

Ontario's Critical Care Strategy

Delivering Critical Care When and Where it's Needed



Implementation of Critical Care Response Teams (CCRTs) in Ontario Hospitals – Year One

Prepared by the Critical Care Secretariat,
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What is a Critical Care Response Team (CCRT)?

CCRTs are composed of physicians, registered nurses and respiratory therapists with specialized training in critical care.

This report provides an overview of the implementation of Critical Care Response Teams (CCRTs) across Ontario and the role they are playing in hospitals and in the health care system as a whole. The focus of this report is to share real, first-hand accounts of the immediate and positive impact CCRTs are having on patients, caregivers and hospitals.

For most people, the delivery of critical care evokes an image of a busy, sterile hospital ward where the humming and beeping of high-tech machines, monitors, and life support equipment is the norm and where clear glass walls allow the nurses and other care providers to constantly observe patients who are seriously ill or critically injured. While that understanding is still true and often necessary, over the past year the delivery of critical care has been evolving to become more than that. This evolution has become necessary due to an aging population which is placing increased pressure on acute care resources. Often patients are admitted to hospital for one health condition or issue, but other

health issues may complicate their hospital stay. This makes the availability of critical care resources an increasing and prevalent need.

Since the Ontario government's announcement of its Critical Care Strategy in January 2006 significant progress has been made in planning for the design and delivery of critical care services across the province. One of the most important advances in critical care this past year has been the expansion of Critical Care Response Teams (CCRTs). The government has funded the development and implementation of 27 adult CCRTs (6 have been providing 24/7 service for 12 to 24 months and 17 have just moved from weekday service to 24/7 service; 4 sites are starting to develop their teams and will begin offering service in September 2007). In addition, there are 4 paediatric CCRTs currently completing a CCRT demonstration project in 4 specialized paediatric centres across the province.

These teams are sometimes referred to as Critical Care Outreach Teams (CCOT), Rapid Assessment of Critical Events (RACE), Acute Critical Care Emergency Support Service (ACCESS), or Medical Emergency Teams (MET). While the names may be different, they share a common purpose and they're having a big impact on the lives of patients and families.



The Critical Care Secretariat wishes to thank all of the hospitals and caregivers who have enthusiastically embraced the concept of a CCRT, worked so hard to implement this tremendous critical care resource in their own organization – and are sharing their expertise and working with other hospitals to assist with CCRT educational and implementation planning needs. Together, you are making a difference in the lives of patients and families across the province.

Dr. Bernard Lawless, Provincial Lead,
Critical Care and Trauma

The impact of CCRTs

Early intervention or resuscitation on the ward saves lives. It enables more timely Intensive Care Unit (ICU) admissions that may result in a shorter length of stay, improving access to ICU beds. It reduces or mitigates avoidable or inappropriate ICU admissions and readmissions, and provides an opportunity for mutual collaboration and knowledge transfer among hospital staff.

What do they do?

CCRTs bring the skills and expertise of a critical care unit beyond its four walls to meet the needs of patients at risk wherever they are in the hospital.

It's About Improving Patient Safety

According to the national Safer Healthcare Now!* Campaign, the goal of CCRTs is to respond to a “spark” before it becomes a “forest fire.”

In Ontario, CCRTs provide earlier intervention when a health care provider identifies that a patient who is not currently in the ICU may be at risk for critical illness, or when a patient’s condition appears to be deteriorating. By working together and intervening early, caregivers can often spare the patient and family the stress of an admission to the ICU, or in many cases, reduce the length of an ICU stay – and ultimately improve the patient’s outcome.

*The Safer Healthcare Now Campaign (SHN) is a key component in the advancement of patient safety in Canada, with 178 participant organizations (hospitals and health regions) and 587 clinical teams enrolled in the Campaign in the past year. Its goal is to improve healthcare delivery by focusing on patients and their safety while in the care of health providers. Similar to its model in the U.S., the Institute for Healthcare Improvement’s 100,000 Lives Campaign, SHN is a collaborative effort aimed at reducing the number of injuries and deaths related to adverse events, such as infections and medication incidents.



