



Context

A group of key Canadian stakeholders, policy-makers, and clinical experts in the management of patients at risk for or requiring long-term mechanical ventilation convened in Halifax in April 2010 for a workshop titled “Improving the Experience of Patients Requiring or at Risk of Long-Term Mechanical Ventilation.” Among a number of identified barriers to transferring these patients across the continuum of care was “a lack of overall vision, programmatic approach, and leadership”¹ in Canada. This is a concern, given epidemiological trends showing current, as well as future growth of this patient population, both in Canada and internationally.^{1,2}

A recently initiated three-year study titled “Understanding Prolonged and Long-Term Mechanical Ventilation in Canada” is intended to help address some of the current information gaps that would help to inform policy development for the care of long-term ventilator-dependent (LTVD) patients in Canada. The study aims to “collect the information needed to establish a national prolonged and long-term mechanical ventilation network of health care providers, to describe health service provision for these individuals and their families, and to promote the delivery of safe, high quality care to this population, across different health care environments, including the home.”² Further details are available at <http://www.stmichaelshospital.com/crich/sru/ventilation.php>.

There are a number of factors driving the transitioning of LTVD patients out of intensive care units (ICUs) into alternate sites of care, such as non-ICU hospital beds, attendant care facilities, group homes, long-term care (LTC) facilities, or patients’ own homes. These include:

- Rising costs of hospital care³
- The need to decrease use of critical care resources for medically stable LTVD patients not requiring ICU critical care services, while enabling provision of services, such as rehabilitation, that these patients do require⁴
- Ensuring availability of ICU beds for critically ill patients⁵
- Decreasing the risk of LTVD patients acquiring nosocomial infections⁶
- Increasing demand for home ventilation due to the commercially available non-invasive masks and positive-pressure ventilators³
- Improving LTVD patient quality of life by transitioning them to where they want to live.⁵

To assist multidisciplinary health care teams in assessing and addressing a number of medical and non-medical factors prior to transitioning LTVD patients out of ICU and the hospital environment into their homes, the following recently developed resources are available:

1. The Canadian Thoracic Society’s clinical practice guideline for home mechanical ventilation, which includes specific recommendations for transitioning patients to their homes, available at: http://www.respiratoryguidelines.ca/sites/all/files/2011_CTS_HMV_Executive_Summary.pdf

2. The College of Respiratory Therapists of Ontario's initiative titled "Optimizing Respiratory Services: A Continuum of Care from Hospital to Home," which produced a training manual for health care professionals and caregivers, with a discharge identification and preparation tool, as well as discharge checklists available at:
http://www.crto.on.ca/pdf/ProfPractice/HFO_Training_Manual.pdf
6. What training requirements are essential for (a) staff and (b) family, to support repatriation?
7. What system processes and support are essential to implement a repatriation program for medically stable long-term ventilator-dependent patients?
8. What health system cost savings and other system-related benefits have been tracked or realized by repatriating medically stable long-term ventilator-dependent patients to home, or other non-critical care settings?

Objectives

The purpose of this report is to gather information from long-term ventilation (LTV) programs in British Columbia, Alberta, Manitoba, Ontario, and Newfoundland and Labrador regarding the transitioning of medically stable LTVD patients out of critical care units into alternate levels of care.

The following questions will be addressed:

1. What current destinations exist in your province for transfer of medically stable chronically ventilated patients out of critical care units?
2. What are patient-specific criteria for safe and optimal patient transfer out of critical care units and repatriation to (a) home, (b) lesser acute hospital unit alternative level of care, (c) long-term care, or (d) other?
3. If your province has a repatriation program for stable chronically ventilated patients, what process for effectiveness review (medical, multidisciplinary, other) is currently in place, and with what frequency is it conducted?
4. What ancillary professional support resources are required to be available to support these transferred patients, and in what capacity?
5. What model of care and skill mix for provision of routine care in alternate health facilities is required and how are patients integrated?

Findings

It is not intended that the findings of this Environmental Scan provide a comprehensive review of the topic. Results are based on a limited literature search and communication with key informants. This report is based on information gathered as of October 28, 2011.

Of the 11 LTV programs or centres contacted, responses were received from nine. Respondents represented a variety of LTV programs, ranging from provincial-level programs to programs associated with a specific health care facility (e.g., hospital, LTC centre, residential care centre).

As the Canadian Thoracic Society's recent clinical practice guideline for home mechanical ventilation states, the "recommendations strive to achieve a balance between an exceptional standard of care illustrated in the literature and the reality of health care in Canada, where geographical and economic barriers may require compromise to ensure the availability of the best care possible." The findings of this Environmental Scan may help to illustrate the range of care provided to LTVD patients in Canada.

The following provides an overview summary of the survey results. The complete responses to each survey question, presented by respondent, can be found in Appendix 1 at the end of this document.

Question 1: Patient Transfer Destinations

Potential patient transfer destinations from an ICU, with some programs or centres offering more than one possible destination, included a step-down ICU (one program or centre), an acute-care respiratory unit, non-ICU transition unit or regular medical ward (four programs or centres), a LTC/residential care/complex care centre (seven programs or centres), a smaller community hospital bed (one program or centre), and a patient's home (six programs or centres). The various programs or centres surveyed had different capacities to transfer LTVD patients from ICUs to alternate non-critical care sites.

Question 2: Patient-Specific Criteria for Safe and Optimal Transfer

Before transferring LTVD patients out of an ICU into the various potential alternate care destinations, there are a number of patient-specific criteria to be assessed and addressed in order to facilitate a safe and successful transition. These criteria may include medical, social, physical, and financial factors. The more straightforward and often well-delineated criteria relate to medical stability and the patient's ventilation status, although these criteria vary by program or centre. Details are provided in Appendix 1.

When transitioning a medically stable LTVD patient specifically from the hospital directly to their home, many responding programs or centres indicated that the following factors are also considered:

- The patient's and, when applicable, family's level of motivation and willingness to accept risk factors with living at home

- The availability of trained, reliable family or caregiver support, with availability of backup options
- The availability of a physician in the community familiar with LTV patient care
- Financial considerations
- Ensuring that patient mobility issues (e.g., wheelchair modifications for a ventilator), home-related accessibility factors, and safety considerations (e.g., availability of backup power generation, home inspection by Fire Department) are addressed.

Question 3: Effectiveness Review Processes

The third question posed to respondents was, "If your province has a repatriation program for stable chronically ventilated patients, what process for effectiveness review (medical, multidisciplinary, other) is currently in place, and with what frequency is it conducted?"

