CCSO Critical Care Services Ontario

ONTARIO'S CRITICAL CARE VENTILATOR STOCKPILE

Guidance Document: November, 2022 Refresh

Version Control

Ontario's Ventilator Stockpile Guidance Document	
Version 1.0	Created 2009
Version 2.0	Updated September 2013
Version 2.1	Updated September 2019
Version 3.0	Updated February 2021 (adjustments to some context and contact information throughout the document, addition of neonatal population, and revision of the reporting requirements of host sites).
Version 4.0	Updated November 2022 (adjustments to some context and contact information throughout document
To be read in conjunction with	Ontario's Surge Capacity Management Plan: • Minor Surge Toolkit • Moderate Surge Tool Kit
Approved by	MOH: Health System Emergency Management Branch Provincial Lead for Critical Care Executive Director, Critical Care Services Ontario (CCSO) CritiCall Ontario
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Public Information / Information for Hospital and System Stakeholders

About Critical Care Services Ontario

Established in 2005, Critical Care Services Ontario (CCSO) led the implementation of Ontario's first Critical Care Strategy and now centrally coordinates and develops integrated system solutions for critical care (Adult, Paediatric and Neonatal) and specialty programs aligned with critical care (Neurosurgery, Trauma and Burns, and the Life or Limb Policy). CCSO's work is the result of an ongoing collaboration between critical care providers, hospital administrators, partners from the Ministry of Health, Ontario Health, and other health system leaders.

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https://ccso.ca/

youtube.com/CriticalCareServicesOntario

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1. Introduction

Key Stakeholders

Critical Care Services Ontario (CCSO)

Critical Care Services Ontario (CCSO) is committed to the improvement of critical care services across Ontario. CCSO's mandate is to work closely with health service providers to implement programs that improve access, quality and integration of critical care services to meet the needs of critically ill patients. CCSO oversees the release and distribution of the ventilators from the provincial stockpile and assists in coordinating information related to repair needs.

CritiCall Ontario

CritiCall Ontario is a 24-hour call centre used by physicians to facilitate medical consultations and referrals for emergent, urgent and critically ill patients. In addition, CritiCall Ontario houses and provides technical support for the Critical Care Information System (CCIS), the province's comprehensive database overseen by CCSO and providing close to real time data on critical care admissions, discharges and resource utilization. CritiCall Ontario acts as the first point of contact for hospitals requiring access to the provincial ventilator stockpile following the procedure documented in this ventilator guidance document.

Ministry of Health (MOH), Health System Emergency Management Branch (HSEMB)

HSEMB is responsible for maintaining the Ministry's Emergency Management Program, which includes working with internal and external stakeholders to strengthen Ministry and health sector preparedness and response capability. They coordinate Ministry and health sector responses to emergencies through the Healthcare Provider Hotline and the Ministry's Emergency Operations Centre (MEOC). The Ministry owns the critical care ventilator stockpile, oversees the relationship with the ventilator manufacturers and supports CCSO in the management of the stockpile.

Host Hospital

A Host Hospital is a hospital that houses ventilators belonging to Ontario's ventilator stockpile within a geographic area. There are currently 26 Host Hospitals strategically located throughout the province.

Host Hospital Site Lead

A host hospital site lead is the key point of contact at the host hospital for the tracking and management of the provincial stockpile ventilators housed at the hospital corporation. The host hospital site lead is accountable for regular reporting on the status of the ventilators in the stockpile through submissions to CCSO.

Requesting Hospital

A Requesting Hospital is any Ontario hospital needing additional ventilators because of increased demand and requires access to the provincial ventilator stockpile. Requesting Hospitals liaise with CritiCall Ontario, Critical Care Clinical Leads and Host Hospitals to access the stockpile.

2. Background

Ontario's battle with Severe Acute Respiratory Syndrome (SARS) revealed significant opportunities for improvement in Ontario's health care system, including the ability to better address potential shortfalls in critical care resources during a sudden spike in demand. Following SARS, the Ministry of Health (MOH) asked a group of system leaders, including hospital administrators and health service providers, to conduct a comprehensive review of Ontario's critical care services. This process culminated in the release of the Ontario Critical Care Steering Committee's Final Report in March 2005. This seminal report set out a blueprint for the transformation of Ontario's critical care services.

Acting on this report, in January 2006, the MOH announced Ontario's Critical Care Strategy to improve access, quality and system integration. As a further evolution of this strategy, CCSO has been supporting the implementation of a provincial program that provides Ontario hospitals with a standardized practice for surge capacity planning and management.

3. Ontario's Surge Capacity Management Plan

The purpose of Ontario's Surge Capacity Management Plan (comprised of the Minor Surge Toolkit and the Moderate Surge Response Guide) is to improve access to critical care services by giving hospitals information on strategies and standardized processes for surge capacity planning. This collaborative and consistent approach ensures maximum use of resources within hospitals and across the OH Regions. In addition, a standardized approach allows for seamless coordination of patient care during both regular operations and during times of excess demands on the critical care system.

Ontario's Surge Capacity Management Plan defines three types of surge events for critical care: Minor Surge (requiring a hospital-level response), Moderate Surge (requiring an OH sub-regional level or multi OH sub-regional level response) and Major Surge (requiring a provincial-level response). A surge by definition is any time where demand exceeds capacity. Each level of surge uses the same principles, but has increasing levels of complexity as demands increase over larger geographic areas and patient populations.

Ontario's Surge Capacity Management Plan describes common principles and the strategic framework that helps improve partnerships and provide access to services for critically ill patients. In utilizing industrial principles of system analysis and flow mapping methodology, the plan quickly identifies process improvement needs of each organization, and throughout the system. Ontario's Surge Management Plan was rolled out across all 14 OH sub-regions in 2010, and has been revised as the system has expanded capacity and improved responses during periods of minor and moderate surge.

