1 experiencing symptoms of MH&A challenges, have the option to be treated on-scene as required, and then be directly transported to a crisis center, or a community-based care setting for further care. Services currently using this patient care model include:

- Cochrane District Paramedic Service
- District of Sault Ste. Marie Paramedic Service
- City of Greater Sudbury Paramedic Service (GSPS started this program before the inception of the MoH Patient Care Models)

Centre for Prehospital Care Celebrates Paramedic Week 2023

In honour of Paramedic Week, we proudly recognized the extraordinary dedication and unwavering commitment of the paramedics in our region. Throughout the week-long event, CPC hosted a daily gift card draw between May 22-26, 2023. All authorized paramedics had their names automatically entered for a chance to win a prize from #IVEGOTYOURBACK911!

Paramedics were invited to participate by submitting photos to showcase what they love to do off the job. The theme was "Diversity in Paramedicine".



























RESEARCH

Prehospital Patellar Reduction in the Prehospital Setting (PRPS)

Prehospital care of patella dislocation is limited to knee immobilization and pain management. Given the potential benefits of early reduction, the perceived low risk of harm, patella reduction was added to the ALS scope of practice in our region through a research project at CPC. Our objective was to describe the success rate and complications experienced with the addition of a prehospital patella reduction.

The PRPS study started in 2020 and although the research phase is completed, we continue to gather statistical information until the procedure is included in the next release of the Advanced Life Support Patient Care Standards.

Between December 2019 and March 2024, 137 patellar reductions were attempted with a success rate of 88% (n=121) (Table 1). Of the 137 reductions completed, *7% (n=10) did not meet the criteria (Table 2). The average for all attempts was 21 years (min 10, max 59). Of note, 30 patellar reductions were completed during this fiscal year (April 1, 2023 - March 31, 2024).

Table 1: SUCCESS RATE

	Successful	Unsuccessful	Grand Total
Post	69	6	75
Study	52	10	62
Grand Total	**121 (88%)**	**16 (12%)**	**137**

Table 2: DID NOT MEET STUDY CRITERIA

Contraindications	Successful	Unsuccessful	Grand Total
2 Attempts	2	2	4
Age >50	2	2	4
Direct Trauma	1	1	1
Grand Total	**5 (50%)**	**5 (50%)**	***10 (7%)**

Effect of RapidShock™ Implementation on Perishock Pause in Out of Hospital Cardiac Arrests

The RapidShock study was started September 2018 and is currently being peer reviewed.

The objective of the study was to examine the effect, if any, of a defibrillator software upgrade called RapidShock on the length of CPR pauses (perishock pauses) during care for out of hospital cardiac arrest among adults.

766 CPR cycles for 166 patients were included for analysis in the pre-phase where the software was not in use (Standard Mode) and 829 CPR cycles for 158 patients were included for analysis in the post-phase where the software was activated (RapidShock Mode).

Our findings concluded that RapidShock external defibrillator software reduced overall pauses and supports the use of semi-automatic mode for paramedics.

Canadian Resuscitation Outcome Consortium

The CanROC Cardiac Arrest Registry collects data on cardiac arrest events, including patient demographics, bystander interventions (such as CPR or defibrillator use), emergency response times, treatments provided by emergency medical responders (including drug therapy and CPR quality), and patient outcomes. By analyzing this data CanROC is able to look for trends, best practices, and guide future protocol development, all of which can help increase survival. Additionally, participating services have access to this data to determine areas that can be improved locally to help give patients the best chance at surviving cardiac arrest. Data collection is currently ongoing at three Canadian sites representing a population of approximately 15 million people in the provinces of Ontario and British Columbia. Between April 01, 2023 and March 31, 2024, 90 patients from the Greater Sudbury Paramedic region were included in the Registry. The table below summarizes the patient outcomes.

OUTCOMES	N	%
Unknown	2	2%
Discharged - First Hospital	16	18%
Died - ED	48	53%
Died - Hospital	23	26%
Transfer to Other Hospital	1	1%
Grand Total	**90**	**100%**

MEDICAL DELEGATION

Q1 The Host Hospital shall ensure that Emergency Medical Attendants and Paramedics are qualified to perform the Controlled Acts and/or other medical procedures as recommended by the Provincial Medical Advisory Committee (PMAC) and the Director. Describe the process.

The HSN CPC is mandated by the Ambulance Act (Ontario Reg. 257/00) to ensure that paramedics are competent to practice. The method by which paramedics are certified is strongly influenced by the Delegation of Controlled Acts policy developed by the College of Physicians and Surgeons of Ontario. In short, it is the responsibility of the Regional Base Hospital Programs to provide an ongoing process by which the "Providers" are continuously informed of best practice guidelines and new trends and are competent to practice in the prehospital environment. As no single process can accomplish these goals, the HSN CPC combines various methodologies and techniques to be utilized as part of a comprehensive continuing medical education program (CME). The goal of the CME program is to prepare paramedics to respond appropriately to a wide range of patient situations, both routinely and infrequently, encountered in the field. Paramedics who do not meet the requirements as laid out in the Certification Standard may be subject to a skills review by the Medical Director or delegate. In rare cases, a Paramedic may have their certification temporarily suspended until such a time that all mandatory CME credit hours are accumulated. Paramedic Services present paramedics who have, at a minimum, an offer of employment at the requested paramedic level to the Base Hospital for certification. Primary Care Paramedics (PCP) complete an orientation process to ensure that they are properly prepared for the evaluation process. They demonstrate competency through a process of scenarios and written questions mapped to their respective scope of practice. During the certification event, they are required to demonstrate competency through a series of scenarios, skills stations and oral questions. In addition to the requirements of a PCP, all Advanced Care Paramedic (ACP) candidates are required to have written the Ministry of Health Advanced Care Paramedic (MOH ACP) exam prior to attending.

Q2 The Host Hospital shall ensure that the Base Hospital Program establishes and maintains a procedure whereby Paramedics already certified under the authority of another Base Hospital Program Medical Director are recognized by the Base Hospital Program.

2.1 Describe the procedure used to ensure paramedics already certified under the authority of another Base Hospital Program Medical Director are recognized by the Base Hospital Program.

Cross Certification applies to paramedics already certified by an Ontario Base Hospital who are seeking certification from another Base Hospital. Once the paramedic is deemed eligible for cross-certification, the Paramedic must complete the Certification Request Form which includes:

- Certification from any Ontario Base Hospital that has occurred within a 10-year period immediately preceding the application
- A declaration of any previous deactivations and/or decertifications that has occurred within the 10-year period immediately preceding the application.
- Current certification status from all Base Hospitals under which the paramedic is certified.
- Permission for the prospective Base Hospital to obtain information from other Base Hospitals regarding the paramedic's previous practice.

The paramedic must successfully complete an evaluation by the Base Hospital and any orientation and training required by the Base Hospital. The evaluation may include:

- An assessment of knowledge and skills;
- Scenario evaluation; and,
- Oral interview or clinical evaluation with the Medical Director

Upon meeting the above requirements for Cross Certification, the Medical Director shall certify the Paramedic.

2.2 Total number of paramedics that work for more than one employer.

As of March 31, 2024, HSN Centre for Prehospital Care had 33 paramedics who worked for more than one employer.

Q3 Provide a list of affiliated Ambulance Services with whom the Base Hospital has signed agreements.

- Algoma District Paramedic Services
- City of Greater Sudbury Paramedic Services
- Cochrane District Paramedic Services
- District of Sault Ste. Marie Paramedic Services
- District of Nipissing Paramedic Services
- Manitoulin-Sudbury DSB Paramedic Services
- Parry Sound District Emergency Medical Services
- Timiskaming District Emergency Medical Services
- Weeneebayko Area Health Authority Paramedic Services

3.1/3.2 Total number of ACPs and PCPs for this reporting year.

REPORTING PERIOD	TOTAL ACP	TOTAL PCP	TOTAL #
April 1, 2023 to March 31, 2024	92	818	910

*This section includes multi-service medics (i.e. a single medic who works in Service A and Service B would be counted twice).