The majority of responding jurisdictions do not have provincial-level repatriation programs, and therefore no provincial program effectiveness review process. Insight was provided by some respondents into effectiveness review processes for their specific programs or centres.

A provincial-level LTV program that transitions patients from hospital to home is a highly client-driven program, with the patients themselves having the opportunity to provide feedback on the program's effectiveness through an annual survey. Another program, which is regionally based, has initiated work with health care analysts to start tracking program indicators such as hospital and/or emergency department admissions and infection rates, as well as client, family, and caregiver feedback on various areas of care including follow-up clinic services, and education received prior to discharge from the hospital.

Several programs or centres received informal feedback from the associated health care providers, patients, and/or families, based on which they improved their programs.

Question 4: Ancillary Professional Support Resources

The fourth question of the survey inquired about the types of ancillary professional support resources available to support LTVD patients transferred out of ICU to various alternate care sites, and in what capacity these are available. Respondents indicated that a wide variety of professionals support LTVD patients in the non-ICU care sites.

Patients transitioned to an acute-care respiratory unit, non-ICU transition unit, or regular medical ward typically have access to the support of all the ancillary professionals available in acute-care hospitals, including physicians, specialist physicians, nurses, physiotherapists (PTs), occupational therapists (OTs), social workers (SWs), respiratory therapists (RTs), dietitians, pharmacists, biomedical engineering staff, and speech language pathologists (SLPs), although specific capacity available to LTVD patients was generally not provided.

The majority of LTC or residential care centres noted having the services of RTs (six centres), a respirologist or other physician (six centres), nursing (four centres), PTs (four centres), and OTs (four centres) available, although with differing availabilities.

LTC or residential care centres indicated having access to the following health care professionals, with examples of availability included where provided:

- **RTs** – availability varied from being on site during weekday daytime hours with on-call coverage (thereby 24 hour a day, seven days a week support) to services

being provided by local acute-care hospital RTs on an as-needed basis or triaged basis; evening and overnight services were provided by on-call RTs from a local acute-care hospital or nurses covering the off times, with some support from on-call hospital RTs; RTs with one program were available 24 hours a day, seven days a week for equipment-related issues

- **Nurses** (licensed practical nurses [LPNs] and/or registered nurses [RNs]) – availability 24 hours, seven days a week
- **Respirologists (specialist physician)** – in-person visits once per month and available by email or phone 24 hours, seven days a week
- **Hospitalist physicians** – visit patients once weekly, or on an “as-needed” basis
- **General practitioners** – working on a rotational basis: for example, a weekly rotation with the physician on duty available on site once per week or “as needed,” and on call 24 hours, seven days a week; or available daily and take turns offering on-call services after hours
- **Physiotherapists** – availability varied from annual in-person assessments with prescribed exercises carried out by family or privately hired caregivers, to regular on-site biweekly visits
- **Occupational therapists** – on site five days a week during daytime hours; on admission and as needed thereafter
- **Biomedical engineering** support was available in two centres, one of which was through a local hospital, which provided loaners during equipment repair
- **Dietitian, pharmacist, recreation therapist, SLP, ethics, and pastoral care services** were available on site for some centres.

Health care professional support for patients transitioned to their homes was also varied and examples include:

- RTs available 24 hours a day, seven days a week by phone; also available to provide training
- General practitioner (GP) or respirologist for regular follow-up; patients often had to seek out these professionals on their own
- Home care services typically performed an initial patient assessment and then provided nursing, OT, and PT services through various community agencies on an “as-needed” basis
- A hospital RT department provided ventilator equipment replacement or loaners in cases of malfunction
- Trained personal care attendants (PCAs) or home support workers available 24 hours per day
- Outpatient tracheostomy clinic and neuromuscular clinic services were also available.

Question 5: Model of Care and Skill Mix for LTV Patient Care, and How Patients are Integrated

Survey respondents were asked what model of care and skill mix is required for provision of care for LTVD patients and how these patients are integrated into alternate health care facilities. The respondents indicated:

- The number of LTVD patients on a unit ranged from one to 22
- In the majority of cases, patients had private rooms; only one centre indicated having double occupancy rooms for patients of the same gender
- Reasons cited for having private rooms were infection prevention and control, and due to complex medical needs or behavioural issues
- LTVD patients were typically all located on the same unit, although not all

patients on the unit were LTV-requiring patients in all centres

- Patients cohorted on the same unit were also located in the same area of the unit to facilitate provision of care
- One centre grouped patients based on their level of nursing intervention (i.e., patients with higher intensity needs and fewer communication and interaction requirements grouped together, versus those individuals who can communicate and interact with the environment)
- Care was provided primarily by RNs and LPNs; one centre indicated an LPN:patient ratio of 1:3 or 4 and an RN:patient ratio of 1:3.

Question 6: Staff and Family Training

This question focused on what training is necessary for staff and family and/or caregivers to support LTVD patients. The majority of programs or centres surveyed indicated that they provide training for patients and their families and/or caregivers, as well as staff, when applicable to their programs.

The majority of programs were very comprehensive with their training, with many indicating that they covered the following major topics in their training sessions:

- tracheostomy care
- suctioning
- manual bagging
- emergency procedures
- equipment maintenance and cleaning
- ventilator and other equipment troubleshooting.

Question 7: System Processes and Support Required for Implementing a Transition Program

Critical system processes and supports to ensure the success of transitioning LTVD patients out of ICUs, as indicated by the survey respondents, included:

- Availability of appropriate facilities outside of ICUs that can safely accommodate LTVD patients
- A multidisciplinary approach to discharge planning started as early as possible
- Having policies, procedures, and standards of care for LTVD patient care in place
- Availability of comprehensive training for patients, families, and/or caregivers both initially before discharge, and on a continuing basis thereafter
- Ensuring that health care professionals, family, and/or caregiver, as well as facility-related support issues have been established, addressed, and confirmed as being available prior to patient transitioning to an alternate care site
- Strong community home care program support availability for patients transitioned to their homes
- A collaborative health care team with established lines of regular communication
- Availability of a provincial-level policy related to repatriation of LTVD patients to other health regions within a jurisdiction.

Question 8: Health System Cost Savings and Other System-Related Benefits

Without specific measurement, health system cost savings and other system-related benefits realized by the responding LTVD patient repatriation programs or centres included the following:

- Cost savings due to the belief that accommodation of an LTVD patient at home is less costly than in LTC; LTC accommodation believed to be less costly than a regular hospital bed, which in turn is less costly than an ICU bed
- Improved patient quality of life, with patients more involved in directing their care and lives
- Reduced lengths of stay in hospital, and minimal readmissions for respiratory issues.