The CCRT project is remarkable on many levels. The provincial government has made patient safety a top priority and is supporting solutions developed by clinicians, that is, medical doctors, nurses and respiratory therapists. Professionally, it is fulfilling to be the intensivist on the team when we respond to the call to help a patient on the ward and to be able to bring to that patient the critical care equipment, skills and knowledge when and where it is needed. Further, as members of the Critical Care Secretariat’s CCRT expansion team we are part of a wonderful collaboration of clinical leaders across the province that have embraced this service model and worked very hard to develop and implement CCRTs at their sites.

Stuart F. Reynolds MD, Physician Lead,
Critical Care Response Team Expansion Project



How do we know CCRTs are making a difference?

Already, we're seeing - and hearing about - the dramatic and frequently lifesaving effect that CCRTs are having in hospitals and on patients' lives across the province.

The following are verbatim testimonials the Critical Care Secretariat has received from hospitals following the First Wave of CCRT Expansion in Ontario, after just one week of offering CCRT service. These compelling stories demonstrate the impact of providing critical care beyond the walls of the ICU.

Kingston General Hospital

Our first call was to see an elderly gentleman who was recovering from orthopedic surgery. He had developed atrial fibrillation. Within 20 minutes of arriving, the CCRT had dealt with the problem. The surgeons, who were called at the same time had just started another case and were not available to participate in the care. The medical opinion was that as this person was already beginning to decompensate, he would likely have suffered a heart attack within the hour. In addition, a brewing pneumonia was identified and treated. Our team was elated; what a great start!

– Rana Fowler RN and Dan Howes MD

St. Joseph's Healthcare - Hamilton

We were called to see a post partum woman who was transferred overnight from ICU and whose blood pressure was very high. Our team was there to provide immediate support and treatment without any delay. A second patient had been transferred into the hospital in the middle of the same night and the attending physician had not yet had the time to see the patient. When the patient started to deteriorate, the nurse called our team to give immediate support. The patient received the care she needed without delay.

The reception that we received from one unit during our first acute patient related visit there was especially fun; the staff had been looking forward to our service and gave us a standing ovation when we arrived.

– Lily Waugh RN and Roman Jaeschke MD

London Health Sciences Centre, Victoria Campus

We received our first Critical Care Outreach call within the first hour of launching our team. We were called to the thoracic unit where we encountered a patient in respiratory distress with a rapid heart rate. The team stabilized the patient on the ward then transferred him to our ICU where he was intubated. Intervening in this patient's care early likely prevented him from having a respiratory arrest. The ward staff were impressed with the care our team provided and our team felt satisfied. What a great start!

– Jasna Gole RN, Frank Rutledge MD



CCRT at London Health Sciences Centre, Victoria Campus

London Health Sciences Centre - University Campus

One of our early calls was to see a post op patient with low blood pressure. The patient had abdominal surgery and needed to be returned for additional surgery to repair some intestinal drainage into the peritoneum. The problem was corrected by the surgeons and treatment was also started to prevent sepsis.

Overall, the excitement has been great here; we have golf shirts for our team members that bear the slogan "Because critical care is a need, not a place." The staff on one ward sang us a song when we arrived, using the tune of YMCA, they put in our team name, CCOT, (Critical Care Outreach Team) and made some lyrics up.

– Jackie Walker RN and Wael Haddara MD

Mount Sinai Hospital

At 8:05 am on Nov 06/06, the day CCRT was initiated, we received a call to see a surgical patient who was in the early stages of sepsis. We instituted aggressive early goal directed therapy and monitored her intermittently throughout the morning. Although at one point it looked as if she may need admission to the ICU, by noon she seemed to be doing much better and we were able to avoid transferring her to the unit. That worked out very well – a day 1 save!

– Stephen Lapinsky MD and Patricia Hynes RN



MSH brings critical care to patients' bedside.
Photo courtesy of Mt. Sinai Hospital, Toronto

St. Joseph's Healthcare, Hamilton

We seem to have more pleasure as we go along. Calls are happening at the pace we want them, the nurses have fun learning, we have facilitated some admissions, and prevented others. We are making a public relations impact with families and staff.

– Roman Jaeschke, MD,
Clinical Professor, Medicine, McMaster University
ICU Director, St. Joseph's Healthcare, Hamilton

St. Michael's Hospital

The CCRT was consulted to the hemodialysis unit by the staff RN. Medical consult was seeing a patient on the hemodialysis unit with rapid atrial fibrillation with a rate of 160. The plan was to provide this patient with intermittent IV metoprolol. The ward nurse insisted that the CCRT be activated before the MD started IV metoprolol as she did not feel comfortable with the intervention without monitoring. CCRT monitored the patient during the intervention; patient reverted to a sinus rhythm after a couple of doses. BP stabilized and patient was able to remain on the ward.