In 2020, the Provincial Ventilator Stockpile was expanded in response to the SARS-CoV 2 (COVID-19) pandemic. New models of ventilators were added to the provincial stockpile that are able to provide support to all patient populations including neonates. In addition to the new ventilators, the stockpile was expanded to include High-Flow Nasal Cannula Systems (HFNC system), specifically the Airvo™ 2 System.

4. Role of Ontario's Provincial Ventilator Stockpile

When a hospital experiences a surge in demand for critical care capacity, and the number of patients requiring critical care services increases, the hospital's Surge Capacity Management Plan is put into action. These plans are centered on common elements and principles, which are aimed at ensuring all hospitals have a standardized surge response process. Surge response plans allow hospitals to escalate through a seamless, coordinated response from one level of surge to the next.

A subset of the Ontario Surge Capacity Management Plan is the provincial ventilator stockpile, which is intended to help hospitals manage unexpected increases in demand for critical care ventilation resources, ensuring that all patients receive appropriate treatment in a timely manner.

All hospitals must take the proper steps to ensure their internal critical care resources have the functional ability to sustain their own critical care units for four weeks, and their own current supply of ventilators is maintained in proper working order. In circumstances when hospitals have physical bed capacity, but insufficient ventilators or HFNC system to support critical care patients requiring mechanical ventilation or other additional respiratory support, hospitals can access ventilators for temporary periods of time from the province's stockpile. This Ontario's Ventilator Stockpile Guidance Document outlines the process and associated procedures for accessing the provincial ventilator stockpile.

Procedure for Requesting a Ventilator &/or a HFNC System from the Provincial Stockpile

Requesting Hospital Decision to Notify CritiCall Ontario

To ensure all hospitals have equitable access to the provincial stockpile, the access policies and procedures outlined in this guidance document have been aligned with similar processes that exist for the Ontario Surge Capacity Management Plan, where the management of events flows from a hospital (Minor Surge) to the sub-region (Moderate Surge) and finally to the province (Major Surge), as referenced in the Ontario Surge Capacity Management Plan.

Before a Requesting Hospital submits their request for additional ventilator(s) or HFNC system from the provincial stockpile, the hospital is required to have engaged in the following:

- The Requesting Hospital will have actively participated in any pre-determined equipment (ventilator/HFNC) sharing plans that may be in place within its hospital corporation, its sub region and/or among other partnering hospitals.
- The Requesting Hospital will have activated the hospital's Minor Surge plan and explored all reasonable internal options on its premises or owned by the hospital/corporation.
- Once all internal resources have been considered and, if the need for additional ventilators or HFNC systems still exists, the Requesting Senior VP or delegate should contact CritiCall Ontario at **1-800-668-4357** and follow the ventilator request process outlined below. **Appendix A** provides a summary of the process for accessing ventilators/HFNC system, and **Appendix B** provides a summary of responsibilities of CCSO, MOH, CritiCall Ontario and Host and Requesting Hospitals.

CritiCall Ontario Facilitates Teleconference –Requesting Hospital and Host Hospital

Once notified (by Requesting Hospital Senior VP or delegate), CritiCall Ontario will facilitate a teleconference between and the Requesting Hospital's Senior VP or delegate.

CritiCall Ontario will connect the Requesting Hospital with the Host Hospital for its geographic area to discuss details around the type and number of ventilators and/or HFNC system (Airvo™ 2) to be released, as well as discussing transportation arrangements.

The switchboard operator at the Host Hospital will connect the CritiCall Ontario Call Agent with the Host Hospital Site Lead for the ventilator stockpile. **Figure 1** below is an example of an information template that switchboards can use to quickly identify the Site Lead for the ventilator stockpile.

In order to facilitate this communication process, Host Hospitals should ensure that switchboards have up-to-date contact information for their Site Leads.

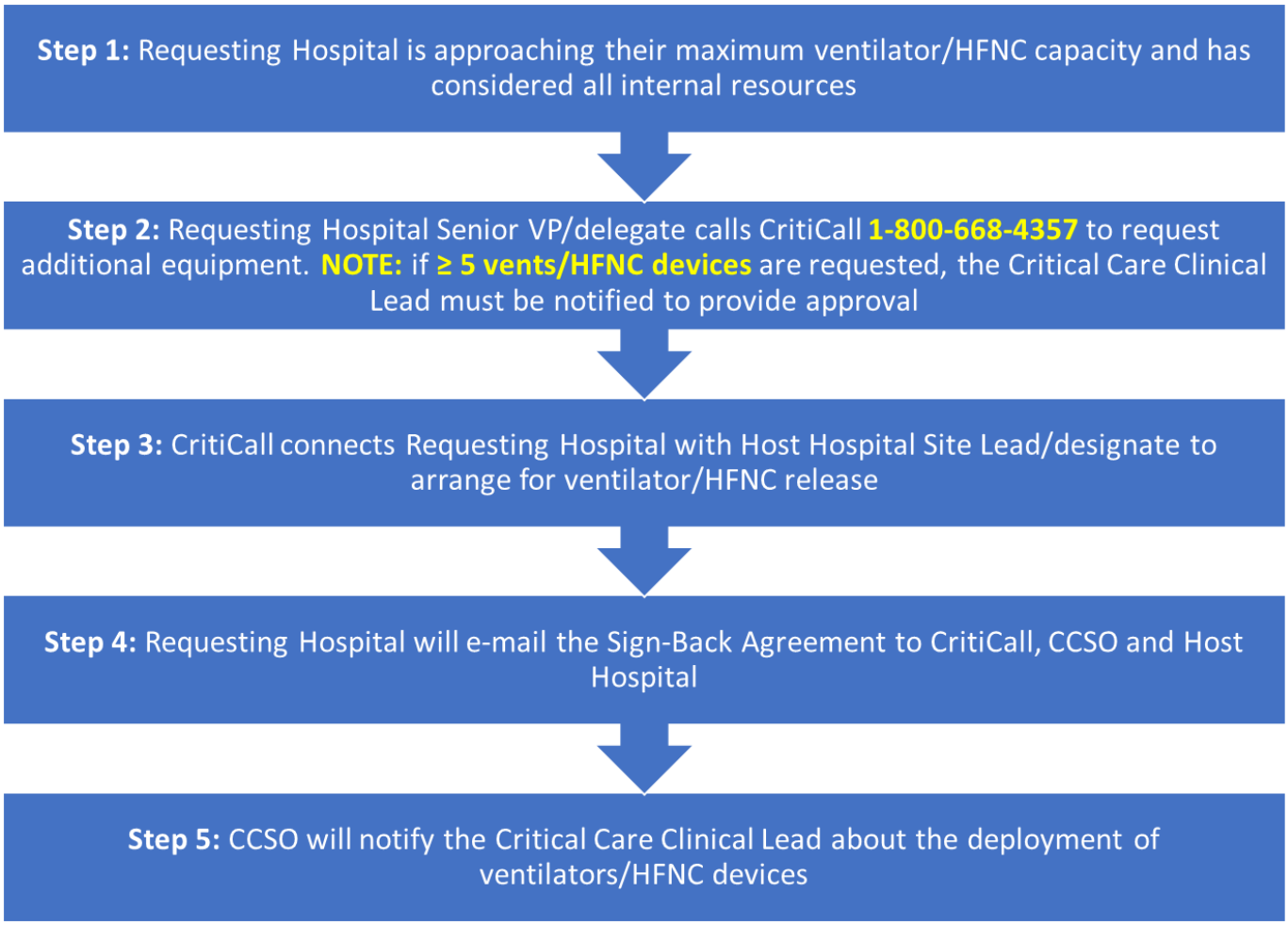
Figure 1: Hospital Switchboard Notification Tool