One centre is currently involved in a pilot study aimed at helping to transition ventilator-dependent patients out of the acute-care setting into the most appropriate community setting (e.g., attendant care facility, group home, personal home). Other goals of the pilot are to decrease the alternate level of care (ALC) days in acute care attributed to this patient population, and to assess every ventilated patient to ensure that they are using the least invasive form of ventilation tolerated, thereby decreasing the burden of care and facilitating discharge to an alternate site. Preliminary findings show that in the first eight months of the pilot study, the nine out of 14 admitted LTV patients who had been successfully transitioned to the community avoided a total of 1,448 ALC days in acute-care hospitals.

Conclusion

Programs for transitioning medically stable long-term ventilated patients out of intensive care units to alternate levels of care, and the availability of supporting health care professionals and other caregivers to support these patients vary significantly across the jurisdictions surveyed. Of the respondents surveyed, one represents a provincial-level respiratory outreach program available to any resident in the province requiring assisted ventilation and meeting the

established medical criteria. This program focuses primarily on supporting long-term ventilated patients transitioning from the hospital to living more independently in their homes by providing equipment and supplies in addition to respiratory therapy, education, and peer group support. Two provinces surveyed indicate that they provide ventilator equipment distribution from a centralized, provincial-level program. Other programs or centres surveyed appear to function on a more local level within their jurisdictions.

References

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Appendix 1

The following tables provide the survey respondents' complete responses to the posed questions.

British Columbia	
Respondent # 1	
Patient Transfer Destinations	<p>Clients transfer from hospitals to home if they have the support to do so (e.g., family, care workers, assistive devices, housing funding, etc.). If these supports are not readily available, then they may transfer temporarily into a LTC facility or assisted-care facility. In general, accommodation is made for most ventilator-assisted clients to move toward independent living situations.</p>
Patient-Specific Criteria for Safe and Optimal Transfer	<p>In general, to enable a client to safely transition from a critical care unit to:</p> <p>a) Home: patients must be able to direct their own care, be medically stable, meet the program’s medical criteria for transfer to home (see below), have fully trained care workers/family, some type of funding to maintain themselves at home, and be willing to accept some risk factors of living at home with their tracheostomy/ventilator;</p> <p>b) A lesser acute hospital unit or c) LTC facility: in these cases, patients do not meet all of the above factors for transfer to home. A lack of trained care workers or funding is usually one of the determining factors as to whether a patient is moved to an alternate care unit in the hospital or an LTC facility. Another issue is if the family feels that they cannot manage the client at home for various reasons. These latter two types of placement do not happen very often.</p> <p>The program’s medical criteria for home ventilation consideration are as follows:</p> <ul style="list-style-type: none"> • Neuromuscular disorders or chest wall restriction who have documented hypercapnea (PCO₂ at rest on room air > 45 mm Hg) • Patient should be stable and on optimal management for any reversible component of any associated pulmonary disease • Patients with a normal PCO₂ (in the range of 40 mm Hg to 45 mm Hg) may be considered if any of the following criteria are present: 1. cor pulmonale, 2. nocturnal hypoventilation (as documented by elevations in nocturnal CO₂ levels [tCO_{2j}] and associated morning symptoms), 3. severe supine dyspnea (e.g., diaphragmatic paralysis), 4. symptoms of alveolar hypoventilation • Patients with central alveolar hypoventilation also qualify in the presence of normal neuromuscular function but abnormal ventilatory control • Home ventilation is not indicated in patients with chronic hypercapnea secondary to either chronic obstructive lung disease or interstitial lung disease. <p>Other criteria for a patient being discharged to this program are as follows: uncuffed tube, reusable inner cannula, no inline suction, no PEEP, Passy-Muir valve in line where tolerated, caregivers are trained and ready for discharge, client is not being discharged to a residential care of health authority-funded facility.</p>

British Columbia	
Respondent # 1	
Effectiveness Review Processes	<p>This program’s model is based on client participation. The original community committee that designed the program included the expertise of individuals who already used assisted ventilation in the community to form part of the decision-making team. This program is fully funded by our provincial government from the Ministry of Health and there is a contract in place through the RHA, which governs the way that the program conducts itself. Our program is a client-driven program with total involvement and participation from all of our clients.</p> <p>The clients themselves have the opportunity to review the program through an annual survey. The program also has an advisory committee from all health regions that meets quarterly. Quarterly reports are provided to our regional health authority for their perusal.</p> <p>A recent external review of the program was undertaken by Dr. S. McKim of the Ottawa General Hospital and is available at http://www.bcits.org/docs/bcitsreport_propbusplanvers-jan09.pdf.</p>
Ancillary Professional Support Resources	<p>The program provides access to an RT 24 hours a day, 7 days a week via the phone, as well as biomedical engineering services. During office hours, the RTs will visit clients when required, as well as providing phone support during the day. Depending on the client’s diagnosis they will have access to nursing, OT, PT, etc. through the various community health agencies. Clients will also have their own GPs/specialists that they see on a regular basis.</p>
Model of Care and Skill Mix for LTVD Patient Care, and How Patients are Integrated	<p>Not applicable. This program is involved only with repatriating long-term ventilator patients to their homes.</p>
Staff and Family Training	<p>The program is not responsible for the training of staff in a facility, except for some RNs that are involved with the clients in the community.</p> <p>The program provides a formal 2-day training session (the course is offered each month) for patients, families, and care workers in a patient’s home, which covers all aspects of the knowledge required to maintain the client in a safe environment. This includes:</p> <ul style="list-style-type: none"> • tracheostomy care • emergency procedures • suctioning • cleaning of equipment and accessories • manual bagging • emergency planning • equipment issues. <p>This information is incorporated into a "tracheostomy and ventilator management training manual," which is available for all caregivers and family or friends.</p> <p>Clients can be involved in all aspects of the training; some clients will provide this training to their own caregivers. Funding for clients to hire and train their own caregivers is available under the CSIL program http://www.health.gov.bc.ca/hcc/csil.html</p>

