

Toronto Central **LHIN**

Critical Care Surge Capacity Management Plan

September 15, 2009

Toronto Central Local Health Integration Network (LHIN) Critical Care Surge Capacity Management Plan

Introduction & Background

Experience with SARS in 2003 and recent experiences of other countries with H1N1 have signalled the importance of developing an effective critical care system to accommodate surges.

A time-limited LHIN-based Inter hospital Critical Care Surge Planning Task Force¹ was convened in August 2009 to develop a system-level plan to address a moderate surge for adult critical care in the Toronto Central LHIN.

Moderate Surge: A moderate surge is defined as a larger increase in demand for critical care services that goes beyond individual hospitals and impacts on a Local Health Integration Network (LHIN) or critical care network.

The Toronto Central LHIN Critical Care Surge Capacity Management Plan outlines a local approach to management and communications and Inter-hospital protocols to facilitate managing a moderate surge.

The Critical Care Surge Capacity Management Plan is meant to lay out a system-level approach applicable in all surges. It is recognized that some surges will have particular nuances that need to be reflected in the protocols and approach to surge management. For example, pregnant patients and the need for aggressive mechanical ventilation are unique to the H1N1 illness at the time of Plan creation.

Overarching Planning Assumptions

- The Toronto Central LHIN Critical Care Surge Capacity Management Plan will align with provincial Critical Care Secretariat planning and will reflect thoughtful consideration of the plans of local hospitals and other service providers to enable a coordinated response in a Critical Care moderate surge.
- A local hospital response should be sufficient to respond to minor surges, and individual hospital boards are accountable for overseeing the surge response. A minor surge in critical care is defined as an acute increase in demand for critical care services – ranging from 100-115% – that is localized to an individual hospital. A hospital's acute care human resources, critical and acute care supplies, and physical plant resources should be sufficient to meet a minor surge.
- The Toronto Central LHIN will continue to act (as much as possible) as a regional and provincial referral center for tertiary and quaternary Critical Care.

The Task Force encourages the distribution of this Plan widely within the Toronto Central LHIN to enable awareness of the approach being taken locally, and across the province to facilitate other jurisdictions in their planning efforts.

¹ See Appendix for Task Force Membership

5 Components to the Plan

1. Management & Communication

Issue:	<ul style="list-style-type: none"> • Monitoring surge capacity in the LHIN. • Regular communication and information sharing between hospitals.
Planning Assumption:	<ul style="list-style-type: none"> • CritiCall will be utilized as the fan out system to notify hospitals of a moderate surge and need for further action (i.e. communication). • The current Critical Care Information System may be modifiable to capture and display specific moderate surge related information items, however this will not be available for a potential H1N1 related surge this fall (2009). As a result, the group will develop and employ local monitoring efforts (i.e. # of surge related patients, specific equipment utilized). • Each hospital will manage internal communications regarding internal surge planning and plan execution.
Recommendation:	<ul style="list-style-type: none"> • Each hospital will identify a key contact person to provide leadership during a surge. • When an ICU in the LHIN receives a patient with H1N1, and at the call of the LHIN Critical Care Lead, each hospital will begin to submit a daily census of their critical care capacity to a central location to enable system monitoring. • Each day, a local lead for each hospital will provide 3 numbers to the Toronto Central LHIN Critical Care Surge Capacity Management Task Force: <ol style="list-style-type: none"> 1. the number of critically-ill (see Appendix for definition) patients who are confirmed, probable and suspect influenza cases (See Appendix for definitions) 2. the number of patients with <i>influenza</i> who are receiving <i>invasive mechanical ventilation</i>² 3. the number of patients denied access where it otherwise would have been provided <p>This data will be based upon the following information on the number of patients at each hospital that satisfy the following criteria:</p> <ul style="list-style-type: none"> • When a hospital reaches their ICU Surge Capacity threshold of 115%, the hospital will notify the LHIN Critical Care Lead. • The Critical Care Lead will notify the LHIN CEO. • The LHIN Critical Care lead will call a teleconference - facilitated by CritiCall- with hospitals with Level 3 ICU capacity in order to facilitate communication and rollout of a moderate surge plan as appropriate.