SERVICE	ACP	PCP	TOTAL
ALGOMA DISTRICT PS		71	71
COCHRANE DISTRICT PS		101	101
GREATER SUDBURY PS	72	110	182
MANITOULIN-SUDBURY DSB PS		134	134
DISTRICT OF NIPISSING PS	20	87	107
PARRY SOUND DISTRICT EMS		87	87
DISTRICT OF SSM PS		99	99
TIMISKAMING DISTRICT EMS		62	62
WAHA PS		67	67

3.3 A list of the delegated Controlled Acts

Note: Not all components of the scope of practice are Controlled Acts

SCOPE OF PRACTICE FOR PARAMEDICS (* = SELECT AREAS OF THE REGION)

MEDICATIONS CARRIED	PRIMARY CARE	ADVANCED CARE
Acetaminophen	✓	✓
Adenosine		✓
Amiodarone *(NIP)		✓
Antibiotics	✓	✓
ASA	✓	✓
Atropine		✓
Buprenorphine/Naloxone (CDPS only)	✓	
Calcium Gluconate		✓
Dexamethasone	✓	✓
Dextrose *(Except ADPS)	✓	✓
Dimenhydrinate (Gravol)	✓	✓
Diphenhydramine (Benadryl)	✓	✓
Dopamine		✓
Epinephrine	✓	✓
Fentanyl		✓
Glucagon (PSDEMS and TEDEMS do not administer Glucagon IN)	✓	✓
Glycopyrrolate *(Palliative for GSPS and CDPS)	✓	✓
Haloperiodol *(Palliative for GSPS and CDPS)	✓	✓
Hydrocortisone Sodium Succinate	✓	✓
Hydromorphone *(Palliative for GSPS ACP)		✓
Hydroxocobalamin (GSPS, CDSP, TDEMS)	✓	✓
Ibuprofen	✓	✓
Ketamine		✓
Ketorolac	✓	✓
Lidocaine (GSPS)		✓
Midazolam		✓
Morphine		✓
NaCl 0.9% (Except ADPS)	✓	✓
Naloxone	✓	✓
Nitroglycerin	✓	✓
Ondansetron	✓	✓
Oxytocin	✓	✓
Oxygen	✓	✓
Salbutamol (MDI and Nebulization)	✓	✓
Sodium Bicarbonate		✓

3.3 A list of the delegated Controlled Acts *continued*

SCOPE OF PRACTICE FOR PARAMEDICS (* = SELECT AREAS OF THE REGION)

OBSTETRICAL/NEONATAL TRANSFER	PRIMARY CARE	ADVANCED CARE
Assess and Recognize Obstetrical Emergencies	✓	✓
Delivery of the Neonate	✓	✓

TRAUMA	PRIMARY CARE	ADVANCED CARE
Lateral Patellar Reduction	✓	✓

AIRWAY/VENTILATORY COMPROMISE SKILLS	PRIMARY CARE	ADVANCED CARE
CPAP	✓	✓
Endotracheal Intubation (Oral)		✓
Endotracheal & Tracheostomy Suctioning	✓	✓
iGel Insertion	✓	✓
King LT Insertion	✓	✓
Magill Forceps Utilization		✓
Needle Thoracostomy		✓
Oral/Nasal Airway	✓	✓
Oximetry	✓	✓
Positive Pressure Ventilation with BVM	✓	✓
Suctioning Mouth and Nose	✓	✓
Tracheostomy Reinsertion	✓	✓

CARDIOVASCULAR COMPROMISE	PRIMARY CARE	ADVANCED CARE
V4R/15 Lead ECG Acquisition and Interpretation	✓	✓
12 Lead Acquisition	✓	✓
12 Lead Interpretation	✓	✓
ECG Interpretation (PCP-five basic rhythms only)	✓	✓
Pacing		✓
Fluid Bolus Initiation		✓
Intravenous Cannulation		✓
Intraosseous Access		✓
Manual Defibrillation	✓	✓
Valsalva Maneuver		✓
Synchronized Cardioversion		✓
Emergency Home Dialysis Disconnect	✓	✓

DRUG ADMINISTRATION	PRIMARY CARE	ADVANCED CARE
Administer Drugs via SL; SC; PO; IM; IN, MDI and Nebulized Routes	✓	✓
Administer Drugs via ETT; IO		✓
Administer Drugs via IV (Except ADPS)	✓	✓
CVAD Access		✓
Hydrocortisone	✓	✓

3.4 A list of the Controlled Acts that have been removed this reporting year.

There have been no Controlled Acts removed in the fiscal year 2023-24.

PRIMARY CARE PARAMEDIC MEDICAL DIRECTIVES	GSPS	MSPS	DSSMPS	ADPS	DNSSAB-PS	PSDEMS	TDEMS	CDPS	WAHA
CORE DIRECTIVES v5.3									
Acute Cardiogenic Pulmonary Edema	✓	✓	✓	✓	✓	✓	✓	✓	✓
Analgesia	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bronchoconstriction	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cardiac Ischemia	✓	✓	✓	✓	✓	✓	✓	✓	✓
Croup	✓	✓	✓	✓	✓	✓	✓	✓	✓
Emergency Childbirth	✓	✓	✓	✓	✓	✓	✓	✓	✓
Endotracheak and Tracheostomy Suctioning and Reinsertion	✓	✓	✓	✓	✓	✓	✓	✓	✓
Home Dialysis Emergency Disconnect	✓	✓	✓	✓	✓	✓	✓	✓	✓
Hypoglycemia	✓	✓	✓	✓	✓	✓	✓	✓	✓
Medical Cardiac Arrest	✓	✓	✓	✓	✓	✓	✓	✓	✓
Moderate to Severe Allergic Reaction	✓	✓	✓	✓	✓	✓	✓	✓	✓
Nausea and Vomiting	✓	✓	✓	✓	✓	✓	✓	✓	✓
Newborn Resuscitation	✓	✓	✓	✓	✓	✓	✓	✓	✓
Opioid Toxicity and Withdrawal	✓	✓	✓	✓	✓	✓	✓	✓	✓
Return of Spontaneous Circulation (ROSC)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Supraglottic Airway	✓	✓	✓	✓	✓	✓	✓	✓	✓
Suspected Adrenal Crisis	✓	✓	✓	✓	✓	✓	✓	✓	✓
Trauma Cardiac Arrest	✓	✓	✓	✓	✓	✓	✓	✓	✓
AUXILIARY DIRECTIVES V5.3									
Cardiogenic Shock	✓	✓	✓		✓	✓	✓	✓	*
Continuous Positive Airway Pressure (CPAP)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Headache- Special Event			✓		✓	✓			
Intravenous and Fluid Therapy	✓	✓	✓		✓	✓	✓	✓	*
Minor Abrasions Special Event			✓		✓	✓			
Minor Allergic Reaction Special Event			✓		✓	✓			
Musculoskeletal Pain			✓		✓	✓			
Cyanide Exposure	✓						✓	✓	
AUXILIARY MEDICATIONS V5.3									
Opioid Toxicity and Withdrawal - Buprenorphine/ Naloxone								✓	
DISCHARGE FROM CARE AUXILIARIES									
Seizure - Treat and Discharge	✓	✓	✓	✓	✓	✓	✓	✓	✓
Hypoglycemia - Treat and Discharge	✓	✓	✓	✓	✓	✓	✓	✓	✓

** Note: Only Constance Lake Station Paramedics are IV certified in WAHA Service and authorized in Cardiogenic Shock and Intravenous and Fluid Therapy*

Q4 Does the Host Hospital adhere to the Provincial Medical Directives recommended by the PMAC and approved by the Director?

HSN Centre for Prehospital Care adheres to the latest version of the ALS PCS Version 5.3 which came into effect on February 9, 2024.

Q5 The Host Hospital shall adhere to Provincial Certification, Recertification, Change in Certification and Remediation policies, as recommended by PMAC within recommended timelines.

5.1 Have the provincial Certification, Recertification, Change in Certification and Remediation policies, as recommended by PMAC within recommended timelines been adhered to?

HSN CPC adheres to the Provincial Maintenance of Certification Policy, Appendix 6 in the Advanced Life Support Patient Care Standards, Version 5.3.

5.2 Total number of initial PCP and ACP certification awarded in the reporting year.

REPORTING PERIOD	TOTAL ACP	TOTAL PCP	TOTAL
April 1, 2023 to March 31, 2024	13	91	104

SERVICE	ACP	PCP	TOTAL
ALGOMA DISTRICT PS		7	7
COCHRANE DISTRICT PS		13	13
GREATER SUDBURY PS	11	19	30
MANITOULIN-SUDBURY DSB PS		3	3
DISTRICT OF NIPISSING PS	2	10	12
PARRY SOUND DISTRICT EMS		9	9
DISTRICT OF SAULT STE. MARIE PS		9	9
TIMISKAMING DISTRICT EMS		4	4
WAHA PS		17	17

5.3 Total number of PCP and ACP reactivations in the reporting year.

REPORTING PERIOD	TOTAL ACP	TOTAL PCP	TOTAL
April 1, 2023 to March 31, 2024	2	40	42

SERVICE	ACP	PCP	TOTAL
ALGOMA DISTRICT PS		5	5
COCHRANE DISTRICT PS		2	2
GREATER SUDBURY PS	2	5	7
MANITOULIN-SUDBURY DSB PS		13	13
DISTRICT OF NIPISSING PS		3	3
PARRY SOUND DISTRICT EMS		5	5
DISTRICT OF SAULT STE. MARIE PS		4	4
TIMISKAMING DISTRICT EMS		2	2
WAHA PS		1	1

5.4 Total number of PCP and ACP deactivations in the reporting year.

REPORTING PERIOD	TOTAL ACP	TOTAL PCP	TOTAL
April 1, 2023 to March 31, 2024	11	73	84

SERVICE	ACP	PCP	TOTAL
ALGOMA DISTRICT PS		7	7
COCHRANE DISTRICT PS		9	9
GREATER SUDBURY PS	10	10	20
MANITOULIN-SUDBURY DSB PS		12	12
DISTRICT OF NIPISSING PS	1	10	11
PARRY SOUND DISTRICT EMS		11	11
DISTRICT OF SAULT STE. MARIE PS		8	8
TIMISKAMING DISTRICT EMS		3	3
WAHA PS		3	3

Q6.1 Does the Medical Director practice emergency medicine full-time or part-time in the hospital emergency unit?

The Medical Director currently works in the HSN Emergency Department and exceeds the minimum requirement of 250 clinical hours.