British Columbia	
Respondent # 1	
System Processes and Support Required for Implementing a Transition Program	<p>Discharge planning meetings for clients being discharged from an acute-care facility to home involve all parties involved in the discharge to ensure that it is a seamless transition.</p> <ul style="list-style-type: none"> • Trained care workers, family members, and client should all have taken the tracheostomy and ventilator management training course. • A discharge summary needs to be provided by hospital physicians to the family physician and client’s respiratory specialist. • There needs to be co-ordination of services that the client will require once home: e.g., OT, PT, RN.
Health System Cost Savings and Other System-related Benefits	<ul style="list-style-type: none"> • Reduced length of stay in hospital, minimal readmissions for respiratory issues, improved quality of life for client (no particular studies evidencing this). • More expedient discharge to home. • Cost savings by having client at home versus staying in a facility. • Access to 24 hours a day, 7 days a week RT phone support, and up-to-date patient files available to RTs. • Direct access to backup equipment and supplies, as well as biomedical engineering services, and RTs. • Prompt replacement of equipment for maintenance and repair through equipment pool. • Greater choice of equipment (masks). Choice of equipment and supplies that may be limited to whatever the hospital has on hand if patient is in a hospital.
Respondent # 2	
Patient Transfer Destinations	<p>Hospitals will attempt to support a patient leaving ICU with a ventilator back to their home with the help of community supports (PROP) and funding (CSIL funding), as well as family support if available. If LTVD patients are not able to be transitioned home and they live within this health authority, this facility provides the only LTC ventilator unit for these patients in this region (22 beds).</p>
Patient-Specific Criteria for Safe and Optimal Transfer	<p>The LTC unit’s patient-specific criteria include:</p> <ul style="list-style-type: none"> • aged 19 years or older • tolerating the Legendair ventilator • being hemodynamically stable • not requiring peritoneal dialysis • no issues with dementia • previous unsuccessful attempts/trials at ventilator weaning • family and resident agreement to placement.

British Columbia	
Respondent # 2	
Effectiveness Review Processes	There are no formal regular reviews of the program’s effectiveness; however, changes or recommendations have been made by various specialties since the opening of the facility 3 years ago. For example, between feedback from nursing and respiratory services, some changes to the admission criteria have been made. In addition, all of the disciplines (nutrition, OT, PT, SLP) have had input to make the admission process smoother.
Ancillary Professional Support Resources	<p>Ancillary professional support resources are as follows:</p> <ul style="list-style-type: none"> • RT – on-site 5 days a week 0800h to 1600 h; after hours, local hospital is on call • respirologist – on-site about once a month, available by phone and email at any time. • PT – annual assessments are done for the annual interdisciplinary care conferences and can make recommendations that can be carried out either by families or privately hired caregivers (nursing staff unable to do prescribed exercises) • nursing – combination of LPNs and RNs onsite 24 hours a day, 7 days a week • physician – every resident is assigned to a GP within the facility. Each GP takes turn offering on-call services for after hours • OT – on-site 5 days a week 0800 h to 1600 h • biomedical department – located at local hospital; most equipment is shipped over to them and is returned within a day or two. Depending on the equipment, a loaner can sometimes be shipped immediately.
Model of Care and Skill Mix for LTVD Patient Care, and How Patients are Integrated	<p>This 22-bed unit is cared for mostly by LPNs who are assigned 3 or 4 residents, and the RNs, who are assigned 2 residents.</p> <p>Most residents have individual rooms; only 6 are in a double room.</p> <p>Beds are filled as openings come available, with double rooms occupied by members of the same gender; no other grouping is done.</p>
Staff and Family Training	<p>Training for:</p> <p>a) Staff: All LPNs and RNs who work on the LTC unit attend a full day of orientation with the RT. A mix of theory and hands-on practice for all tracheostomy and ventilator information is provided. Topics covered include:</p> <ul style="list-style-type: none"> ▪ styles of tracheostomy tubes, cuffed versus uncuffed ▪ oxygen therapy ▪ corking versus Passy-Muir speaking valves ▪ ventilator theory and Legendair usage ▪ manual bagging ▪ tracheostomy emergencies (plugged tracheostomy tube versus dislodgement).

British Columbia	
Respondent # 2	
	<p>They then have 5 full days of buddy shifts on the unit with another LPN or RN, including one-on-one time with the RT for more hands-on practice with the residents. At the end of the 5 buddy shifts, new staff participate in a 4-hour long skills review session with the RT and nursing supervisor to assess whether staff is prepared to begin working alone.</p> <p>RNs are trained to replace dislodged tracheostomy tubes, and on-call GPs are available 24 hours, 7 days a week for RNs to call and discuss sending a worsening resident to the local hospital's ED.</p> <p>b) Family: Families are offered the opportunity to learn about tracheostomies and ventilators from the on-site RT if they so choose. Similar material is covered as is offered to the nursing staff so that families are able to take residents off site for outings.</p>
System Processes and Support Required for Implementing a Transition Program	<p>Families and patients begin the process while still in hospital. Hospital social workers begin paperwork to assess appropriateness of patient for transfer to our unit.</p> <p>This unit's nursing supervisor and RT then meet with potential resident while they are still in hospital to confirm appropriateness.</p> <p>Family and patient must be in agreement with moving to our facility and able to pay the monthly rent.</p> <p>Hospital physician hand-off is given to the assigned GP to take over.</p>
Health System Cost Savings and Other System-Related Benefits	<p>No official data on this.</p>

CSIL = Choice in Supports for Independent Living; ED = emergency department; GP = general practitioner; ICU = intensive care unit; LPN = licensed practical nurse; LTC = long-term care; LTVD = long-term ventilator dependent; OT = occupational therapist/therapy; PEEP = positive end-expiratory pressure; PROP = Provincial Respiratory Outreach Program; PT = physiotherapists/physiotherapy; RHA = regional health authority; RN = registered nurse; RT = respiratory therapist/therapy; SLP = speech language pathologist.