² Information regarding total surge occupancy will be available through the Critical Care Secretariat

Toronto Central Local Health Integration Network (LHIN) Critical Care Surge Capacity Management Plan

2. Human Resources

Issue:	<ul style="list-style-type: none"> • Credentialing of human resources.
Planning Assumption:	<ul style="list-style-type: none"> • Acute care human resources (i.e., physicians, nurses, perfusionists, respiratory therapists) working within LHIN hospitals or critical care networks should be sufficient to meet the surge and should be supported to travel to the area of need. Other hospital staff, with additional acute and critical care training, should be deployed to help address moderate surge. Hospitals will modify internal staffing patterns, as appropriate.
Recommendation:	<ul style="list-style-type: none"> • As part of Minor surge planning hospitals have or will develop plans for mobilizing staff from other areas within a hospital to be available to work in Critical Care areas as necessary. Although it would be ideal to have plans to deploy any type of healthcare worker across different institutions we do not believe it is feasible for this fall (2009) and as such the Task Force recommends hospitals work together with the ministry to cross-credential physicians across the TC-LHIN in the event of a moderate surge. • The Task Force recommends that through the Toronto Academic Health Sciences Network (TAHSN), hospitals collaboratively develop a process for implementing emergency, temporary privileges for physicians.

3. Equipment

Issue:	<ul style="list-style-type: none"> • Access to Equipment and Supplies.
Planning Assumption:	<ul style="list-style-type: none"> • Each hospital will stockpile specialized equipment and medications to meet minor surges, and have a structured process for access and maintenance. • At a provincial level, ventilators are being “stockpiled” for possible surge. • The Critical Care Secretariat is developing a plan for how hospitals/LHINs obtain access to provincial stockpile and it is recommended that this plan be shared in a timely fashion. • Hospitals within the LHIN agree on the importance of sharing resources in the event of a surge. This sharing will take precedence over routine scheduled procedures that require Critical Care resources in the event of a surge. • Each hospital will plan for and manage prioritization of scheduled cases.
Recommendation:	<ul style="list-style-type: none"> • In the event a hospital is down to its last available ventilator or has no additional unconventional support (i.e. high frequency ventilation, NO) then a call to the LHIN Critical Care lead (facilitated by CritiCall) will be made in order to alert them. • The LHIN Critical Care Lead will then determine if equipment can be made available to the hospital in need by other institutions within the LHIN. Hospitals within the LHIN should be prepared to provide mechanical ventilators to the point they are limited to 2 high functioning units or 1 unconventional modes and scheduled cases are on hold. Equipment will be repatriated to the lending institution as a priority. • If no equipment is available within the LHIN the LHIN Critical Care Lead will (via the Critical Care Secretariat) ensure the needy institution is given access to the provincial ventilator supply. • The Task Force recommends that the following equipment sharing partnerships be explored as a first response: <ul style="list-style-type: none"> ○ St. Joseph’s Health Centre and St. Michael’s Hospital; ○ Sunnybrook Health Sciences Centre and Toronto East General Hospital; and

	<ul style="list-style-type: none"> ○ Mount Sinai Hospital and University Health Network. <p>Secondary response will be to look across the LHIN for equipment sharing. Tertiary response will be to engage the Critical Care Secretariat to enable access to provincial supply of ventilators.</p> <p>Hospital Respiratory Therapists should be engaged in cross-hospital discussion to enable equipment sharing as required and assist in planning for hospital partnerships.</p> <ul style="list-style-type: none"> ● The Task Force recommends planning for the addition of 3 new ECMO machines to augment current supply.
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4. Physical Plant

Issue:	<ul style="list-style-type: none"> ● Maximizing physical space to meet critical and acute needs.
Planning Assumption:	<ul style="list-style-type: none"> ● Although this is not likely to be the case for all surges, for the sake of the expected H1N1 related surge we will work on the assumption that there is necessary space within the LHIN to provide care.
Recommendation:	<ul style="list-style-type: none"> ● None at this point. ● Task Force will work on unexpected expansion as need arises via the teleconference.

5. Inter-hospital Processes to Address Moderate Surges

Issue:	<ul style="list-style-type: none"> ● Cancellation of scheduled procedures that require critical care resources.
Planning Assumption:	<ul style="list-style-type: none"> ● Critical care units will not ask for assistance and the LHIN will not move to a moderate surge level unless all scheduled cases (Priority B and C – see OHPIP priority levels) requiring Critical Care are cancelled. <p><i>OHPIP (Ontario Health Plan for an Influenza Pandemic) Priority Level Descriptions</i></p> <ul style="list-style-type: none"> ● <u>Priority A - Emergent cases:</u> Patients who are deemed critical, whose condition is immediately life threatening. Their immediate need is greatest and they must be treated ● <u>Priority B - Urgent cases:</u> Patients who are deemed urgent and who need service within 14 days. It may be possible to defer these services for a few days, but not for the length of a pandemic wave. Physicians will determine that these patients are not put at undue risk. If their situation changes they will be moved to priority A. ● <u>Priority C - Elective cases:</u> Patients whose condition is deemed non-life threatening and for whom services can be deferred until the end of a pandemic wave (i.e., six to eight weeks).
Recommendation:	<ul style="list-style-type: none"> ● Cancellation of scheduled procedures that require critical care resources is an internal decision; expected to be implemented when a hospital reaches 100 to 115% occupancy. Once cancelled, scheduled cases will not be restarted until the occupancy rate has dipped below 100-115% occupancy (internal decision) and borrowed equipment has been returned. ● City-wide scheduled cases requiring Critical care may need to be cancelled when the situation necessitates. The group recommends not putting an exact value on this (e.g. 2-3 hospitals at maximum critical care capacity) but rather recommends that this decision be made during regular group communications during an event. ● Task Force members will work with provincial partners (i.e., Cardiac Care Network, Child Health Network) to address issues of a provincial nature, as appropriate.