Staff on the wards have embraced the availability of the team and without fail have identified how helpful and beneficial the team is.

– Chris Hayes MD and Gail Wilson RN

The Scarborough Hospital

We prevented at least two ICU admissions and facilitated two others to occur rapidly. We were called to see a patient with sepsis and were able to manage their condition on the ward. The RNs, MDs and RRTs are displaying good recognition of the CCRT calling criteria so our education plan and marketing are working well.

– Carol Shelton RN and Stewart Aitken MD

Hôpital Régional de Sudbury Regional Hospital

The person was brought in with slurred speech and decreased O₂ saturation. It was a confusing situation because it seemed like a stroke with decreased level of consciousness yet when the Intensivist with the CCRT members did a work up, it was discovered that the person actually had sepsis as a result of a urinary tract infection, and a previously undiagnosed myasthenia gravis was also recognized. The patient made a good recovery. The ward service was very grateful for the quick response of the CCRT.

– Janet Riehl RN and Don Burke MD

Hamilton Health Sciences Centre - General Site

One neat call we made was actually initiated by us. We were doing a follow up on a patient and noticed that a patient in the adjacent bed was short of breath. When we investigated we found that the patient's nasogastric tube was too large for them and was causing not only the breathing difficulty, but there was also infection developing, really an early sepsis. The nasogastric tube was replaced with a smaller one and the patient was started on antibiotics.

– Peter Kraus MD and Karen Cziraki RN

Sunnybrook Health Sciences Centre

Our first morning of offering service we received a call for a sick patient and had them to the ICU within thirty minutes; fast, fast service. The staff was in attendance and was very appreciative. A respiratory therapist in the step down unit made another call that first week. They had recognized that the patient was significantly compromised, called our team and we arrived to deal with a pre-arrest situation. It was a really smart call.

– Karen Smith RN and Martin Chapman MD

Thunder Bay Regional Health Sciences Centre

We were called to see a very elderly person with a lower gastrointestinal bleed who was experiencing atrial fibrillation. ICU admission was avoided and we also focused on teaching the ward staff about positioning, chest physio and suctioning.

We have also had very positive feedback from staff physicians regarding the fact that we are now following patients for 48 hours after we transfer them out of the ICU to the ward.

– Adrian Robertson MD, Carolyn Freitag RN and Diane Olsen RN



CCRTs at Hamilton Health Sciences Centre – General Site

Trillium Health Centre

We had a rewarding case yesterday. We were called to see a gentleman in the complex continuing care unit. The nurse had become concerned when she noted that his blood pressure was trending down. On arrival we initiated a stat ECG, chest X-ray and labs. While this was going on, the patient was found to be bradycardic and his level of consciousness started to diminish. We pushed atropine and stabilized the patient on the unit before transferring him to the ICU. The staff were thrilled with the support they received and the outcome for the patient was very good.

– Mike Cass RN and Neil Antman MD

St. Joseph's Health Centre, Toronto

We were called to see an elderly man with increased respiratory distress and oxygen requirements. We assessed the patient and decided his deterioration was most likely from CHF and aspiration. While treating him, we had a discussion about philosophy of care. The patient was quite lucid and made a clear decision that he would not want CPR, intubation or ICU admission. Fortunately he improved anyway with our intervention but we may have saved him from unwanted interventions in the future.

– Joanne Meyer MD and Geeta Juta RN



Photo courtesy of St. Joseph's Health Centre, Toronto

Grand River Hospital

The team was called to see an elderly patient who was recovering from a hip fracture and sudden hypotension. Labs were drawn, an elevated WBC noted, no IV, only a Foley inserted 4 hours prior to the call. There were communication concerns, since the patient did not speak English. The patient appeared responsive, their chest was clear, their non-verbals indicated abdominal pain and the patient appeared very restless. An EKG was done, including a 15 lead, an IV was started and a bolus of fluid given. O₂ was applied. The patient's blood pressure improved and the patient settled.