Alberta	
Respondent # 3	
Patient Transfer Destinations	<p>The Chronic Ventilator Program follows medically stable ventilated patients in this region of the province that are repatriated from ICU to 3 placement site options:</p> <ul style="list-style-type: none"> • a non-ICU ventilator transition unit at a designated acute-care hospital which has 4 beds prioritized for ventilated patients, helping to transition LTVD patients to home or a LTC facility; • a complex care unit in a LTC facility which is a mixed unit with hemodialysis patients and 4 beds dedicated to complex respiratory care patients including ventilator patients; or • home, where patients are supported by community home care services as well as home care vendors. Ventilator equipment for patients transferred to their homes is provided by a central provincial respiratory outreach program that delivers and sets up the ventilator and provides initial equipment-related education, as well as some ongoing equipment maintenance and troubleshooting; the patients in this region are subsequently followed by the region's Chronic Ventilator Program as well as community home care.
Patient-specific Criteria for Safe and Optimal Transfer	<p>In order to be discharged from ICU, patients should be medically stable, and transferred to a home-style ventilator that is set on long-term ventilator parameters. This would include low levels of oxygen, PEEP less than 8, etc. The available beds in the non-ICU ventilator transition unit are not for weaning patients from ventilators, rather for patients determined as requiring chronic ventilation; thus all means of weaning must have been tried and have failed before a patient would be admitted to the region's Chronic Ventilator Program. Note that this does not mean that ventilation parameters cannot be changed for these patients; rather these patients require LTV.</p> <p>For palliative care patients, patients must have a life expectancy of greater than 6 months.</p> <p>These patients are moved to the non-ICU ventilator transition unit of the designated acute-care hospital to facilitate discharge to either home or a LTC centre. Teaching required to help the client and their family to learn about all aspects of care (including the ventilator, tracheostomy, bagging, suctioning) is initiated here.</p> <p>Discharge rounds involving a multidisciplinary team are held weekly and include all admissions to the transition unit in order to identify and make plans for any issues or barriers relating to discharging this specific patient. The client and their family are involved in these discussions that will hopefully set goals and priorities to move them toward discharge. In these rounds, one can start to realize what the barriers are to discharge. Generally they revolve around the ability to provide trained caregivers in the home and costs. In this region, homecare provisions for caregivers tend to have a maximum of approximately 8 hours per day. The biggest barrier is in finding caregivers that can be trained to work with a ventilated client and to then retain them after they've completed all of the training; retention tends to be an issue, as they are not highly paid. Caregiver reliability – for example, a “no-show” and having a backup plan for when this happens – is also a concern.</p>

Alberta	
Respondent # 3	
Effectiveness Review Processes	<p>The program is relatively new (~5 years old) and there is currently no process to review the current repatriation strategy. An independent program review was performed in 2008, identifying elements of the program that could be improved upon.</p> <p>The program has recently started working with health care analysts to start tracking some program indicators that will look at hospital and/or emergency department admissions, infection rates, etc.</p> <p>A questionnaire is being developed that will be given to clients, family, and caregivers to get feedback from them on care in several areas, such as follow-up in clinics, hospital admissions, and education provided prior to leaving hospital.</p> <p>The program investigates patient deaths immediately and has a debriefing shortly after to discuss any lessons that may be learned from the patient's care; this is designed to be a learning experience.</p>
Ancillary Professional Support Resources	<p>This regional Chronic Ventilator Program consists of 2 (0.8 FTE each) dedicated RTs and 1 full-time Program Facilitator who is also an RT. These individuals follow the ventilator clients throughout the continuum of care from ICU to the non-ICU ventilator transition unit to home or a LTC facility, thus crossing the boundaries between acute care, home care, and LTC. This staffing is only for this specific area of the province, and would not include that of the provincial respiratory outreach program.</p> <p>The non-ICU transition unit has a multidisciplinary team with all of the professional support that a hospital can provide (e.g., OTs, PTs, RTs, SWs, RNs, Transition Services, a pulmonary physician, and hospitalist physicians).</p> <p>The LTC facility relies on the dedicated RT staff of the regional Chronic Ventilator Program (total of 2.6 RT FTE) that provides services 7 days a week from 0845 h to 1715 h. These RTs divide their time between acute care and LTC on a triage basis. Although 24-hour RT care is not available in the LTC facility, the nursing staff is well trained to manage ventilator requirements. There is an on-call service from the Respiratory Department at the designated hospital that would be able to give phone support for minor problems. If the patient is unstable, 911 services are called and the patient transferred to the designated acute-care hospital for the region. On arrival, patients are stabilized in the ED and a decision is made whether the patient requires admission to the ICU or the non-ICU ventilator unit.</p> <p>Patients in the LTC facility are cared for by a group of physicians (hospitalists) that also follow the patients admitted to the non-ICU ventilator unit. Patients are seen by these physicians typically about once a week, or on an "as-needed" basis. The patients go out of the facility for tests or appointments as an outpatient, and are generally accompanied by a family member or an RT or RN.</p> <p>At home, there is less professional support for long-term ventilated patients. They do have health care professionals such as RNs, OTs, RTs, and SWs within the home care program but with less capacity, and physician that will look after their day-to-day health care needs, and</p>

Alberta	
Respondent # 3	
	<p>patients are only seen on an "as-needed" basis. Patients require a family followed up in the hospital's neuromuscular clinic to manage their ventilation strategies. There is also an outpatient tracheostomy clinic that can be used for tracheostomy management. Patients and family are trained by the regional Chronic Ventilator Program's RTs prior to leaving the hospital. It is the responsibility of the family to hire and train other caregivers. The RTs provide follow-up and ongoing training as required.</p>
<p>Model of Care and Skill Mix for LTVD Patient Care, and How Patients are Integrated</p>	<p>The non-ICU ventilator transition unit is used by the regional Chronic Ventilator Program as a unit to transition patients to home or LTC. All of the beds in this unit are capable of housing a ventilator patient, but the 4 beds for which ventilator patients have priority are preferentially located in a room closer to the nursing station. Ventilator alarms are incorporated into the call bell system for safety.</p> <p>The LTC facility has 4 beds for ventilator patients that are grouped together onto 1 "pod," which allows for the best utilization of staff. Patients are typically housed in a private room for infection prevention and control. The entire unit has 44 beds (40 for hemodialysis or complex care patients, and 4 for ventilator patients). The entire unit has nurses (RNs and LPNs) and nursing attendants on shifts 24 hours, 7 days a week, and there is always 1 professional on the pod. The ventilator patient beds also have RT support from the Chronic Ventilator Program at least on a once per day basis and otherwise as needed. The entire LTC facility unit (44 beds) also has a full-time PT, a therapy aide (for ROM exercises, etc.), and 0.6 FTE for each of an OT, SW, and dietitian.</p>
<p>Staff and Family Training</p>	<p>The dedicated RTs for this region's Chronic Ventilator Program do the majority of the formal ventilation training for the professional staff in acute care and LTC. Similar training is also provided for the patients and their families.</p> <ul style="list-style-type: none"> • The training is done usually before discharge from the hospital to home or LTC. The training deals with all aspects of ventilator and airway care and maintenance, and is tailored specifically to each patient's needs. Ongoing teaching by the RTs is provided as required (e.g., introduction of new equipment). • Health care professional staff are usually scheduled for an 8-hour education day, provided 'as needed' with refresher sessions approximately twice a year, to learn about ventilator-associated care. These sessions incorporate simulations. A learning module has been developed that is required pre-reading before the education day. This pre-reading includes some self-tests to ensure understanding of essential concepts. • The RTs also take the opportunity to teach both professional staff and families at the bedside as needed. • Other aspects of specific patient care are handled by the appropriate professionals, such as nurses, PTs, and OTs. These professionals are not specific to the region's Chronic Ventilator Program.