Ventilator/HFNC system Allocation Sign-Back Agreement for Requesting Hospitals

Once the request for a provincial ventilator has been approved, CritiCall Ontario will email the Ventilator Allocation Sign-Back Agreement for Requesting Hospitals (Ventilator Allocation Sign Back Nov 2022 - Final.pdf) to the Requesting Hospital. The Requesting Hospital is then required to complete, sign and email the agreement to CritiCall Ontario and the Host Hospital prior to release of a ventilator from the provincial stockpile.

Both the Host and the Requesting Hospitals are responsible for ensuring that the Ministry Ventilator Usage Criteria and Terms and Conditions are met (attached with the Sign-Back Agreement). Figure 2 summarizes the algorithm that should be used to initiate the ventilator request process.

Figure 2: Provincial Stockpile Ventilator / HFNC System Request



Key Messages

- As is consistent with the Minor Surge plan, all Requesting Hospitals are expected to first utilize their internal and corporation-level resources prior to escalating to a Moderate Surge (requiring sub regional level response).
- Staff at the Requesting Hospital must ensure that their CEO/senior delegate is made aware of the need for additional ventilator(s) &/or HFNC system. The Requesting Hospital CEO/senior delegate will notify CritiCall Ontario.
- Host Hospitals must ensure 24/7 delegate coverage is available to respond to ventilator requests when the Site Lead is not available. The notification tool should be distributed to switchboard operators and updated as required to ensure a seamless call transfer.
- **NOTE:** Host Hospitals are expected to follow the same process to access the Provincial Ventilator Stockpile for internal rotational use of ventilators &/or HFNC Systems. This is to ensure that an up-to-date ventilator inventory is maintained and critical care resources are sustained across the province.

5. Procedure for Releasing a Ventilator &/or a HFNC system from the Provincial Stockpile

Ventilator Testing at Host Hospital

The Host Hospital is responsible for conducting and documenting the results of the following tests prior to using the ventilators in clinical settings as per the asset agreements:

1. Standard Biomedical Check (performed by Biomedical Engineering Department or appropriate equivalent)
2. Electrical Safety Test (performed by Biomedical Engineering Department or appropriate equivalent),

and

3. Acceptance/Functionality Test (performed by Respiratory Therapy Department or appropriate equivalent).

The Host Hospital Checklist for Sending/Receiving Ventilators (Host Hospital Checklist for Sending and Receiving Provincial Ventilators - 2021 - Final.pdf) was developed to ensure that all associated equipment (including consumables) required to safely operate the ventilator(s) is accounted for, and to document the physical condition of the ventilator(s) prior to release.

Note: The Host Hospital must complete the checklist prior to shipping the ventilator(s) to the Requesting Hospital.

Transportation of Ventilator/HFNC system from Host to Requesting Hospital

Many hospitals have pre-determined processes and arrangements with transport companies for safe transportation of ventilators between hospitals. Hospitals should follow their standard operating procedures

for safely transporting a ventilator. Hospitals should ensure that staff are aware of standard operations procedures for transport and have the contact details of transport companies readily available. The host hospitals may also be able to provide guidance on a process for transport of stockpile ventilators. It is the Requesting Hospital's responsibility to arrange for transportation to and from the Host Hospital and to cover any transportation cost. It is important for Requesting Hospitals to use transportation methods which provide appropriate insurance for damages during transportation. The insurance should cover the dollar value and not the weight of the ventilator.

Ventilator Testing at Requesting Hospital

Once the ventilator arrives at the Requesting Hospital, the Requesting Hospital is responsible for completing the Requesting Hospital Sending/Receiving Checklist to ensure consistent recording on the condition of the ventilator(s), that all required equipment was received with the ventilator(s), and that no damage occurred during transport.

The Requesting Hospital is also required to complete the Requesting Hospital Checklist for Sending/Receiving Ventilators (Requesting Hospital Checklist for Sending and Receiving Provincial Ventilators - 2021 - Final.pdf) upon receipt of the ventilator(s). Any malfunction or damage to the ventilator(s) noted while completing the checklist at the Requesting Hospital must be reported immediately to the Host Hospital Site Lead to begin discussion on how best to coordinate timely repair of the ventilator(s).