– Dr. Natalie Needham-Nethercott and
Bonnie Slemmon RN

Credit Valley Hospital

The first month of activity for our RACE team was very exciting with a total of 26 new consults. One of our first calls involved a patient who was post op for a total hysterectomy. The team was called for a primary concern of severe abdominal pain and hypotension. The assessment resulted in the patient receiving fluid and blood. While the team was present the MRP arrived and conferred with the RACE MD. No further intervention was deemed necessary at this time.

Later in the shift, the team was called back to see the patient for increased severity of abdominal pain. The RACE team felt that the abdomen was more taut and a stat CT was ordered. The images revealed a large hematoma and the patient was taken to the OR for emergency surgery and drainage of 2.5L of fluid. The patient was admitted to the ICU post-op, ventilated and given antibiotics.

The nurses that originally called the RACE team were thrilled to receive timely and expert care. We believe that a septic crisis was clearly averted through early intervention. The RACE team "life line" has been very well received throughout the hospital.

– Gail Lang RRT , Lynn Varga RN and Janos Pataki MD

North York General Hospital

One of our calls was to see an elderly person and we recognized that the person needed information about ICU care and what it entailed. The patient expressed that they could not have discussions with the physician about their values and wishes because the physician did not understand their religious beliefs. With further discussion it was discovered that the physician had the same religious background as the patient and discussion with the patient and patient's family proceeded. Ultimately the patient decided, with the support of their family that ICU care was not their preference and this was recorded in the patient record.

Another good call was from a nurse who just felt "worried" about the patient. The Intensivist and primary physician worked together and discovered that even though the patient's breathing was not particularly laboured further investigation uncovered pneumonia. It confirms the power of the "6th sense" of experience that we tap into through the calling criteria "worried about the patient".

– Cathy Badeau RN, Jasmine Tse RN and Donna McRitchie MD

Toronto East General Hospital

A patient who had undergone emergency surgery in the night was not doing so well in the morning. The ward nurse recognized that the patient met the calling criteria and called our team. We gave her a fluid bolus and increased her intravenous rate. The surgeon had gone home to sleep after being up most of the night, and one of the surgical residents was able to scrub out of the operating room and participate in the care, so not only did the patient improve nicely, the ward nurse and resident both had some valuable teaching. Everyone was pretty happy.

– Marcus Kargel MD and Marilyn Lee RN

University Health Network - Toronto Western Site

We were called to see a patient who was having great difficulty breathing. A CT was done and identified a large retro-sternal mass - her airway was down to 1 mm in diameter. She was quickly transferred to Toronto General and underwent surgery and is doing well now. Very satisfying.

– Lorenzo Del Sorbo MD and Karen Meredith RN

Establishing provincial benchmarks

The CCRT data collection will provide hospitals, LHINs, the Ministry of Health and Long-Term Care and the system as a whole, with valuable information about the impact of CCRT intervention and help to identify CCRT activity and outcome benchmarks which will inform other implementations in hospitals across the province.



CCIS Ontario's Critical Care Information System

Later this year, current CCRT data collection will be integrated with the province's new Critical Care Information System (CCIS), an information

management tool that allows hospitals to record and track information about their critical care patients and the care provided to them and to use this information to support critical care decision-making.

When is the CCRT called by staff?

Sometimes it is a health care provider's experience and "gut feeling" or observation that their patient "just doesn't seem right" that prompts them to call the CCRT.

Because the CCRT takes the skills and expertise of an intensive care unit beyond the walls of the ICU, these innovative teams can deliver care within minutes in any area of the hospital to patients whose condition may be deteriorating. Their quick action helps to stabilize patients and reduces the need for lengthy stays in Intensive Care Units. Working in partnership with specially trained staff in the hospital wards, the teams also provide assessments on the spot to ensure that patients receive the right care in the right unit of the hospital, including the ICU, thereby saving lives and increasing access to critical care resources.

However, the intervention of a CCRT can only be successful if staff on hospital units and wards are trained to know when to call. And in many cases, even training is not enough – sometimes it is a health care provider's experience and "gut feeling" or observation that their patient "just doesn't seem right" that prompts them to call the CCRT – and as some of the testimonials in this report indicate, they are never wrong in doing so. So, it is the combination of the efforts, expertise and sound judgment of the CCRT members and the unit staff who have day-to-day interaction with the patients that makes CCRTs successful.