6.2 Does the Medical Director hold recognized medical specialty credential(s) in emergency medicine?

The Medical Director is credentialed in Emergency Medicine as CCFP (EM).

Q7.1 Do all Base Hospital physicians have knowledge of paramedic practice and provincial medical directives?

HSN CPC has centralized all Base Hospital (BHP) patching to the Health Sciences North Emergency Department. Base Hospital Physicians are all Emergency Department Physicians and final year Residents credentialed through Health Sciences North.

The Emergency Department Physicians receive an orientation program which includes an overview of their roles and responsibilities as Base Hospital Physicians and an introduction to the ALS Patient Care Standards. The Medical Director regularly reviews the directives and/or amendments with the emergency physicians and shares CQI findings.

Emergency Department meetings have a standing Prehospital Care Section where changes in paramedic clinical practice/directives can be addressed.

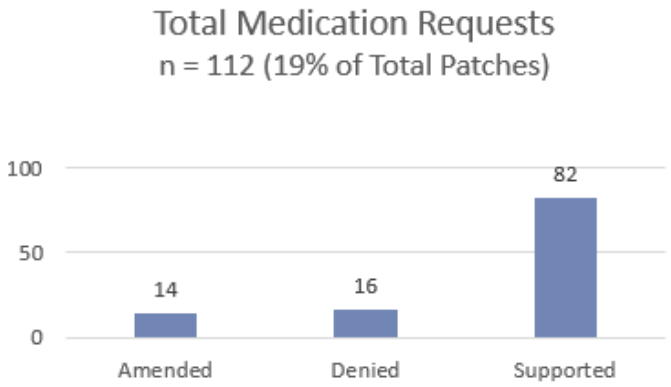
7.2 Total number of emergency physicians engaged as a Base Hospital Physician.

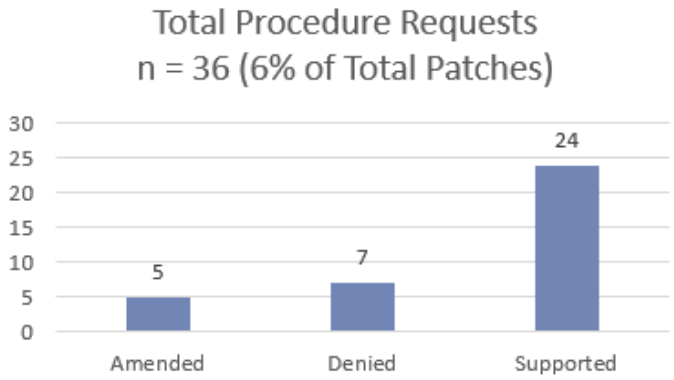
36 Emergency Physicians were engaged as Base Hospital Physicians

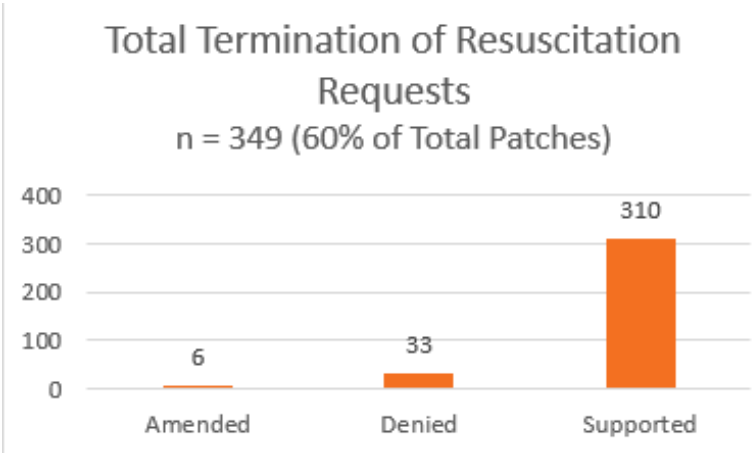
BASE HOSPITAL PHYSICIANS	
Dr. Alex Anawati	Dr. Virginie Marchadier
Dr. Dominique Ansell	Dr. Jeff Middaugh
Dr. Megan Bhatia	Dr. Renee-Anne Montpellier
Dr. Adam Bignucolo	Dr. Jennifer Moore
Dr. Christopher Bourdon	Dr. Robert Ohle
Dr. Andrew Caruso	Dr. Nadia Omri
Dr. Tyler Christie	Dr. Sam Oommen
Dr. Emily Conrad	Dr. Laura Piccinin
Dr. Erin Creasor	Dr. Robert Pineau
Dr. Delia Dragomir	Dr. Andy Primeau
Dr. Mark Dube	Dr. Jason Prpic
Dr. Nicholas Fortino	Dr. Christine Pun
Dr. Craig Hamilton	Dr. Steve Socransky
Dr. Justin Hsu	Dr. Melanie Squarzolo
Dr. Erica Kohtakangas	Dr. Samuel Stone
Dr. Pavan Koka	Dr. Brian Tissot
Dr. John Kusnierczyk	Dr. Lee Toner
Dr. Robert Lepage	Dr. Aidan Wharton
Dr. Louise Logan	

Q8.1 Total number of Base Hospital physician and paramedic online interactions that have been reviewed for medical quality.

Total of **531** online interactions occurred between April 1, 2023 and March 31 2024, and 100% were reviewed for medical quality.

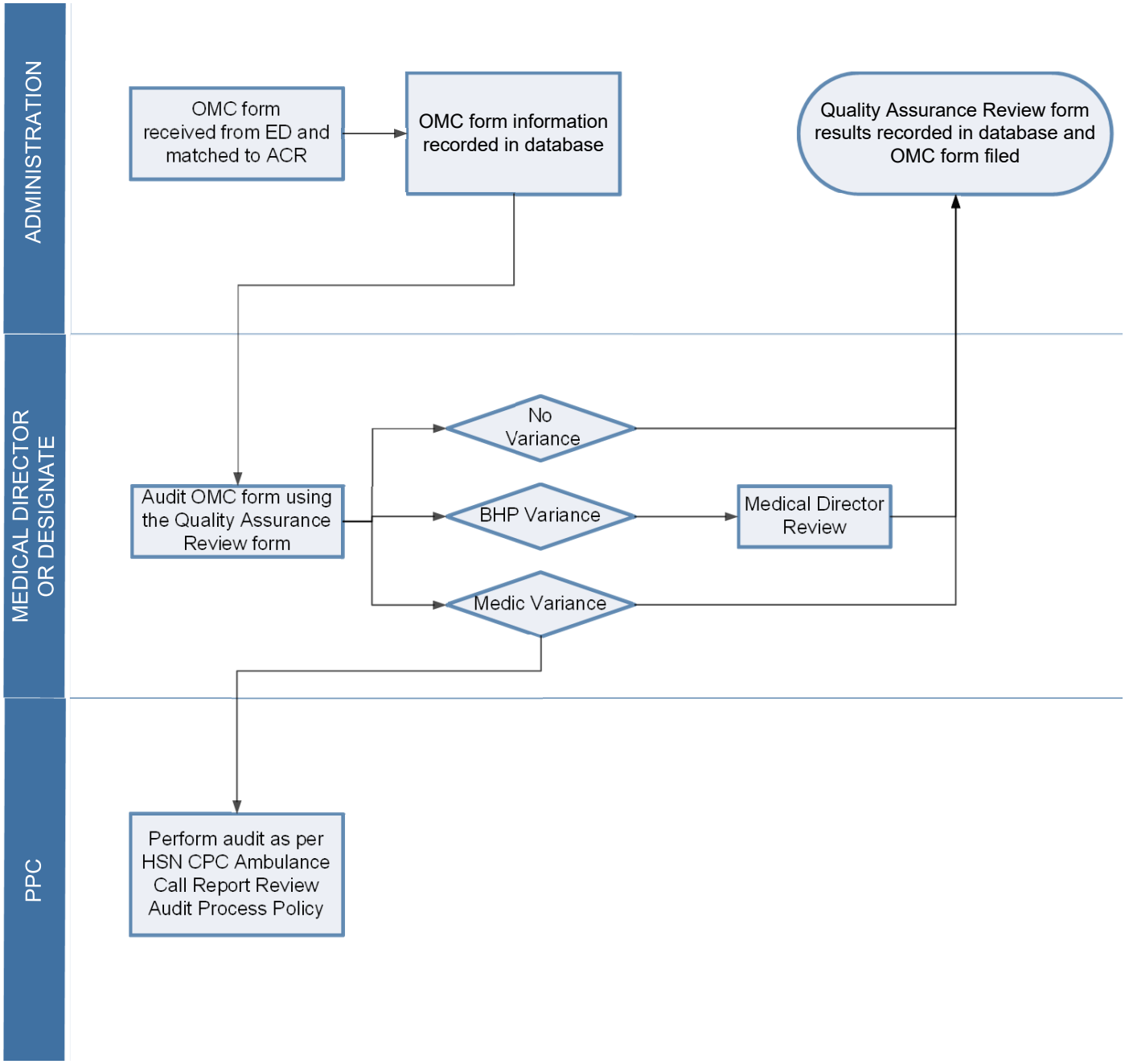






Top 10 Medical Directives Per Patch (92% of all patches)	# of Patches
Medical Cardiac Arrest Medical Directive	369
Withhold Resuscitation Order	30
Trauma Cardiac Arrest Medical Directive	26
Tachydysrhythmia Medical Directive	24
Combative Patient Medical Directive	20
Analgesia Medical Directive	20
Patient Refusal/Emergency Treatment Standard	14
Intravenous and Fluid Therapy Medical Directive	13
Bronchoconstriction Medical Directive	8
Special Project Palliative Care	7
Grand Total	**531**

8.2 Describe the medical quality review process.



MEDICAL OVERSIGHT

Q9 List the dates of Provincial Medical Advisory Committee (PMAC) meetings attended by a member of the Base Hospital Program.