Toronto Central Local Health Integration Network (LHIN) Critical Care Surge Capacity Management Plan

Issue:	<ul style="list-style-type: none"> • Service distribution across the LHIN.
Planning Assumption:	<ul style="list-style-type: none"> • A high degree of service/program consolidation already exists within the LHIN. (See <i>Appendix B for current program distribution in the LHIN</i>) • Rationing and redistributing scarce critical care resources will be employed only after surge capacity has been exceeded and all attempts to use outside resources have been made.
Recommendation:	<ul style="list-style-type: none"> • It is possible the service redistribution may need to occur during a Critical Care surge for services requiring Critical care access (i.e. Cardiac surgery, Vascular, Thoracics, Neurosurgery, Trauma, etc.). However the Task Force feels this should be handled on an “as needed” basis during regular communication sessions. • For Critically ill pregnant patients and decisions about the best place to manage them the decision is based on factors related to the health of the mother and unborn child. In these situations the TC-LHIN based intensivist will be connected with the obstetrician on call at Mount Sinai Hospital or Women’s College Hospital through CritiCall. The on-call obstetrician in collaboration with the intensivist will make recommendations on the best location for the mother’s care following a protocol developed and vetted through the Child Health Network. This decision will take into account factors such as age of the fetus, the mother’s health and NICU resources.

Issue:	Scare Resource Allocation
Planning Assumption:	<ul style="list-style-type: none"> • Should they be required, decisions surrounding patient triage will be made collectively amongst the Task Force.
Recommendation:	<ul style="list-style-type: none"> • In the event that TC LHIN hospitals get into a situation where patient triage is required, the Task Force will collectively declare a triage situation and will alert the TAHSN chair, LHIN CEO and the MOHLTC (via the Critical Care Secretariat). • The expert group will develop and implement an appropriate triage tool incorporating the following principles: <ul style="list-style-type: none"> • The hospital triage officer/team will assess and prioritize all patients for receipt of scarce interventions using objective medical criteria. • Critical care for all patients who need/want it should be a priority. However; some patients may be ineligible for scarce critical care interventions if they have extreme organ failure and/or severe chronic illness with a short life expectancy. • Comfort care and symptom management can be made available at all times to those who need it. • Critical care resources will not be preferentially distributed to any specific population group. • Decisions regarding resource allocation will be well documented, tracked and remain transparent, occur uniformly across all affected regions, and subject to rigorous quality assurance.

Issue:	<ul style="list-style-type: none"> • Inter-hospital transportation.
Planning Assumption:	<ul style="list-style-type: none"> • Ornge will be included in all communications during moderate surges.
Recommendation:	<ul style="list-style-type: none"> • Ornge to work with the MOH, LHIN leadership and other Critical care transport providers to advise on all aspects of decisions during a surge that involves increased patient movement.

Toronto Central Local Health Integration Network (LHIN) Critical Care Surge Capacity Management Plan

APPENDIX: Inter-Hospital Critical Care Surge Capacity Planning Task Force Membership