Alberta	
Respondent # 3	
System Processes and Support Required for Implementing a Transition Program	<p>Strong family support is a must for patients to be cared for at home. A program called “Self-Managed Care” is utilized, where the client or family is given a sum of money with which to hire caregivers. Due to the fact that this money is limited, the family will need to be part of this care plan.</p> <p>Strong home care community support is essential due to the patient likely having multiple medical issues besides ventilation.</p> <p>EMS can be called to notify them that there is a patient in a wheelchair, unable to speak due to tracheostomy, etc. They should also be notified if there is a specific hospital in the region to which all ventilator patients should be taken in cases of emergency.</p> <p>At home they will need to find a family doctor that will take over their daily care. This program's RTs follow up in the pulmonary clinic for ventilator-related care.</p> <p>Acute-Care Pulmonary Physicians need to communicate on an ongoing basis with the Hospitalist physician group. The LTC facility needs to receive a discharge summary, including a medication summary, from the hospital 24 hours prior to anticipated LTC facility admission.</p> <p>It is important that all members of the health care team involved in the care of these clients work collaboratively and communicate frequently about the care plan.</p>
Health System Cost Saving and Other System-Related Benefits	<p>There are quality of life indicators that should be considered as system-related benefits.</p> <p>Have 4 clients in a LTC facility that would otherwise be in acute care. Believe there have been studies showing that home is cheaper than LTC, and LTC is cheaper than acute care. Our program has recently started to capture this type of data.</p>
Respondent # 4	
Patient Transfer Destinations	<p>The program was first set up to help with transitioning polio patients on ventilators to their homes. It is funded by a hospital Medicine program to provide ongoing support of adult chronic ventilator patients after discharge from the hospital. Over the years, AADL has contracted with the program to provide ventilator service to these patients in Alberta. Therefore, this program has 2 roles, and they are carried out by the same group of RTs:</p> <ul style="list-style-type: none"> • Hospital Program. In this role, the program provides clinical care to adult patients with invasive home ventilation through regular home visits and as needed visits. This is limited to patients within this city and two surrounding cities. As not all hospitals in this city have this kind of program in place, we have extended this service as a courtesy to adult patients discharged from other hospitals in the city as well. • Service Provider for AADL. In this role, the program's RT staff help set up the ventilator when a new start is identified and train the family and caregivers in the basic care on tracheostomy, ventilator and troubleshooting. The program will also provide periodic maintenance as outlined by AADL. The RTs are on call 24 hours a day for equipment-related issues for AADL. However, AADL does not provide funding for clinical care.

Alberta	
Respondent # 4	
Patient-specific Criteria for Safe and Optimal Transfer	<p>For a patient going home from the hospital, the following parameters are desirable: $FiO_2 \leq 0.3$ and respiratory rate < 20, and no PEEP (based on AADL criteria for adult patient for home). The patient should also have 24-hour care in place, either from family or with caregivers, home care in place who can help with medical and non-medical needs, occupational and physical therapist assessment to ensure the home is patient safe, and access to a social worker to help with financial support.</p> <p>The program and its RTs are not routinely directly involved with in-patient care or discharge planning of LTVD patients. There are patients that are transferred directly from ICU to home. This program will only be involved in that process if it is a new ventilator set up following the AADL guidelines ($FiO_2 \leq 0.3$, respiratory rate < 20, and no PEEP). The program may sometimes be asked to participate in a pre-discharge family meeting for a patient requiring long-term ventilation, in order to provide patient and family with an idea of what to expect regarding care of a LTVD patient at home versus in long-term institutional care.</p>
Effectiveness Review Processes	<p>AADL is responsible for the approval of a ventilator for a patient going home. It requires a letter outlining the ventilator settings and some investigations confirming the stability of the patient on these settings. It also requests that a discharge plan be in place for the patient. There is currently no other formal review of the program's effectiveness.</p>
Ancillary Professional Support Resources	<p>In hospital, OT and PT are available to provide support prior to discharge. OT will do a home assessment and determine the necessary equipment that needs to be in place prior to discharge.</p> <p>At home, the program's RTs are on call 24 hours a day, 7 days a week for equipment-related issues. In addition, the home care team will do their own assessment in the patient's home and determine the level of support they would provide. These include nursing, PT, OT, and additional RT support if needed.</p>
Model of Care and Skill Mix for LTVD Patient Care, and How Patients are Integrated	<p>This program has no involvement in alternate health care facilities for LTVD patients except to provide training to staff in a certain specific pediatric group home facility.</p>
Staff and Family Training	<p>The program's RT staff train all applicable family and/or support staff on ventilator management and how to manage a plugged tracheostomy tube, decannulation, suctioning, and the general operation of the ventilator unit.</p> <p>The program provides 24 hours a day, 7 days a week on-call coverage in order to manage any patient concerns, primarily on equipment-related issues, and will provide direction as to how to proceed.</p> <p>Ultimately, if the problem is without resolve or patient status fails, they are instructed to call 911.</p>

Alberta	
Respondent # 4	
System Processes and Support Required for Implementing a Transition Program	<p>As part of AADL guidelines, this program requires:</p> <ul style="list-style-type: none"> • the identification of a responsible physician who can address any ventilator-related issues when the patient goes home • that a list of the ventilator settings at the time of discharge be sent to our office • that family and caregiver support needs be determined during the discharge planning and confirmed before discharge • that proper training around ventilator care should ideally be done while the patient is still in hospital.
Health System Cost Savings and Other System-related Benefits	<p>This program allows patients to reside in their home environment with support services from all aspects of home care support. No doubt that having patients managed at home is a significant cost saving to the health care system versus housing these patients in ICU beds.</p> <p>There are 3 hospitals in this area that have a chronic ventilator unit, but unfortunately these beds are always full requiring use of expensive ICU beds for some patients because current non-ICU ventilator-care bed capacity is exceeded.</p>
Respondent # 5	
Patient Transfer Destination	<p>This residential care centre has a 16-bed unit for LTVD residents who are stable enough to go home but for some reason are unable to return to their own homes. Six beds are currently occupied by tracheostomy and bi-level PAP residents, and 10 are occupied by ventilator residents.</p>
Patient-specific Criteria for Safe and Optimal Transfer	<p>For the LTV program at this LTC centre, patients must</p> <ul style="list-style-type: none"> • be aged 18 years or older • have been determined to require LTV • be medically stable and not receiving acute treatment (e.g., intravenous medication) • not require one-on-one direct care or supervision • not require lab work more often than twice weekly • not need suctioning and/or tracheostomy care more often than every 4 to 6 hours • be accepted by our physician group • not present a safety risk to him/herself or others • have a trustee and/or legal guardian appointed before admission, if one is needed • have any psychosocial needs identified, and the referring hospital must have a treatment plan in place to address them • have any identified psychiatric needs reviewed on an individual basis • while in hospital, be using the same ventilator equipment on which they will be transferred, and have this equipment appropriately adjusted for their needs.