- June 14, 2023
- September 12, 2023
- December 6, 2023
- March 6, 2024

Q10 Are Base Hospital Physicians available for on-line medical direction and control on a 24 hr/7 days a week basis?

Yes.

Q11 The Host Hospital shall ensure that the Base Hospital Program enters into and keeps in effect an agreement with each certified land ambulance service provider listed in Appendix D, with respect to the qualification, ongoing medical oversight, and re-qualification of Paramedics to deliver controlled medical acts under the authority of the Base Hospital Program Medical Director.

HSN CPC has an agreement with each land ambulance service in the Northeast. These agreements include details related to qualification, ongoing medical oversight and requalification of paramedics to deliver controlled medical acts under the authority of the Base Hospital.

Q12 The Host Hospital shall ensure that the Base Hospital Program monitors the delivery of patient care in accordance with the Advanced Life Support Patient Care Standards. Describe the actions taken to monitor the delivery of patient care in accordance with the Advanced Life Support Patient Care Standards.

Continuous Quality Improvement (CQI) is a complex responsibility that requires the collective effort of varied focus areas. Within the HSN CPC, CQI is attained through an integrated system of performance measurement, performance improvement and continuing medical education within a broad based system of quality management and medical leadership.

Performance Measurement is accomplished by collecting and reviewing ambulance call reports (ACRs) for the appropriateness and quality of advanced patient care. Skills and specific patient conditions are categorized as high or low risk procedures by HSN CPC Quality of Care Committee (QCC).

Quality Improvement is an inclusive, multidisciplinary process that focuses on identification of system wide opportunities for improvement. Our efforts focus on identification of the root causes of problems through event analyses, self-reports, and clinical audit reports to reduce or eliminate these causes and develop steps to correct inadequate or faulty processes. The need and importance of a wide overlap between Performance Measurement, Performance Improvement and Continuing Medical Education (Figure 4) is vital to ensure ongoing quality patient care as demonstrated in the well-known and widely used Plan-Do-Study-Act cycle (Figure 5).

FIGURE 4

FIGURE 5

FIGURE 4

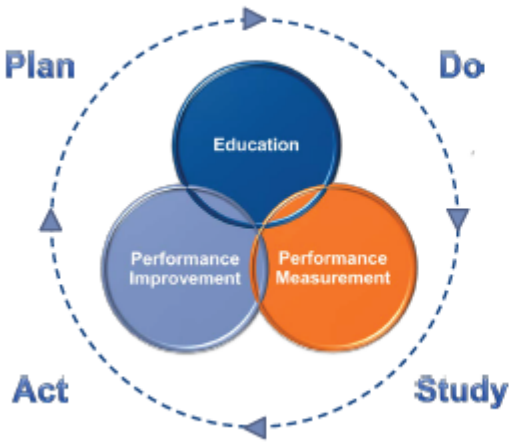


FIGURE 5

Q13 The Host Hospital shall ensure that the Base Hospital Program monitors the delivery of patient care in accordance with the Basic Life Support Patient Care Standards, if such monitoring is contained in the agreement with the Upper Tier Municipality and Designated Delivery Agent for land Ambulance Services as set out in Appendix D.

There are no agreements in place at this time. When a BLS issue is noted during the regular ALS auditing processes, service operators are notified for their follow up.

Q14 The Host Hospital shall ensure that timely advice is provided to each Upper Tier Municipality (UTM) and Designated Delivery Agent (DDA) for Land Ambulance Services as set out in Appendix D regarding medical issues in prehospital care.

Advice may be provided formally through either the HSN CPC Quality of Care Committee proceedings that are reported back to Paramedic Services or through the HSN CPC Program Committee. Discussions and resulting action items are tracked through the meeting minutes. Ad hoc advice is provided frequently via conversation, email and non-standing meetings.

14.1 Total number of prehospital medical care issues raised by the UTM or DDA that required advice from the Base Hospital.

When an official request is made by a Paramedic Service or the Ministry of Health (MOH) to review a specific occurrence, all information related to the call is tracked in the IQEMS database. It is forwarded to a Paramedic Practice Coordinator for review and may be analyzed by the QI Lead and the applicable Medical Director/Advisor. All reviews are completed via either the standard call review process or via a formal Event Analysis report in accordance with program policies.

For further information on the outcomes of program audit activities or event analyses, see Appendix B.

14.2 List the top 5 subject areas that advice was requested from UTMs and DDAs (i.e. medical equipment, medical acts, policies, etc).

1. ePCR/IQEMS audits
2. Medical Directives and Companion Documents
3. Implementation of Patient Care Models
4. Medical equipment/medication
5. Policy and Procedures

Q15 The Host Hospital shall ensure participation in provincial, regional and community planning that affects prehospital care such as emergency planning, where the Host Hospital has the authority to do so. The total number and dates of provincial, regional, and community planning meetings, indicate the meeting hosts are listed below.

Regional

- HSN CPC Council (Sudbury/ Videoconference) - Monthly
- HSN CPC Quality of Care Committee (Sudbury/ Videoconference) – Monthly
- HSN CPC Audit Huddles – Bi-weekly
- Cambrian College Paramedic and Advanced Care Flight Paramedic Programs Advisory Committee - Bi-annual
- HSN CPC NEO Regional Data Advisory Group (Teleconference) - 3 times/year
- HSN CPC Program Committee (Sudbury/ Teleconference) - Quarterly
- Acute Stroke Protocol Improvement Team – Ad hoc
- STEMI Bypass Steering Committee – Ad hoc
- HSN EVT Program Development – Ad hoc

Provincial

- Base Hospital Managers/ Directors Business Meeting - Monthly
- Ontario Base Hospital Medical Advisory Group (MAC) (Toronto) - Quarterly
- Trauma Registry Advisory Committee - Quarterly
- OBHG Education Sub-Committee - Quarterly
- OBHG Data Quality Management (DQM) - Quarterly
- OBHG Collaboration Working Group (Toronto) - Quarterly & Ad hoc (on hold)
- OBHG Annual Curriculum Development Group – Ad hoc
- OBHG Storage Working Group (Wiki site) - Quarterly
- OHBG Scenario Working Group – Ad hoc
- OBHG Autonomous IV Working Group – Ad hoc
- Ontario Trauma Advisory Committee (OTAC) Quarterly Meeting (Toronto) - Quarterly
- Ontario Trauma Coordinators Network (OTCN) (Teleconference) - Quarterly
- Ontario Trauma Advisory Committee Medical Directors Working Group – Ad hoc
- OBHG Annual General Meeting - Annual
- Sunnybrook/ HSN Joint Medical Council Meeting (Toronto & Sudbury) - Bi-annual
- CCSO Town Hall Meeting - Annual
- IQEMS Technical Working Group - Weekly
- IQEMS Operational Working Group - Bi-weekly
- PPO Technical Working Group - Weekly
- PPO Operational Working Group - Bi-weekly
- IQEMS/ PPO Executive Steering Committee - Bi-weekly

Community

- Sudbury CACC Advisory Committee
- HSN Emergency Prepardness Committee – Ad hoc
- Critical and Emergency Care Program Council – Monthly
- Suboxone Working Group – Ad hoc

National

- Trauma Association of Canada - Performance Improvement Subcommittee - Bi-annual
- National Association of EMS Physicians - Canadian Relations Sub-Committee - Annual & Ad hoc

Q16 The Host Hospital shall make every reasonable effort to ensure that each request for medical advice, direction, or assistance received from an Emergency Medical Attendant, paramedic or communications officer is provided expeditiously and that performance standards are set out in this Agreement are met.

16.1 How are requests for medical advice, direction or assistance from an emergency medical attendant, paramedic or communications office provided?

The following are primary methods of communication:

- 24/7 Online Medical Control through the Base Hospital Physicians
- IQEMS, which is used to discuss audit findings and patient care dialogues
- Email, which is used for the communication of general information and notifications
- Live chats during webcasts are a means for paramedics to ask questions and interact with their medical directors
- Typically twice annual (at minimum) in person sessions with Paramedic Practice Coordinators in an interactive education setting
- Adhoc, all program staff provide support and advice to paramedics on a daily basis.

16.2 Total number of formal requests for medical advice direction or assistance from an Emergency Medical Attendant, Paramedic or communications officer provided.

- There were 578 formal requests for medical advice direction or assistance.

Q17 Where a Host Hospital has not been available to expeditiously provide medical advice (eg. Radio patch), direction, or assistance to an Emergency Medical Attendant, Paramedic, or communications officer, the Host Hospital shall document the circumstances of the event in an incident report that will be provided to the Senior Field Manager within 48 hours of the event.