Sunnybrook Health Sciences Centre	Dr. Robert Fowler Angie Jeffs, Patient Care Manager, Critical Care Unit
St. Joseph's Health Centre	Dr. Robert Cirone, Medical Director, ICU Kathy Millar, Vice President Quality, Safety & Performance Excellence
University Health Network	Dr. Niall Ferguson Dr. Neil Lazar Dr. Jeff Singh Dr. Susy Hota, Infectious Diseases, IPAC Kathy Sabo, Vice President and Toronto Western Hospital Lead Marnie Escaf, Vice President UHN, TGH Site Lead
Mount Sinai Hospital	Dr. Stephen Lapinsky Dr. Mike Christian Dr. Niall Ferguson, Interim Director - Critical Care Medicine Jocelyn Bennett, Senior Director, Acute & Chronic Medicine and Nursing
St. Michael's Hospital	Dr. Andrew Baker Erone Newman, Program Director, Heart and Vascular Program
Toronto East General Hospital	Dr. Carmine Simone, Director, Critical Care Marilyn Lee, Manager, Intensive Care Unit/Recovery Room
Toronto Central LHIN	Dr. Tom Stewart, Critical Care Lead Rose Cook, Senior Consultant, Program Development
Critical Care Secretariat	Julie Trpkovski, Manager, Critical Care Secretariat Vanessa Blount, Project Coordinator, Critical Care Secretariat
CritiCall	Kris Bailey, Executive Director Patrick Legault, Account Manager LHIN 7
Ornge	Tom Lepine, Chief Operating Officer Dr. Bruce Sawadsky, Chief of Staff

APPENDIX 2: Definitions

Definition of Critically Ill Patient*

- Admitted to an Adult intensive care unit (ICU); or
- Receiving invasive or non-invasive mechanical ventilation; or
- Receiving continuous intravenous vasoactive medications; or
- Receiving High Inspired Oxygen Concentration ($\geq 60\%$)
- Not meeting above criteria but anticipated to clinically deteriorate within the next 24 hours (based on progressive respiratory disease on chest x-ray or volatile respiratory status)

* For instance, by determination from daily communication with ICU and Critical Care Rapid Response physician and nurse leads.

Definitions for Confirmed, Probable and Possible Influenza Infection (including H1N1)

Confirmed

Person with Influenza-like illness¹ **AND**

Laboratory confirmation of influenza A (pH1N1 or non-pH1N1) or B virus in respiratory specimen (NP swab, sputum, BAL or throat swab) by one or more of the following tests:

- RT-PCR
- Viral culture with or without strain typing
- Four-fold rise in swine influenza A (pH1N1) virus specific antibodies by serology testing (if serology testing becomes available)

NB: EIA/ELISA or DFA result may be positive or negative

Probable

Person with Influenza-like illness¹ **AND**

Positive rapid test (EIA/ELISA/DFA) result for influenza A or B on respiratory specimen (NP swab, sputum, BAL or throat swab), where viral culture or RT-PCR is **not performed**.

NB: If viral culture or RT-PCR is performed with the rapid test, discordant results should be interpreted as follows:

- *positive rapid test, negative culture/RT-PCR: false positive rapid test. There is no influenza infection*
- *negative rapid test, positive culture/RT-PCR: confirmed influenza infection*

Suspect

A suspected case defined as a person who does not meet the confirmed or probable case definition, and is not influenza test negative, and:

- has ILI and resides in a city with confirmed cases, OR
- has ILI and has traveled to a city, province or country where there are confirmed or probable cases; OR
- has ILI and has an epidemiologic link in the past 7 days to a confirmed case or probable case

NB: where possible, in this circumstance, acute and convalescent serology will be obtained; if acute and convalescent serology are obtained, the case classification will be changed to confirmed if serology indicates a 4 fold increase in titre, and to not influenza if seroconversion does not occur.

Toronto Central Local Health Integration Network (LHIN) Critical Care Surge Capacity Management Plan

APPENDIX: Current Pre-surge Critical Care Capacity

Critical Care Capacity (as of August 25, 2009)							
	SBHC	UHN – TWH	UHN – TGH	SMH	MSH	SJHC	TEGH
Total # of Level 3 (active) ICU beds	43	22	53	66	16	15	15
# of Level 3 ICU @ 115% surge capacity	49	25	61	76	18	17	17
Unconventional Ventilation Ability (HFV, NO, Extra-corporeal)	HFOV, NO,	HFOV, HFJV, NO	HFOV, HFJV, Extra-corporeal, iNO and/or iFlolan	HFOV, NO, Extra-corporeal	HFOV, NO	HFOV, NO	
High Volume Programs Requiring Critical care Access -	<ul style="list-style-type: none"> • Trauma • Cardiac • Neurosurgery • Vascular 	<ul style="list-style-type: none"> • Neuroscience 	<ul style="list-style-type: none"> • Transplant • Cardiac • Vascular • Thoracics 	<ul style="list-style-type: none"> • Obstetrics • Trauma • Neurosurgery • Cardiac • Vascular 	<ul style="list-style-type: none"> • Oncology • Obstetrics 	<ul style="list-style-type: none"> • Thoracic • Obstetrics 	<ul style="list-style-type: none"> • Weaning Unit • Thoracics