Key Messages

- The safety checklists should be retained by the host and requesting hospitals respectively for record keeping purposes. CCSO may request these checklists at any time.
- If 5 or more ventilators or HFNC Systems are requested, the Critical Care Clinical Lead must be notified to provide approval
- CritiCall Ontario will e-mail the Critical Care Clinical Lead for the Host Site about the transfer of ventilators/HFNC Systems
- It is the Requesting Hospital's responsibility to arrange for safe transportation of ventilators. Requesting Hospitals that choose to use transport methods without sufficient coverage (e.g. local taxi providers) will be liable for damage occurred during transport.

Both the Host Hospital and Requesting Hospital should retain copies of these completed checklists for their records, as these can be requested by CCSO or MOH at any time

6. Procedure for Returning a Ventilator/HFNC System to the Provincial Stockpile

Requesting Hospital Responsibilities

When the surge in demand for critical care capacity is decreasing and ventilator(s) accessed from the Provincial stockpile are no longer needed, or at the request of the Critical Care Clinical Lead or CCSO, the ventilator(s) must be returned to the Host Hospital in a timely manner.

Before the ventilator(s) is/are returned to the Host Hospital, the Requesting Hospital should complete the Requesting Hospital Sending/Receiving Checklist to ensure that there was no damage to the ventilator(s) during the time it was in use at their hospital. The Requesting Hospital is required to retain completed checklists for record keeping purposes as these can be requested by CCSO or MOH at any time.

Additionally, the ventilator(s) should be returned to the Host Hospital in a manner that allows for their immediate use by the next hospital. This includes ensuring that the ventilator(s) is returned with cleaned re-usable equipment, with all components in working order, including:

1. Heated humidifier
2. Temperature probe
3. Humidifier cable
4. Reusable expiratory filter

Disposable equipment consumables must also be returned in sufficient quantities allowing for immediate use, including:

1. Circuits
2. Humidifier pots
3. Disposable expiratory filters

Ventilator Testing at Host Hospital

Once returned, the Host Hospital is responsible for completing the Host Hospital Sending/Receiving Checklist prior to returning the ventilator(s) to storage to ensure that all equipment was returned, and that the ventilator(s) did not sustain any damages/malfunctions while in the use by the Requesting Hospital or during transport. Damages detected must be investigated by the Host Hospital and appropriate repairs conducted in a timely manner. The hospital is responsible for repairs from damages that occurred during transport or as a result of negligence while the ventilator is under the care of the hospital.

The Host Hospital is required to retain completed checklists for record keeping purposes as these can be requested by CCSO or MOH at any time.

Key Messages

- Requesting Hospital must complete the Requesting Hospital Sending/Receiving Checklist prior to returning the ventilator(s)/HFNC System(s).
- Requesting Hospital must return ventilator/HFNC and associated items in a condition such that the ventilators can be used immediately upon their return.
- Host Hospital must also complete the Host Hospital Sending/Receiving Checklist prior to returning the ventilator/HFNC system back to storage, to ensure it is in proper working condition.

7. Ventilator Stockpile Composition and Distribution

Ventilators in the Provincial Stockpile

In August 2009, the MOH began work to augment the existing ventilator resources in Ontario. This work started with distribution of a survey to all Ontario hospitals to identify the type and number of available ventilators in each hospital. This process, along with data from the Critical Care Information System (CCIS) and consultation with field experts, facilitated the development of a comprehensive ventilator stockpile strategy for all Ontario hospitals.

Beginning in March 2020, with the first wave of the COVID-19 pandemic, purchase orders were placed for an additional 603 ventilators, which provided a significant increase in capacity and a buffer to the current stockpile. Some ventilators were available for immediate delivery and added to the inventory while others were phased-in as they became available. CCSO will communicate with sites regarding the process for releasing ventilators from the current ventilator stockpile as needed.

There are nine models of ventilators included in the provincial stockpile for Ontario. A listing of these nine ventilator models and appropriateness for different patient populations is found in **Table 2.**

Table 1- Overview of Ventilators in the Provincial Stockpile

Ventilator	Vendor	Special Considerations
Hamilton T1	BOMImed	Can be used to ventilate all patient populations including neonates with a neonatal circuit
V500	Dräger	
Carescape R860	GE	

Ventilator	Vendor	Special Considerations
Servo-U (Adult)	Getinge	
Servo-N (Neonatal)	Getinge	Specific ventilator for neonatal population. Not to be used for paediatric or adult patients
Puritan Bennett (PB) B840	Medtronic	
AVEA	Trudell	Capable for use in some neonates (patients weighing between 400g and 5kg)
BellaVista 1000	Trudell	

Allocation of Ventilators and HFNC System at Host Hospitals

Since the inception of the stockpile, some ventilators have been decommissioned due to damage and with new ventilators purchased due to COVID-19 have been added Ventilators are stored in 25 Host Hospitals across all fourteen sub regions in the province. In 2021, the stockpile was expanded to include high flow nasal cannula devices that are also used to provide additional respiratory support to critical care patients.

Each Host Hospital has a signed agreement with MOH outlining their accountabilities with respect to the provincial stockpile. The ventilators and HFNC system are stored within the Host Hospitals for distribution to hospitals when a request for ventilators/HFNC system has been received through CritiCall.