The total number and nature of incident reports provided to the senior Field Manager related to medical advice delays.

The HSN CPC Quality of Care Committee (QCC) defines “expeditiously provide medical advice” as a Base Hospital Physician (BHP) making contact with the paramedic within 3 minutes of receiving the request (T4). In our system, there are four phases for a patch completion.

All patch failures noted on an Ambulance Call Report and/or reported by a paramedic are escalated to the Quality Improvement Lead to determine root cause and recommend system improvements.

For 2023-2024, we only had one patch failure to report to our senior field manager at the Northeast Field Office.

T1	T2	T3	T4
Paramedic requests radio/ phone patch via Dispatch	Dispatch transfers to Charge Nurse in ED	Charge Nurse answers phone and locates a BHP	BHP answers phone
Benchmark established by QCC is <3 minutes			

Q18.1 Describe the process used to assist operators with request for assistance and information regarding direct patient care components and elements of local policy and procedures.

Once a request for assistance and/or information has been received in writing by the program, it is triaged by the receiver to determine if its nature is Medical, Educational, CQI, Research, Operational or Other.

- Medical advice and/or inquiries are reviewed by the applicable Medical Advisor or the Regional Medical Director and, when required, forwarded to the Quality of Care Committee (QCC) to be reviewed by the Medical Program as a whole. Minutes of this committee are available to all staff and a report from this committee is provided at Regional Program Committee meetings.
- Educational advice and/or inquiries are assigned to the Regional Education & Certification Coordinator for review and, when required, brought to monthly Council or QCC meetings. A Medical Advisor or the Regional Medical Director may be consulted, as needed.
- Quality Improvement advice and/or inquiries are forwarded to the Quality Improvement Lead for review. A Medical Advisor or the Regional Medical Director may be consulted, as needed.
- Assistance or information related to reportable program metrics are forwarded to the Communication and Informatics Lead or Performance Measurement Lead for review.
- Operational advice and/or inquiries are forwarded to the applicable Paramedic Practice Coordinator and, when required, forwarded to the monthly Council meetings for review.
- Research inquiries are forwarded to the CQI Lead or Regional Manager and when required, the Regional Medical Director is consulted.

18.2 List the top 5 subject areas that information was requested from operators (i.e. medical equipment, medical acts, policies, etc).

1. Initial certification / Return to work requests
2. ePCR/IQEMS Audits
3. Event Analysis
4. Medical equipment purchase advice
5. Continuing Medical Education

EDUCATION

Q19 The Host Hospital will provide a process to confirm and/or ensure the education and standard of practical skills necesary for certification and delegation of specific controlled acts approved by the Provincial Medical Advisory Committee (PMAC) to Emergency Medical Attendants and Paramedics.

HSN CPC develops a yearly CME program that covers the paramedic scope of practice as per the ALS PCS and MOH approved Research Directives. The goal of the CME program is to prepare paramedics to respond appropriately to a wide range of patient situations both routinely and infrequently encountered in the field.

The Ministry of Health Emergency Health Regulatory and Accountability Branch (MOH-EHRAB) has mandated that PCPs receive a minimum of 8 hours of CME and that ACPs receive a minimum of 24 hours of CME annually. To meet the needs of the service operators, the paramedics and the Regional Base Hospital Programs, these hours have been converted to credit hours. In order for Northeast Paramedics to remain in good standing and maintain certification, ACPs must accumulate 24 credit hours while PCPs must accumulate 8 credit hours. Paramedics must have the required number of credits based on their scope of practice logged within the Paramedic Portal of Ontario no later than the third Monday in January.

Failure to meet these requirements will result in a Paramedic review by the Medical Director or designate and may result in the temporary deactivation of the Paramedic's certification. Paramedics who do not meet these requirements are subject to a performance review by the Medical Director or delegate and may have their certification temporarily suspended until such a time that all mandatory CME credit hours are accumulated.

19.1 List the topic, date and length of each continuing medical education program offered to and held for medical, nursing and other allied health staff of the Host Hospital and receiving hospitals in the Ministry-approved geographic coverage area.

DATE	TOPIC/INSTRUCTOR	HOURS/CREDITS
2023-04-23	v5.1 ALS PCS Medical Directives Review presented by CPC Staff	1.5
Various	Summer CME 2023: M&M Presentation and Skills Review presented by Dr. Jason Prpic and CPC Staff	4
Various	2023 Fall Skill Sessions presented by CPC Staff	2
2023-12-05	ALS PCS Treat and Discharge Medical Directive Review presented by CPC Staff	1.5

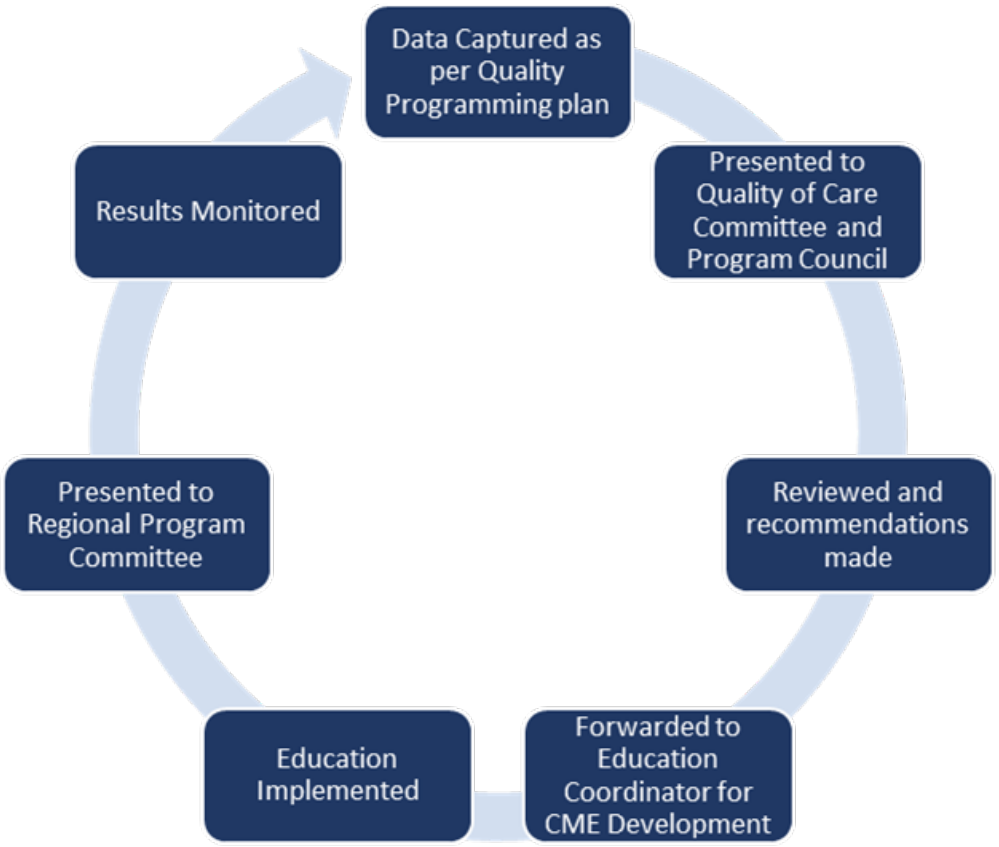
Q20 The Host Hospital shall ensure that prehospital patient care education is provided in accordance with education standards approved by the Minister as may be implemented and amended from time to time. Provide the topics and time allotted for each educational session delivered this year to paramedics.

In addition to those noted above, the following Virtual sessions were provided specifically for the paramedics.

DATE	TOPIC/INSTRUCTOR	HOURS
April- June 2023	Paramedic Practice Rounds	8

Q21 The Host Hospital shall ensure the development and implementation of an educational plan for the Region linked to Continuous Quality Improvement initiatives.

Q22 The Host Hospital shall ensure the provision of the mandated hours of education per year for both PCPs and ACPs.



22.1 Total number of hours of CME delivered per PCP.

In this fiscal year, 8 hours minimum were delivered per PCP.

22.2 Total number of hours of CME delivered per ACP.

In this fiscal year, 24 hours minimum were delivered per ACP.

CONTINUOUS QUALITY IMPROVEMENT (CQI)

Q23 The Host Hospital shall ensure the implementation of a CQI program for each Paramedic employed or engaged by land ambulance service operators as set out in Appendix C and ensure the provision of regular commentary to each Paramedic and operator.

23.1 Total number of paramedics that have been provided with commentary by the host hospital and a brief description of their program.

All paramedics certified under the Program receive commentary on a regular basis, generally via the applicable Paramedic Practice Coordinator for their area. Commentary may include electronic distribution of memos, policies and other documents. As part of auditing activities, paramedics are provided commentary on all of their ACRs with a possible variance from the standard. Additionally, paramedics receive positive commentary via IQEMS.

23.2 Total number of commentary provided to all paramedics.

During the fiscal year 2023-24, HSN CPC made available approximately 1,238 commentaries to paramedics via the Ambulance Call Evaluation process. The Program also distributed various correspondence including 10 memos/letters to paramedics via email and the HSN CPC website.

23.3 Was a minimum of one chart review commentary provided to each paramedic?

Paramedics will receive access to their commentary via IQEMS utilizing the credentials provided in their notification email, 100% of paramedics who completed a call with an identified potential variance received feedback.