Alberta	
Respondent # 5	
Effectiveness Review Processes	The staff of RNs and LPNs have a training program delivered by staff RTs and a Clinical Practice Coordinator. All nursing staff must review their ventilator knowledge and practices with an RT every 3 months after completion of the training program. The program also has annual patient conferences for review of overall patient care. These are attended by a nurse, an RT, a dietitian, a physiotherapist, a recreation therapist, a SW, a pharmacist, and an OT, and are either attended by the doctor or have the minutes of the meeting reviewed by the doctor.
Ancillary Professional Support Resources	This centre's program provides: <ul style="list-style-type: none"> • 24 hour RT coverage • physiotherapists for bi-weekly visits, but they do not do chest physiotherapy • nursing 24 hours a day • on-site dietitians, OTs, recreation therapists, and pharmacists • several GPs who manage the ventilator patients on a rotating basis; 1 is available 24 hours a day on call, and the on-call doctor visits once each week during his/her rotation.
Model of Care and Skill Mix for LTVD Patient Care, and How Patients are Integrated	In addition to the response to ancillary professional support resources (above) for skill mix, the centre is set up with each of the unit's 16 residents having their own room. There is a common dining room and many of the residents like to eat there; others eat in their own rooms by preference. Most socialization is dependent on resident preference. More beds are being developed in another wing on the same floor and will be part of this same unit when they are ready and funded.
Staff and Family Training	RNs are all required to assist with tracheostomy tube changes as part of their training, and would be available in cases of tracheostomy dislodgement if the RT was not. Respiratory assessments are done by the RT weekly and on an "as-needed" basis for all ventilator residents. Staff training covers the various types of tracheostomy tubes in use in our centre, what to do if there is a problem with the ventilator or tracheostomy tube, and how and when to suction, what types of problems might occur and how to recognize them. The training in ventilator problems consists mostly of "bag and push the code button." The on-duty RT will always respond to the code button being activated.
System Processes and Support Required for Implementing a Transition Program	The RTs in charge of patient care in the community need to be able to assess the patient and their needs in hospital before discharge. A ventilated patient should also have a pulmonologist who can follow their ventilation needs in the community on at least an annual basis. This program's patients are followed only by GPs and are seen by a pulmonologist by referral as needed. In general this has worked well, but it would be preferable for all residents to have regular assessments by a pulmonologist.

Alberta	
Respondent # 5	
Health System Cost Savings and Other System-related Benefits	<p>No formally documented information.</p> <p>The residents definitely prefer to live here rather than in the hospital; their quality of life is improved because they have more control over their lives when living in this centre. There are definite cost savings to the health care system with a bed on this unit; while much more expensive than a traditional nursing home bed, it is still much cheaper than a regular hospital bed, and significantly less costly than an ICU bed.</p>

AADL = Alberta Aids to Daily Living; ED = emergency department; EMS = emergency medical services; FTE = full-time equivalent; ICU = intensive care unit; LPN = licensed practical nurse; LTC = long-term care; LTV = long-term ventilation; LTVD = long-term ventilator-dependent; OT = occupational therapist/therapy; PAP = positive airway pressure; PEEP = positive end-expiratory pressure; PT = physiotherapists/physiotherapy; RN = registered nurse; RT = respiratory therapist/therapy; SW = social worker .

Manitoba	
Respondent # 6	
Patient Transfer Destinations	<p>LTVD patients no longer requiring the critical care of the ICU environment are transferred to this hospital's Respiratory Ward when a bed is available. This unit can accommodate up to 4 ventilated patients, and has been updated with a ventilator external alarm system built into the nurse call system.</p> <p>The hospital also has a "step-down" ICU where patients who take longer to wean from the ventilator are admitted from the medical or surgical ICUs. This step-down ICU is also where we initiate long-term ventilation parameters before the patients are transferred to the Respiratory Ward; it also has capacity for up to 3 long-term ventilator patients. If LTV has been established on a patient who cannot be transferred to the Respiratory Ward, the teaching is done in the ICU or step-down ICU, if there is space available.</p> <p>Patients who cannot go home are panelled for the region's LTC facility, which can accommodate up to 20 chronic ventilator patients.</p>
Patient-Specific Criteria for Safe and Optimal Transfer	<p>Patient criteria for transfer to:</p> <ul style="list-style-type: none"> • Home: medically stable; family/caregivers must demonstrate the ability to perform required tasks in a safe and acceptable manner, including a pre-discharge trial in order for them to demonstrate their ability to safely manage the patient at home; mobility issues are addressed, e.g., wheelchair modifications for ventilator, humidifier, as well as home accessibility, etc. • Lesser acute hospital unit: stable airway; stable ventilator settings with minimal oxygen (preferably none); patient must be capable of calling for help • LTC: medically stable on optimal ventilator settings; patient must be capable of calling for help.
Effectiveness Review Processes	No formal process; done on a case-by-case basis.