8. Host Hospital Accountabilities, Maintenance, and Tracking

Host Hospital Responsibilities

Host hospitals have the following responsibilities:

- The Host Hospital will have identified a Site Lead to act as the key administrator for the ventilator stockpile. The Site Lead is responsible for ensuring proper procedure is followed when a ventilator is released and, will also be the point of contact for all stockpile ventilator requests and any information requests from CCSO as and when required.
- The Host Hospital will ensure the Site Lead or delegate can be contacted 24 hours-a-day, 7 days-a-week, 365 days-a-year.
- The Site Lead will ensure that preventative maintenance checks on stockpile ventilators are conducted every six months, and/or as required under the terms and conditions of the equipment operating manual.
- The Host Hospital will ensure there is staff scheduled on every shift that have the ability to test the provincial ventilator(s) to ensure they are fully functional prior to sending to a Requesting Hospital
- The Host Hospital is subject to the accountabilities for the use, storage and maintenance of the ventilators as outlined in the Ministry Ventilator Usage Criteria and Terms accountability agreement.

When needed, CCSO or MOH may access the ventilators from the provincial stockpile directly. The Host Hospital may not lend, pledge, sell or otherwise dispose of the provincial ventilators except as permitted by CCSO and MOH.

Ventilator Tracking and Storage

Ongoing Tracking

It is imperative that each of the provincial ventilators and HFNC system can be located at all times. In order to assist with the tracking of the stockpile, each ventilator/HFNC system has a unique asset tag for identification. All hospitals must ensure that the asset tag is not removed or defaced at any time. If the asset tag becomes detached or modified in any way, the hospital must notify CCSO immediately by contacting vents@ccso.ca

Host Hospitals must use the computerized tracking log provided to them during initial deployment of ventilators. Each tracking template was pre-populated with the ventilator asset tags that are unique to each Host Hospital. **Figure 3** shows a sample of the *Ventilator Stockpile Tracking List* displaying information regarding the location of the ventilators. This tool allows Host Hospitals to assess the location and accessibility of each ventilator at any given time.

In the same file, an individual tracking worksheet was included, shown as a sample in **Figure 4.** When the status or action of a specific ventilator changes, the Site Lead is responsible for updating the tracking worksheet. Once this information has been updated on the ventilator-tracking worksheet the location change will be immediately reflected on the Inventory Summary Worksheet. Host hospitals will have received an electronic version of the tracking log file that is pre-populated with the asset tags for their sub-region.

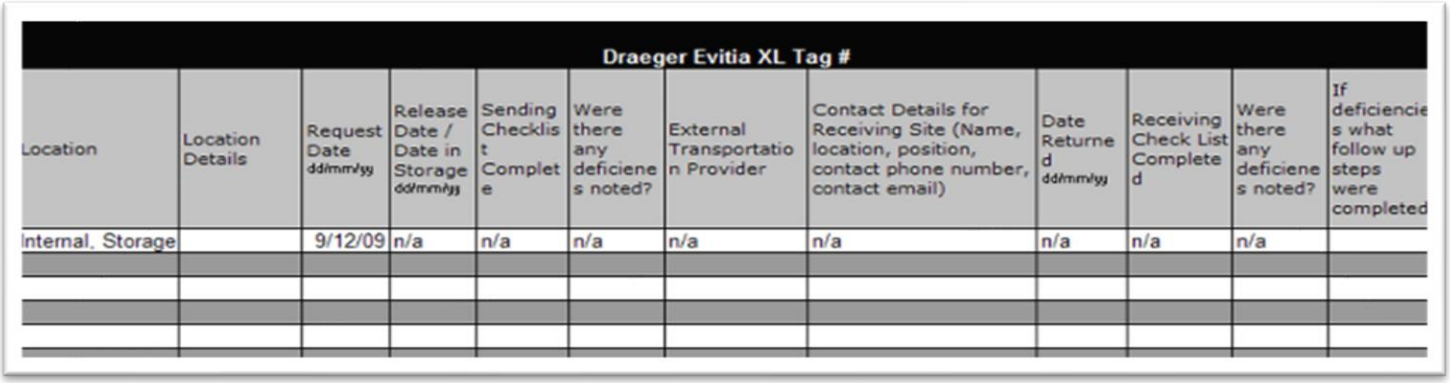
Figure 3: Ventilator Stockpile Tracking List – Inventory Summary

Site Lead: <Name, contact number>
Site Alternate: <Name, contact>

<Host Hospital Name> VENTILATOR STOCKPILE TRACKING LIST

Manufacturer and Model	Asset Tag Number	Location: Storage, Internal Use, External
Drager Evita XL	Tag 1	Internal, Storage
Covidien Puritan Bennett 840	Tag 2	Internal, in use
Cardinal AVEA	Tag 3	External

Figure 4: Ventilator Tracking Worksheet



Draeger Evitia XL Tag #											
Location	Location Details	Request Date dd/mm/yy	Release Date / Date in Storage dd/mm/yy	Sending Checklist Complete	Were there any deficiencies noted?	External Transportation Provider	Contact Details for Receiving Site (Name, location, position, contact phone number, contact email)	Date Returned dd/mm/yy	Receiving Check List Completed	Were there any deficiencies noted?	If deficiencies what follow up steps were completed
Internal, Storage		9/12/09	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	

Quarterly Ventilator Tracking Form Submissions

Accurate tracking of the ventilators/HFNC system is crucial as it ensures that the availability of the ventilators/HFNC system can be assessed at any time. It also ensures that the ventilators/HFNC system are maintained according to the vendor's maintenance and care schedule.

A revised Quarterly Ventilator Tracking Form (2019) (Form One) has been created for CCSO for completion and submission by Host Hospitals to CCSO at the end of every quarter.

Storage

When not in use, the ventilators/HFNC system must be kept in storage at the Host Hospital. The Requesting Hospitals must return the ventilator(s)/HFNC system immediately after use as the Host Hospital is liable to the MOH for any loss, theft or damage of or to the ventilators/HFNC system that may occur when the ventilators are under the care of the Host Hospital or its employees, agents and subcontractors.