Q25 The Host Hospital shall include a report on all CQI activities and findings as part of the annual report submitted to the Ministry.

Refer to Appendix A: Performance Measurement Standard Reports

Q26 The Host Hospital shall collaborate with Emergency Medical Services System Stakeholders to share relevant CQI data, as appropriate. How and when was CQI data shared with Emergency Medical Services System stakeholders?

WHAT	WHO	FREQUENCY	HOW
AMBULANCE CALL REPORT AUDIT Notification of any event or circumstance which appears as a variance from the standard.	Paramedics Service Providers	Upon review and closure	IQEMS
EVENT ANALYSIS Sharing of information and outcomes during and post analysis.	Service Providers MOH Field Office	Upon discovery and closure	Event Analysis Report
AUDIT ACTIVITIES REPORT Number of audits completed / Paramedics	Service Providers	Quarterly	Performance Measurement Standard Reports
AUDIT VARIANCE DETAIL AND SUMMARY REPORTS Breakdown of variance rates and outcomes by Service	Service Providers	Quarterly	Performance Measurement Standard Reports
PARAMEDIC SELF REPORTS This report identifies the number of self-reports submitted by Paramedics. The summary categorizes self-reports by Service	Service Providers	Quarterly	Performance Measurement Standard Reports
BLS OMISSIONS/COMMISSIONS BLS issues discovered during an ALS audit are reported to the Service Operator during the auditing process.	Service Providers	Upon discovery	Performance Measurement Standard Reports
PARAMEDIC SKILLS INVENTORY Number of calls where a particular ALS skill was used as part of the overall patient care plan	Service Providers	Bi-annual	Performance Measurement Standard Reports
CLINICAL AUDIT REPORTS Measures of current practice against a defined (desired) standard with the intent to improve systems vs individual practice.	Service Providers	Quarterly	Clinical Audit Reports
AD HOC FINDINGS	Service Providers	HSN CPC Program Committee	Discussion Minutes
REGIONAL DATA ADVISORY COMMITTEE	Service Providers Hospital Representatives CACC Representatives	3x / yr	Discussion Minutes
ONLINE MEDICAL CONTROL INTERACTIONS REPORTS	Service Providers	Quarterly	Performance Measurement Standard Reports

Q27 The Host Hospital shall ensure that Host Hospital physicians will be available to provide "online" continuous quality improvement and advice on a continuous basis.

All HSN Emergency Physicians and 3rd year Residents are oriented by the Base Hospital Regional Medical Director prior to providing on-line Medical Control. Ongoing education is delivered during face-to-face departmental meetings and via email updates.

Dedicated patch phones are located in the HSN Emergency Department (ED). All Registered Nurses in the ED have been trained, through the ED Nurse Clinician, to answer the patch telephone and advise paramedics that a BHP will be on the line shortly. The RN answering the telephone is responsible for notifying the BHP of the call and advising the paramedic if there will be any delay. HSN CPC has also provided formal education to the paramedics on patching. Reminder emails are sent on a regular basis to help keep this process consistent.

Q28 The Host Hospital shall ensure the establishment of a mechanism to track customer inquiries and organizational responsiveness to these inquiries and survey land ambulance stakeholder groups on a regular basis, and that all consumer feedback will be reviewed and integrated into quality management planning.

All inquiries related to quality management are addressed in the same manner in which they were received i.e. an email is responded to with an email. Any inquiries/feedbacks relative to the quality management or education activities under the purview of the Base Hospital are considered as part of the Annual CME Plan and/or the Annual Quality Programming Overview. Each of these plans is provided to relevant stakeholders in draft form and feedback is actively solicited on each plan on an annual basis. All findings related to activities as laid out in the plan are distributed to key stakeholders and available upon request.

Refer to:

Appendix A: Performance Measurement Standard Reports
Appendix B: Case Reviews 2023-24
Appendix C: Quality Programming Overview 2023

Q29 The Host Hospital shall ensure the conduct of clinically-focused audits of controlled acts performed on or indicated for a patient by a Paramedic employed or retained by an operator covered by this Agreement, to monitor paramedic compliance with Provincial Medical Directives, in accordance with the following chart audit process:

29.1 Total number of Ambulance Call Reports (ACRs) requiring auditing.

Utilization of IQEMS enables auditing of 100% of selected call types, exceeding the minimum requirements. In Q1-Q3 2023-24 there were 36,664 calls audited.

29.2 Total number of medical directive/protocols and cases that have been audited.

In Q1-Q3, there were 36,664 ambulance call reports that were electronically audited. Of these audited calls, 3,203 (8.7%) were identified as having a variance and required further action; and 33,461 (91.3%) were closed with no further action.

29.3 Have all paramedics that have performed at least 5 acts within the ALS PCS had a minimum of 5 ACR audited this year?

All Paramedics with at least 5 acts within the ALS PCS had a minimum of 5 ACRs audited this year.

Refer to Appendix A: Performance Measurement Standard Reports, Section 2

29.4 Total number of new paramedics (less than 6 months) and total number who had 80% of their charts audited.

There were 13 newly certified ACPs and 91 PCPs (defined as paramedics not having previous Base Hospital certification) in 2023-24. The Performance Agreement states 80% of charts where a controlled act or advanced medical procedure is performed must be audited, however IQEMS allows for 100% of paramedic charts to be audited.

29.5 Number of cancelled calls where paramedics made patient contact that were audited.

Of the cancelled calls electronically sorted and audited in IQEMS, 183 were manually reviewed by an auditor.

FILTER TYPE	NO FOLLOW-UP REQUIRED	PARAMEDIC FEEDBACK RECEIVED/ REMEDIATED	OPERATIONAL ISSUE	SELF REMEDIATION	GRAND TOTAL
Cancelled Calls	**160**	**20**	**1**	**2**	**183**

APPENDIX A: PERFORMANCE MEASUREMENT STANDARD REPORT

ANNUAL PERFORMANCE MEASUREMENT STANDARD REPORT
April 1, 2023 to March 31, 2023*

Centre for Prehospital Care

Health Sciences North

Performance Measurement Standard Reports
April 1, 2023 to March 31, 2023*

*** **NOTE**: In 2024 several Northeastern Ontario Emergency Medical Service Providers transitioned to new ePCR platforms, causing a delay in data transfer to Intelligent Quality Evaluation & Management Suite (IQEMS). As a result, this Annual Report will include data only from April 1, 2023 to December 31, 2023, as the Q4 data was not available at the time of reporting with the exception of Section 4, Online Medical Quality Control, which will include data April 1, 2023 to March 31, 2024. The Base Hospital is actively working with the services and these new vendors to ensure timely data transfers for future reporting.

SECTION 1) AUDIT ACTIVITIES SUMMARY BY FILTER TYPE (ALL SERVICES)

This is a cumulative report providing the breakdown of the number of Ambulance Call Reports (ACR) in the Northeast that matched a filter type and required further review. The column "Matched the Filter Type Totals" includes the total number of ACRs that matched the filter type in IQEMS. It includes ACRs not requiring further review and those identified for further review. The column "Matched the Filter Type-Escalated for Additional Review," is the number of ACRs of those identified for further review were further escalated for additional review.

SECTION 2) PARAMEDIC SELF-REPORTS

This report identifies the number of self-reports by filter type, submitted by northeastern Ontario paramedics, related to identified omissions and/or commissions, and patient care or documentation.

SECTION 3) SERVICE OPERATOR AUDIT REQUESTS

This report provides the number of service operator driven audit requests in the northeast and is listed by IQEMS Filter Type.

SECTION 4) ONLINE MEDICAL QUALITY CONTROL

This section will include the following information for the northeast and includes data between April 1, 2023 and March 31, 2024:

- Total Patches by Paramedic Certification Level
- Total Termination of Resuscitation Requests
- Total Medication Requests
- Total Procedure Requests
- Top 10 Medical Directives Per Patch

SECTION 5) BLS CONCERNS REPORTED TO SERVICE

This report is the number of BLS Patient Care Standard (PCS) concerns communicated to Service Operators during the auditing process. This summary is broken down by Filter Type.