Calling the CCRT does not replace calling a "Code Blue" for all respiratory and/or cardiac arrests or other critical emergencies.

CCRT Call Criteria

The CCRT is called by hospital staff whenever a patient shows significant change in any of the following:

Airway

- Threatened
- Stridor
- Excessive secretions

Breathing

- Respiratory rate ≤ 8 or ≥ 30
- Distressed breathing
- Saturations $< 90\%$ on $= 50\% O_2$ or 6 litres/min

Circulation

- Systolic blood pressure ≤ 90 mmHg or ≥ 200 mmHg or decrease 40 mmHg
- Heart rate ≤ 40 or ≥ 130

Disability

- Decreased level of consciousness
- Decrease in GCS > 2 points
- Signs or symptoms of a stroke
- Prolonged seizures

Other

- Urine output ≤ 100 ml over 4 hrs (except dialysis patients)
- Serious concern about your patient

Who currently has a CCRT?

The twenty-seven hospital sites that have received funding for adult CCRTs, as well as the four paediatric CCRT demonstration sites are shown below.

Building on a successful demonstration of the Intensivist-led CCRT model, the initial rollout of Critical Care Response Teams was focused on establishing Intensivist-led CCRTs in larger hospitals that manage the bulk of Ontario’s critical care resources.

To date, the 27 hospitals sites that have received funding for adult CCRTs, have worked through a number of key tasks including confirming buy-in from key clinical and administrative leaders, securing approval from the Medical Advisory Committee, identifying staff to participate on the teams, sending the staff to the CCRT RN/RT Training Course, and beginning to educate ward staff on the calling criteria. Bi-weekly teleconferences, hosted by the Critical Care

Secretariat and attended by the hospital CCRT physician site leads and RN or RRT co-leads, are facilitating the sharing of ideas and supporting momentum as the sites work to meet their implementation deliverables.

In the demonstration sites that have been providing 24/7 CCRT service for some time, the focus is on sharing their experience with other hospitals who are in an earlier phase of CCRT implementation. CCRT sites are also collecting data on their activities that will underpin efforts to establish benchmarks for CCRTs in Ontario.

Opportunities to expand CCRTs to community hospital settings, as well as alternate CCRT delivery models that may better reflect a community hospital setting, are currently being explored.

Hospital Sites with CCRTs – Listed by Local Health Integration Network (LHIN)

Central LHIN	North Muskoka LHIN
North York General Hospital	Royal Victoria Hospital, Barrie
York Central Hospital	Northwest LHIN
Central East LHIN	Thunder Bay Regional Health Sciences Centre
The Scarborough Hospital – General Site	Southeast LHIN
Hamilton Niagara Haldimand Brant LHIN	Kingston General Hospital
Hamilton Health Sciences Centre – General Site	Southwest LHIN
Hamilton Health Sciences Centre – McMaster Children’s Hospital (Demonstration)	London Health Sciences Centre – Children’s Hospital of Western Ontario (Demonstration)
St. Joseph’s Healthcare, Hamilton	London Health Sciences Centre – Victoria Campus
Champlain LHIN	London Health Sciences Centre – University Site
Children’s Hospital of Eastern Ontario (Demonstration)	Toronto Central LHIN
The Ottawa Hospital – General Campus	Hospital for Sick Children (Demonstration)
The Ottawa Hospital – Civic Campus	Mount Sinai Hospital
Queensway-Carleton Hospital	St. Joseph’s Health Centre, Toronto
Erie St. Clair LHIN	St. Michael’s Hospital
Hotel Dieu Grace, Windsor	Sunnybrook Health Sciences Centre
Mississauga Halton LHIN	University Health Network – Toronto Western Site
The Credit Valley Hospital	University Health Network – Toronto General Site
Trillium Health Centre – Mississauga Site	Toronto East General Hospital
Halton Healthcare Services – Oakville Trafalgar Site	Waterloo Wellington LHIN
William Osler Health Centre – Peel Site	Grand River Hospital
North East LHIN	
Sudbury Regional Hospital	

For more information on the Ontario's Critical Care Strategy visit our website at www.health.gov.on.ca/criticalcare or contact Robert McKay, Manager, Critical Care Secretariat at Robert.McKay@moh.gov.on.ca