Maintenance, Spare Parts and Damage

Maintenance

The Host Hospital is responsible for maintenance of the ventilators and accompanying equipment in accordance with the vendor's maintenance schedule and equipment operating manual. MOH coordinates preventative maintenance agreements with vendors for ventilators in the stockpile.

Spare Parts

Each ventilator comes equipped with supporting equipment including a heated humidifier, temperature probe and humidifier cable, as well as disposable equipment such as circuits and humidifier pots. Disposable expiratory filters need to be purchased from each vendor by any hospital that requires a ventilator from the stockpile.

The ventilator vendors have their own products and/or recommended products that can be purchased for use with the ventilators. Hospitals may also choose to purchase their preferred types of disposable equipment if it is compatible with the Provincial Ventilator Stockpile models.

Each time a ventilator is used by either the Host Hospital or a Requesting Hospital, the hospital is required to return the ventilators to storage at the Host Hospital with re-usable equipment components cleaned and in working order, including:

- Heated humidifier
- Temperature probe
- Humidifier cable
- Reusable expiratory filter

Disposable equipment consumables including:

- Circuits
- Humidifier pots
- Disposable expiratory filters

Damages

Host Hospitals and Requesting Hospitals shall at all times use reasonable care when handling, storing, and/or transporting ventilators. To assist with monitoring the condition of the ventilators, CCSO requires the use of the sending/receiving checklists, which are to be completed by both the Host and Requesting Hospitals.

In completing the checklists, hospitals will have the ability to easily assess the ventilator to note any damages and to ensure they can be dealt with in an appropriate and timely manner. Any damages detected must immediately be investigated by the Host Hospital and appropriate repairs conducted. The MOH nor CCSO is responsible for repairs from damages that occurred during transport or as a result of negligence while under the care of the hospitals, its employees, agents or subcontractors.

Education and Support

Hospitals should contact the vendors directly for education and support. Contact information for vendors is available in Appendix E. Vendors will be able to link hospitals to available resources and online tools. Please ensure that hospital staff have the knowledge and ability to provide proper patient care using the ventilators that comprise the stockpile.

Key Messages

- Host Hospital(s) must ensure that preventative maintenance checks are conducted in a timely manner and have processes in place to easily identify and access ventilators during a surge event.
- Host Hospitals are responsible for maintaining the computerized tracking log provided during initial deployment of ventilators as per their asset agreements.
- CCSO or MOH may request reports on the status, usage and location of ventilators at any time.
- CCSO has created an updated Ventilator Tracking Form (2019) to monitor utilization and movement of the Provincial Stockpile (see Form Four).
- **Site Leads at Host Hospitals are required to submit the Quarterly Ventilator Tracking Form to CCSO by email: vents@ccso.ca using the submission dates below.**
    - By 31 July for Q1 [April-June]
    - By 31 October for Q2 [July-September]
    - By 31 January for Q3 [October-December]
    - By 30 April for Q4 [January-March]
- Hospitals should contact the vendors directly for education and support.
- Host Hospitals are responsible for maintenance of the ventilators and accompanying equipment in accordance with the vendor's maintenance schedule.
- Damage to ventilator(s) must be reported to CCSO via damage reporting form

9. Provincial Ventilator Stockpile Rotation Plan

Purpose

The purpose of the rotation plan is to expand the utilization of ventilators in the provincial stockpile, housed in Host Hospitals.

Expanding the use of the stockpile through a rotation plan will:

- Improve the life expectancy of the ventilators/HFNC through regular use
- Improve staff competencies on ventilator models, and increase their knowledge for training others in the sub-region
- Give patients and staff the chance to benefit from these ventilators.

Ventilators and HFNC system have longer life expectancy and perform better when they are being used and maintained regularly. To ensure the ventilators/HFNC system are utilized and to extend their life expectancy, a centrally organized rotation plan is being introduced, where 50% of the stockpile in a Host Hospital will be rotated each year, hence getting all the ventilators/HFNC system circulated over a two-year period within a Host Hospital.

A number of rotation options were considered and presented to the Critical Care Clinical Lead Committee. The option of rotating the stockpile over a two-year period was chosen as it enables the entire stockpile to be rotated and it reduces the administrative burden on Host Hospitals, with less frequent release/return points compared to other options presented.

Each Host Hospital is responsible for making the necessary arrangements for rotation to suit individual hospital need i.e. selecting the type of ventilator(s) and the designated ICU for rotation.

Note: Please ensure that the process for putting a ventilator &/or HFNC system into rotation is the same process as requesting a ventilator/HFNC system from the stockpile. CritiCall must be notified so that the database and tracking of ventilators/HFNC system is accurate reflecting the number of devices that are available for potential deployment.

Benefits

Rotating the stockpile will:

- Ensure that unit staff are familiar with functionality of stockpile ventilators/HFNC system on an ongoing basis and develop trouble-shooting skills
- Ensure routine testing, maintenance and repair of ventilators/HFNC system resulting in longer life expectancy of working ventilators
- Give hospitals the opportunity to use this equipment

Process for Rotating the Stockpile Ventilators

Year one (1) of rotation: Host Hospitals should arrange for 50% of the ventilators to be placed in the selected critical care units for rotation starting between July 1 and August 30. Details of ventilators circulated for rotation must be documented and updated in the Revised Quarterly Tracking Form (2019) (Form One).

Year two (2) of rotation: Host Hospitals should replace 50% of the ventilators/HFNC system that were in rotation with the remaining 50% of ventilators in storage starting between July 1 and August 30 of the subsequent year (year two).

All parts of the ventilator must be rotated (e.g. heaters that are mounted on the vent).