Performance Measurement Standard Reports
April 1, 2023 to March 31, 2023*

SECTION 1

Centre for Prehospital Care
Health Sciences North

AUDIT ACTIVITIES SUMMARY BY FILTER TYPE:
April 1, 2023 to December 31, 2023

ACR Matched the Filter Type	Total*	Identified for Further Review	Escalated for Additional Review**
FILTER TYPE			
Allergic Reaction	481	36	14
Analgesia	4540	268	107
Cancelled Calls	14168	183	23
Cardiac Arrest	730	730	269
Cardiac Ischemia	3168	591	233
Difficult Airway	400	5	1
Emergency Childbirth	30	30	10
Hypoglycemia	761	384	108
Nausea & Vomiting	3619	116	53
Opioid Toxicity	2150	223	77
Palliative Care	38	31	9
Pulmonary Edema	4279	101	22
Sedation	71	33	13
Seizure	375	44	11
SOB (Asthma, Croup & Needle Thoracostomy)	1687	346	159
Suspected Adrenal Crisis	6	6	4
Symptomatic Bradycardia	126	60	23
Tachydysrhythmia	35	16	3
Total	**36664**	**3203**	**1139**

***Matched the Filter Type Totals**: *This is the total number of Ambulance Call Reports (ACR) that matched the filter type in IQEMS. It includes ACRs not requiring further review and those identified for further review.*

****Matched the Filter Type - Escalated for Additional Review:** *Of the ACRs identified for further review, these are the ACRs that required an additional review.*

Performance Measurement Standard Reports
April 1, 2023 to March 31, 2023*

SECTION 3

Centre for Prehospital Care
Health Sciences North

SERVICE OPERATOR AUDIT REQUESTS
April 1, 2023 to December 31, 2023

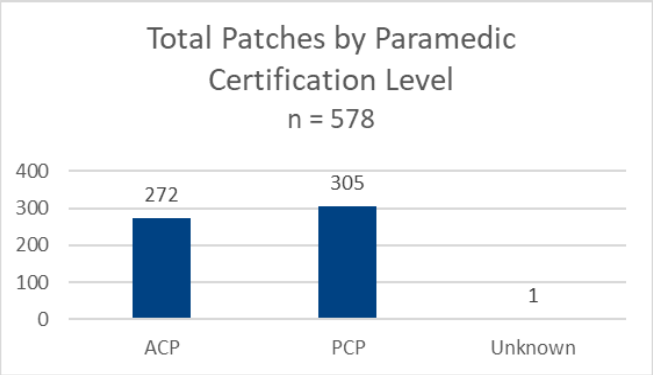
FILTER TYPE	Number of Self-Reports Calls
Allergic Reaction	3
Analgesia	5
Cardiac Arrest	29
Cardiac Ischemia	13
Nausea & Vomiting	2
Opioid Toxicity	2
Pulmonary Edema	2
Seizure	2
SOB (Asthma, Croup & Needle Thoracostomy)	9
Total	**67**

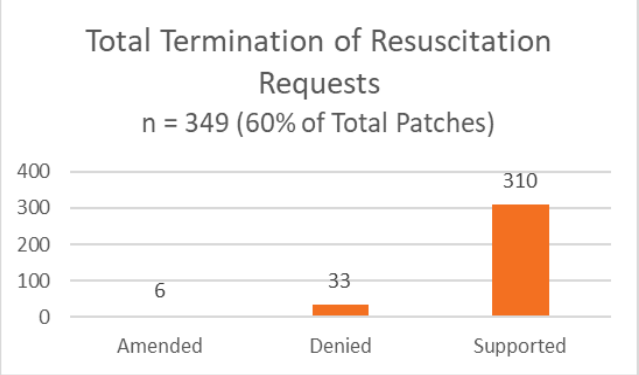
Performance Measurement Standard Reports
April 1, 2023 to March 31, 2023*

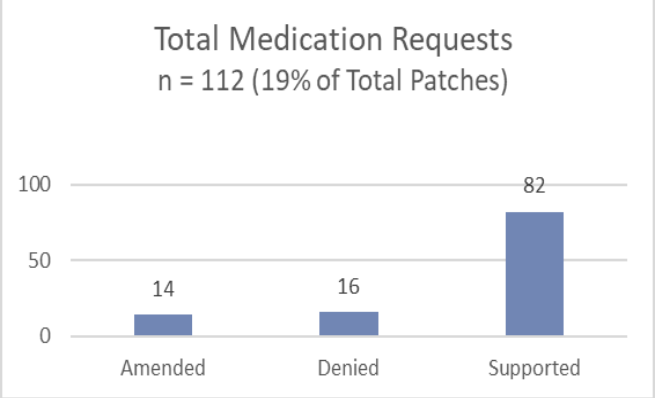
SECTION 4

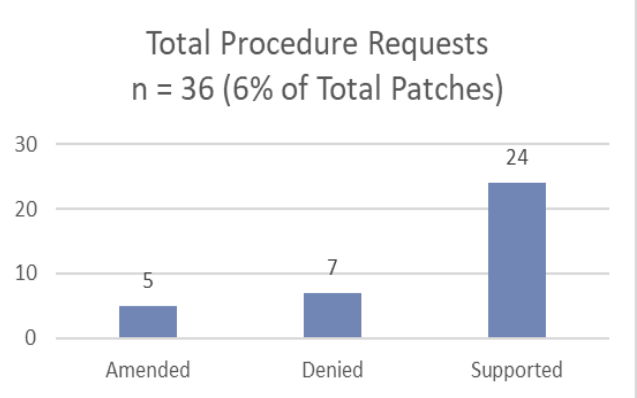
Centre for Prehospital Care
Health Sciences North

ONLINE MEDICAL QUALITY CONTROL
April 1, 2023 to March 31, 2024









Top 10 Medical Directives Per Patch (92% of all patches)	# of Patches
Medical Cardiac Arrest Medical Directive;	369
Withhold Resuscitation Order;	30
Trauma Cardiac Arrest Medical Directive;	26
Tachydysrhythmia Medical Directive;	24
Combative Patient Medical Directive;	20
Analgesia Medical Directive;	20
Patient Refusal/Emergency Treatment Standard;	14
Intravenous and Fluid Therapy Medical Directive;	13
Bronchoconstriction Medical Directive;	8
Special Project Palliative Care;	7
Grand Total	**531**

Performance Measurement Standard Reports
April 1, 2023 to March 31, 2023*

SECTION 3

Centre for Prehospital Care
Health Sciences North

SERVICE OPERATOR AUDIT REQUESTS
April 1, 2023 to December 31, 2023

FILTER TYPE	Number of Self-Reports Calls
Allergic Reaction	3
Analgesia	5
Cardiac Arrest	29
Cardiac Ischemia	13
Nausea & Vomiting	2
Opioid Toxicity	2
Pulmonary Edema	2
Seizure	2
SOB (Asthma, Croup & Needle Thoracostomy)	9
Total	**67**

APPENDIX B:
CASE REVIEWS 2023-24

Incidences and audits requiring additional reviews are identified in IQEMS by means of a "Case Review" entry. This module is interrelated with the audit platform and collects information in a centralized workspace to facilitate communication between paramedics, auditors, managers and medical directors.

For this fiscal year, 61 ACRs were identified as "Case Reviews" of which 34% (n=21) were escalated for audit huddles. Only 21% (n=13) required a detailed event analysis. Of those, two cases required an education plan and six of the 13 event analysis were forwarded to the Field Office.

The following table provides the final base hospital outcome.

	REASON FOR CASE REVIEW		
	ACR Request	**4**	**(7%)**
BH Outcome	No Variance Found	1	
	Operational Issue	1	
	Paramedic Feedback Received/Remediated	2	
	Audit Required	**17**	**(28%)**
BH Outcome	No Follow-up Required	9	
	No Variance Found	1	
	Paramedic Feedback Received/Remediated	7	
	Audit Review	**21**	**(34%)**
BH Outcome	Manager Case Review Required	2	
	MD Audit Review Required	1	
	No Follow-up Required	4	
	Paramedic Feedback Received/Remediated	10	
	Paramedic Telephone Review Completed/Remediated	1	
	Self Remediation	3	
	Event Analysis	**13**	**(21%)**
BH Outcome	BHP Patch Issue Resolved	1	
	No Follow-up Required	1	
	Paramedic Feedback Received/Remediated	6	
	Paramedic Telephone Review Completed/Remediated	1	
	Remediation Plan Completed	3	
	Stakeholder Review Requested/Completed	1	
	Patch Review	**6**	**(10%)**
BH Outcome	Equipment Issue Reviewed/Resolved	1	
	No Follow-up Required	3	
	Paramedic Feedback Received/Remediated	2	
	Grand Total	**61**	

APPENDIX C: QUALITY PROGRAMMING OVERVIEW 2023-24

QUALITY PROGRAMMING OVERVIEW 2023-2024

Centre for Prehospital Care

Health Sciences North

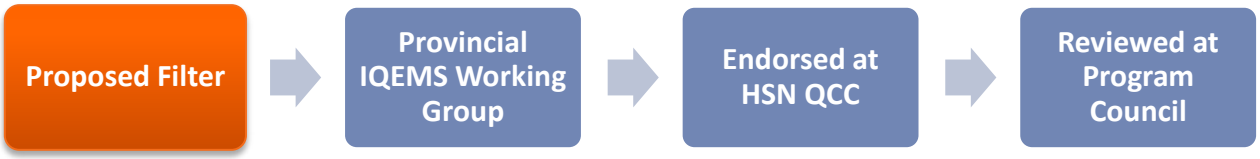
www.hsncpc.ca

QUALITY PROGRAMMING OVERVIEW 2023-2024

INTRODUCTION

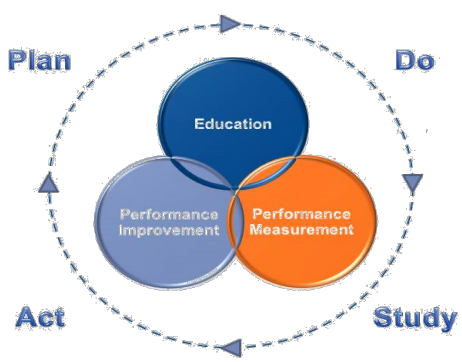
Quality is a multifaceted responsibility that requires the collective effort of varied focus areas. Within the Health Sciences North Centre for Prehospital Care (HSN CPC), this is attained through an integrated system of clinical measurements, quality improvement and continuing medical education within a broad based system of quality management and medical leadership. The need and importance of a wide overlap between these programs (Figure 1) is vital to ensure ongoing quality patient care as demonstrated in the Plan-Do-Study-Act cycle (Figure 2).

Performance Measurement is accomplished by utilizing the Integrated Quality Evaluation Management System (IQEMS). This clinical auditing system is fully web-based, and audits 100% of the data through the clinical filter identification system. Electronic Ambulance Call Reports (eACRs) received from the Service Operators are electronically sorted and filtered through computerized algorithms that are based on Medical Directives and/or Standards. The filters identified through the clinical filter identification system are developed and approved by the Provincial IQEMS Operational Working Group in consultation with Medical Directors then endorsed through HSN CPC Quality of Care Committee and reviewed at Program Council.



Continuous Quality Improvement (CQI) activities include continuously examining performance in the system to see where the personnel, system, and processes can continue to improve. Various databases currently exist which contain data relevant to CQI activities. These data systems are used to evaluate performance in the following ways:

- Prospectively identify areas of potential improvement
- Answer questions about patient related items within the EMS System
- Monitor changes once improvement plans are implemented
- Provide accurate information enabling data driven decisions
- Support research that will improve the system and potentially broaden EMS knowledge



QUALITY PROGRAMMING OVERVIEW 2023-2024

Since transitioning to the Intelligent Quality Evaluation and Management Suite (IQEMS) in 2017, the following sections have been updated based on the new chart audit processes and reporting functionalities.

A. PERFORMANCE MEASUREMENT

CLINICAL AUDIT SYSTEM

The Clinical Audit process ensures:

1. Paramedics have 100% of their charts audited where a controlled act or advanced medical procedure was performed.
2. Newly certified Paramedics (defined as paramedics not having previous Base Hospital certification): The performance agreement states 80% of charts where a controlled act or advanced medical procedure must be audited however IQEMS allows for 100% of paramedic charts to be audited by the IQEMS filters.
3. All cancelled calls that fail an IQEMS filter, where paramedics made patient contact, with or without controlled acts performed, are audited.

STANDARD REPORTS

Reports are generated to ensure compliance with the Performance Agreement and the ALS/BLS Patient Care Standards. These reports are shared with the Service Operators and the Ministry of Health (MOH) Emergency Health Program Management and Delivery Branch (EHPMDB) as outlined below. Following receipt, the Service Operators are invited to discuss any findings within the reports.

A. QUARTERLY REPORTS

HSN CPC Audit Activities (Audit Activities Summary by Filter Type Report and Audit Activities by Paramedic Report)

The report is an overview of ALS calls that were filtered through the IQEMS computerized algorithm. It is summarized by paramedic and includes the number of ALS calls, electronic audits and manually reviewed audits. This report also includes a summary of audit activities by Service Operator.

Detailed Variances by Paramedic

This report includes variances by medic, IQEMS filter type, and Base Hospital Outcome. This is provided in excel format to allow service operators to review, sort, and organize the data.

QUALITY PROGRAMMING OVERVIEW 2023-2024

Online Medical Quality Control Interactions

This report provides analysis of the patch calls completed in 2023-24.

Service Operator Audit Requests

This report identifies the number of audits requested by a Service Operator. It is categorized by IQEMS filter type, reason and Base Hospital Outcome.

Paramedic Self Reports

This report identifies the number of self-reports submitted by Paramedics related to identified omissions and/or commissions in patient care or documentation. This is recognized as a very important component of paramedic practice. It is categorized by IQEMS filter type, reason (negative statement) and Base Hospital Outcome.

BLS Concerns Reported to Service Operators

This report is the number of BLS PCS concerns communication to the service operator during the audit process. This summary is provided in excel format and includes a sheet for each quarter.

B. BIANNUAL REPORTS

Paramedic Skills Inventory

This report is the total number of calls (by call #) where a particular ALS skill was used as part of the overall patient care plan. Paramedic skills activities are based on the number of times a Paramedic was on a call where an ALS skill was used as part of a patient care plan. These counts are based on the total number of ALS skills performed by the entire responding crew. For example, a call with multiple crew members identified on the ACR will each receive credit for their active participation in the assessed need and delivery of the identified ALS skill.

Reports are distributed as follows unless otherwise noted in this document:

REPORTING PERIOD	DISTRIBUTION TIMELINE
Service Operators/MoH EHPMDB	
Quarterly Reports	8 - 12 weeks following reporting period
Biannual Reports	8 - 12 weeks following reporting period
Annual Reports	8 – 12 weeks following reporting period

QUALITY PROGRAMMING OVERVIEW 2023-2024

CLINICAL PERFORMANCE MEASURES

Clinical Performance Measures are defined measurements that are part of a process. They are evidence-based measures that optimally guide the improvement of the quality of patient care and practice. These indicators are evaluated on a regular basis by running standardized data queries and subsequently reviewing outlier data to provide accurate treatment rates for specific clinically relevant indicators. These indicators are reviewed and endorsed by the Quality of Care Committee.

Current indicators include:

1. Medication Incidents (Pediatric and Adults)
    a. Provide quarterly to Service Operators
2. Patients with a suspected opioid overdose who received naloxone by paramedics.
    a. Provide quarterly to OBHG Data Quality Management Committee (OBHG Medical Advisory Committee)

B. CONTINOUS QUALITY IMPROVEMENT

QUALITY IMPROVEMENT ACTIVITIES

Continuous Quality Improvement (CQI) provides a method for understanding the system processes and allows for their revision using data obtained from those same processes. HSN CPC uses a number of approaches and models of problem solving and analysis to ensure and demonstrate the required standards are being met through valid measurement tools.

1. Clinical Audit Reports

A clinical audit is a cyclical process where an element of clinical practice is measured against a standard. The results are then analysed and an improvement plan is implemented. Once implemented, the clinical practice is measured again to identify improvements, if any.

The Quality of Care Committee leads the planning of the clinical audit and determines the population as it relates to existing protocols (i.e. chest pain, stroke, multi-system trauma, etc.) and/or Standards. A random statistical sample is calculated and the cases are compared to the associated treatment protocol. Based on the findings, improvement opportunities are developed, disseminated and monitored.

QUALITY PROGRAMMING OVERVIEW 2023-2024

2. Focused Reports

Focused reports are ad hoc reports responsive to needs as they arise. Content may be driven from the HSN CPC Quality of Care Committee, HSN CPC Program Committee, HSN CPC Program Council, or Ontario Base Hospital Data Quality Management Committee. Examples include repetitive errors reported by performance measurements, implementation of a new or changed directive, and request for data from the Ministry of Health (MoH).

3. Case Reviews

Analysing incidents, through an established framework, can serve as a catalyst for enhancing the safety and quality of patient care.

Recommendations and corrective actions are formalised and have an evaluation plan to determine if the recommendations are implemented and the impact they have on the system.

REPORTING	DISTRIBUTION DATE
Preliminary Findings	14 days post event analysis
Final Report	30 days post event analysis

APPENDIX D: MEDICATION INCIDENTS

MEDICATIONS INCIDENTS

April 1, 2023 (Q1) - December 31, 2023 (Q3)

Centre for Prehospital Care

Health Sciences North

www.hsncpc.ca

MEDICATION INCIDENTS

REGIONAL DATA

	Contra Indication			Dosing High			Dosing Low			Incorrect Medication	Medication Omission			Grant Total
Medication	**Q1**	**Q2**	**Q3**	**Q1**	**Q2**	**Q3**	**Q1**	**Q2**	**Q3**	**Q1**	**Q1**	**Q2**	**Q3**	
Acetaminophen	3	3	2	7	9	4	2	3	1		2	3	6	45
Adenosine	1	1									1			3
ASA	3	2	1	1	2	1		1	1		17	18	18	65
Atropine												1		1
Buprenorphine/Naloxone		1												1
Calcium Gluconate													1	1
Dexamethasone	3		5		1	1	5	1	3		19	21	15	74
Dextrose	2		1	1	1	3	4	3	6		4	4	1	30
DimenhyDRINATE (Gravol)	7	7	5	2										21
DiphenhydrAMINE (Benadryl)		3	1					1				2	1	8
Dopamine			1			1								2
Epinephrine	3	3	3		1		1				8	5	4	28
Fentanyl	2		1			1							1	5
Glucagon	2		1	1	1						1	1		7
Glucose Gel or Tablets											26	21	17	64
Hydrocortisone													1	1
Hydromorphone				1							1			2
Ibuprofen	5	5	3	2	4	1	2	2			2	4	8	38
Incorrect Medication										1				1
Ketamine					1						1			2
Ketorolac	3	5	2	2	1	1		1						15
Lidocaine		2	1		1			1						5
Midazolam						1					1			2
Morphine		1	1		1								2	5
Naloxone	11	15	11	1	3	2	1	1	1		1	4	2	53
NTG	8	15	11		1	1	3	3			20	17	20	99
Ondansetron	10	10	6	3	2	1		2			5	1	3	43
Oxytocin												4		4
Salbutamol		1	4		8	1					10	10	15	49
Grand Total	**63**	**74**	**60**	**21**	**37**	**19**	**18**	**19**	**12**	**1**	**119**	**116**	**115**	**674**