A key responsibility during the controlled rotation will be monitoring of ventilators/HFNC by Site Leads. As rotation will occur within the Host Hospitals, Site Lead responsibilities will include:

- Testing the ventilator(s) prior to release from stockpile
- Monitoring vents while in rotation
- Updating the Quarterly Ventilator Tracking Form, adding/updating details of ventilators in rotation
- Being the main point of contact for CCSO
- Ensuring testing of ventilators is conducted upon return to stockpile

The following safety tests are to be completed prior to the ventilator(s) being released for rotation, and upon return to storage; results must be documented by the Host Hospital using the checklist (Form Two):

- Standard Biomedical Check (completed by vendor or hospital Biomedical Engineering Department if accredited to perform)
- Electrical Safety Testing by hospital Biomedical Engineering Department
- Acceptance/Functionality Testing by Respiratory Therapy Department

As per the requirements set out in the Ministry's Ventilator Usage Criteria and Terms, each Host Hospital will remain responsible for maintaining and preparing the remaining ventilators in the stockpile for transfer if they are required by another hospital or their own facility. These accountabilities include but are not limited to the following points:

- Verifying the functionality of all ventilators in storage
- Updating ventilator tracking logs
- Ensuring that the asset tag assigned to the ventilator is not removed or defaced at any time. If the asset tag becomes detached or modified in any way, the hospital must notify CCSO within a 24-hour period
- Keeping records relating to the storage and transfer of the ventilators, and providing accurate reports on the usage and location of the ventilators to CCSO every quarter.

Unauthorized use of the provincial stockpile ventilators outside of the rotation plan will be considered a breach of the stockpile agreement and the Host Hospital or hospital corporation may lose all stockpile privileges.

Key Messages

- The Provincial Stockpile will be circulated for rotation, within the Host Hospital ONLY. This is to ensure ready access to the full stockpile if needed. Host hospitals will notify CritiCall of the vent/HFNC Systems and the associated asset tags that are being put into rotation and when they are returned to the stockpile. This will ensure accurate tracking and reporting of availability to the system.

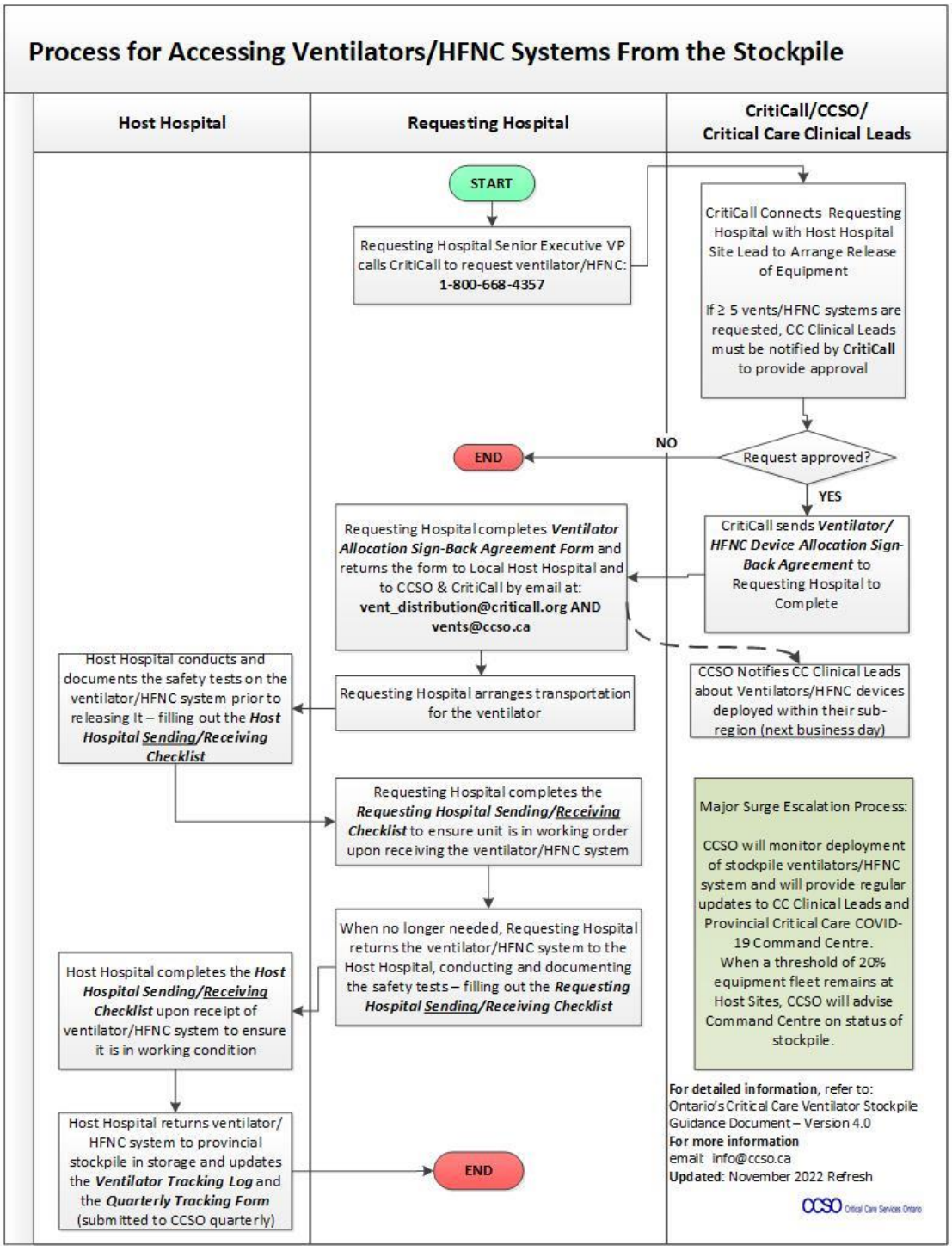
- The stockpile will be rotated over a two-year period. 50% of the stockpile will be rotated in Year 1 starting between 1 July – 31 August. The remaining 50% of the stockpile will be rotated in year 2 starting between 1 July – 31 August of the subsequent year.

- Each Host Hospital will decide which types of ventilators are circulated for rotation within critical care units in their hospital.

- *Revised Quarterly Ventilator Tracking Form* (2019) must be submitted quarterly to CCSO, see Tracking Form submission dates below:
  By 31 July for Q1 [April-June]
  By 31 October for Q2 [July-September]
  By 31 January for Q3 [October-December]
  By 30 April for Q4 [January-March]

Appendix A:

Process for Accessing Ventilators/HFNC Systems from the Stockpile



Appendix B:

Ventilator Stockpile Responsibility Summary

CCSO	MOH (HSEMB)
• Oversee the management and distribution of the Provincial Ventilator Stockpile. • Update policies and processes for access to ventilator(s). • Track movement of ventilators by receiving the following documents: - *Quarterly Ventilator Tracking Form from Host Hospitals,* - *Ventilator Allocation Sign-Back Agreements* from CritiCall. • Notifies Critical Care Clinical Lead about movement of vents/HFNC system if < 5 requested	• Oversee service contracts, warranty extensions and preventative maintenance agreements with vendors. • Work with CCSO to respond to ventilator damage/repair reports that are beyond warranty. • Maintain/update contractual asset agreements with Host Hospitals.
HOST HOSPITAL	**REQUESTING HOSPITAL**
• Responsible for storage, maintenance and tracking inventory of their stockpile. • Ensure Site Lead/delegate is identified and accessible for coordinating release of ventilators. • Complete the necessary safety checks before release and upon return of ventilator(s). • Ensure Preventative Maintenance checks are conducted on time. • Responsible for repair of damages that result from manufacturer's defect. • Make arrangements for rotation of ventilators within the Host Hospital. • Submit quarterly Tracking Form to CCSO (Form Four).	• Ensure all internal resources have been utilized prior to accessing the Provincial Stockpile. • Critical Care Unit staff must ensure that hospital CEO/senior delegate is made aware of the need for additional ventilators. • Submit *Ventilator and HFNC Allocation Sign-Back Agreement* to CritiCall and Host Hospital. • Make suitable arrangements for the transport of ventilator from Host to Requesting Hospital. • Complete the necessary safety checks upon receipt and return of ventilator(s).
CRITICALL ONTARIO	
• Connects Requesting Hospital to Critical Care Clinical Lead if 5 or more ventilators/HFNC Systems requested • Connects Requesting Hospital to Host Hospital • Faxes *Ventilator and HFNC Allocation Sign-Back Agreement* to Requesting Hospital • Scans signed *Ventilator and HFNC Allocation Sign-Back Agreement* to CCSO at vents@ccso.ca	

Appendix C:

Host Hospital Notification Tool

Appendix D:

Contact Information

MOH and CCSO

CCSO

Email: vents@ccso.ca

MOH
Health System Emergency
Management Branch

Tel: (866) 212-2272
Fax: (416) 212-4466
Email: emergencymanagement.moh@ontario.ca

Vendors

BOMImed
100 Irene St #1,
Winnipeg, MB R3T 4E1

Tel: 1-800-667-6276
http://www.bomimed.com/

Dräger (Evita XL and v500)
2425 Skymark Ave,
Mississauga, ON L4W 4Y6

Tel: 1-866-343-2273
www.dräger.com

GE
1919 Minnesota Ct,
Mississauga, ON L5N 0C9

Tel: 1-866-281-7545
https://www.gehealthcare.com/

Getinge (Servo-U and Servo-N)
90 Matheson Blvd W #300,
Mississauga, ON L5R 3R3

Tel: 1-800-387-3341
www.getinge.com

Medtronic (Puritan Bennett 840)

16720 TransCanada Hwy
Kirkland, QC, H9H 4M7

Toll Free: 1-(877) 664-8926
www.medtronic.ca

Trudell (AVEA and Bellavista 1000)
758 Baransway Dr.,
London, ON N5V 5J7

Tel: 1-800-265-5494
www.trudellhs.com

Forms:

Revised Quarterly Ventilator Tracking Form (2019)

To be submitted to CCSO by email one month after the end of quarter (i.e. July 31, October 31, January 31, April 30)

Revised Quarterly Ventilator Tracking Form (to be used from Oct. 1, 2019): Vent Use

To be submitted to CCSO by fax or email one month after the end of quarter (i.e. July 31, October 31, January 31, April 30)

CCSO Critical Care Services Ontario

Note: Please submit tracking details for all ventilators assigned to your Host Hospital								
Date Submitted:					**Quarter (e.g. Q1, 2019-20)**			
Host Hospital Name:					**Site Lead (Name):**			
					Contact Number:			
Date of Stockpile Vent Request *(dd/mm/yy)*	**Name of Requesting Hospital, Site**	**Ventilator Type** *(Model)*	**Asset Tag #**	**Release Date** *(dd/mm/yy)*	**Return Date** *(dd/mm/yy)*	**If not returned by end of reporting period, Anticipated Return Date** *(dd/mm/yy)*	**Damages Noted Upon Return?** *(Y/N)*	*If damages noted, what follow-up steps were taken?*

Revised Quarterly Ventilator Tracking Form (to be used from Oct. 1, 2019): Rotation and Maintenance

To be submitted to CCSO by fax or email one month after the end of quarter (i.e. July 31, October 31, January 31, April 30)

CCSO Critical Care Services Ontario

Note: Please submit tracking details for all ventilators assigned to your Host Hospital						
Date Submitted:				**Quarter (e.g. Q1, 2019-20)**		
Host Hospital Name:				**Site Lead (Name):**		
				Contact Number:		
Ventilator Type *(Model)*	**Asset Tag #**	**Current Status** *(storage / rotation / other)*	**Other Status** *Please describe*	**Most Recent Into Rotation Date** *(dd/mm/yy)*	**Most Recent Returned from Rotation Date** *(dd/mm/yy)*	**Preventative Maintenance Update** *(date last completed/planned upcoming)*