Manitoba	
Respondent # 6	
Ancillary Professional Support Resources	<p>For the patients that go home, the Long-Term Ventilator Service (with 1 full-time RT) provides all respiratory equipment and supplies.</p> <p>Ventilator replacement due to malfunction outside of normal business hours is provided by this hospital's RT Department.</p> <p>Most of the province's health regions outside of this one do not have specialists (e.g., MDs, RTs, OTs, PTs) with the experience or skill set to manage this patient population.</p>
Model of Care and Skill Mix for LTVD Patient Care, and How Patients are Integrated	<p>Patients are cohorted to this hospital's Respiratory Ward, but not the same room. The Respiratory Ward has an RN, unit assistant, and part-time RT staffing model for the ventilator patients (maximum of 4 patients).</p> <p>The patient must be capable of calling for help in some way.</p> <p>If no bed is available on the Respiratory Ward or if a patient cannot call for help (e.g., cognitively impaired), they must be admitted to an ICU.</p>
Staff and Family Training	<p>Staff are trained in order to be able to monitor and/or troubleshoot the patient and/or ventilator at a basic level, and know when to call for RT support.</p> <p>Families are trained in all areas of tracheostomy and ventilator management.</p> <p>The Long-Term Ventilator Service insists on a "primary caregiver" who is given a comprehensive training program.</p>
System Processes and Support Required for Implementing a Transition Program	<p>System processes and support, such as physician hand-off, family support, etc., are essential but difficult for this program to obtain (e.g., it's very difficult in this region to find a family physician to hand off the medical care of a ventilator patient to, once the patient goes home).</p>
Health System Cost Saving and Other System-Related Benefits	<p>No specific data available, but the program is aware that these patients are using critical care and in-patient beds unnecessarily.</p> <p>A review of the Long-Term Ventilator Service is in progress but not yet complete.</p>

ICU = intensive care unit; LTC = long-term care; LTV = long-term ventilation; LTVD = long-term ventilator-dependent; MD = medical doctor; OT = occupational therapist/therapy; PT = physiotherapists/physiotherapy; RN = registered nurse; RT = respiratory therapist/therapy

Ontario	
Respondent # 7	
Patient Transfer Destinations	This program facilitates transfer from acute-care facilities to alternate settings in the community – home, attendant care, complex continuing care and, on one occasion, a LTC facility.
Patient-Specific Criteria for Safe and Optimal Transfer	<p>Patients must be medically stable, cardiorespiratory monitoring non-essential, and have minimal ventilation requirements. Ideally, for transfer:</p> <ul style="list-style-type: none"> • Home: the patient should have access to a family physician who is comfortable with tracheostomized ventilated individuals, sufficient caregiver support (24 hours, 7 days a week care required), minimal tracheal suction requirements, and the individual must be linked to a health care professional who can perform monthly tracheostomy tube changes • “Step-down” unit or a complex continuing care unit that cares for ventilated individuals: the patient should be medically stable, occasional cardiorespiratory monitoring is appropriate, and have physician coverage.
Effectiveness Review Processes	<p>There is not a province-wide evaluation process.</p> <p>An internal review of bed utilization for the ventilation program and ongoing medical follow-up for clinical issues which include, minimally, annual in-patient reassessments is performed.</p>
Ancillary Professional Support Resources	<p>This program's experience is that an interdisciplinary team approach is best, and includes:</p> <ul style="list-style-type: none"> • physician • nursing – RN or RPN to provide daily care, physical assessment, skin and wound care, continence, manage tube feeds as applicable • physiotherapy – assess and/or provide passive or active range of motion exercises, transfers, mobility • OT – assess and establish environmental controls, seating assessment for wheelchairs, transfers • RT – assess and manage ventilation; includes interventions to assess for speech potential, lung volume recruitment • social work – to facilitate community supports, psychosocial adjustment • dietitian – to help maintain proper nutrition • pharmacist • speech language pathologist – to address speech and any swallowing concerns.
Model of Care and Skill Mix for LTVD Patient Care, and How Patients are Integrated	<p>Nursing staff skill mix is RNs and RPNs. Nursing staffing needs to be flexible, based on the current and fluctuating clinical situation of patients.</p> <p>Patients are grouped based on nursing intervention levels (i.e., patients with higher intensity needs and less communication and interaction requirements are grouped together versus those individuals who can communicate and interact with the environment).</p> <p>In the community, be it at home or in supportive housing, this program often trains PSWs and family to provide care where the needs of the patient are predictable. In some cases, the patient can direct their own care.</p>

Ontario	
Respondent # 7	
Staff and Family Training	<p>Caregivers and nursing staff (for those individuals who are being discharged to the community) are provided with the following training:</p> <ul style="list-style-type: none"> • review of respiratory anatomy and physiology • ventilator equipment assembly, disassembly, care and troubleshooting • regarding clinical/medical changes in condition, we review who to call based on certain parameters. For example, if the individual wants "all available interventions" and there is a perceived emergency, we advise to call 911. An emergency could consist of decannulation, or a blocked airway. Both of these situations and the responses are reviewed during caregiver training. If there is a problem such as increased secretions and complaints of shortness of breath, but the individual is otherwise stable, we suggest calling the primary health care provider. <p>In Ontario, ventilators are loaned through the Assistive Devices Program. A single-site ventilator equipment pool (VEP) is the "warehouse" for this equipment and individuals are instructed to contact them regarding any equipment malfunction. The VEP provides 24 hour, 7 days a week on-call equipment-related troubleshooting resources, and when necessary, organizes equipment replacements.</p>
System Processes and Support Required for Implementing a Transition Program	<p>For discharge to the community (either personal home or attendant care facility):</p> <ul style="list-style-type: none"> • CCAC support is required to arrange for nursing care and PSW support • a family physician responsible for the patient, ADP application for ventilators, feeding pumps, wheelchair prescriptions, often some home modifications, and follow-up respiratory appointments to help maintain respiratory stability need to be arranged and in place. <p>Our program offers reassessment visits, both on an in-patient and outpatient basis. We are available to answer patient or caregiver questions 24 hours a day, 7 days a week with an RT on site, and we can also take questions through our website.</p>
Health System Cost Savings and Other System-Related Benefits	<p>This program has tracked system-related benefits through some small-scale pilot work, but don't believe anything has been measured on a province-wide basis.</p> <p>The centre is currently involved in a pilot program to help transition ventilator-dependent patients out of the acute-care setting into the most appropriate community (e.g., attendant care facility, group home, personal home) setting. Other goals of the pilot are to decrease the ALC days in acute care attributed to this patient population, and to assess every ventilated patient to ensure that they are using the least invasive form of ventilation tolerated, thereby decreasing the burden of care and facilitating discharge to an alternate site.</p> <p>In the first 8 months of the pilot study, 14 patients were admitted to the pilot and 9 were successfully transitioned to alternate settings in the community. The number of ALC days in acute care avoided that are attributable to these transfers total 1,448 days. Over the same time period, more than 39 recommendations related to the care or transfer of ventilated and/or tracheostomized patients were made in consultation with approximately 15 hospitals, a LTC centre, and one of the province's CCAC Palliative Care Teams, as part of the study.</p>

ADP = Assistive Devices Program; ALC = alternate level of care; CCAC = Community Care Access Centre; LTC = long-term care; LTVD = long-term ventilator dependent; OT = occupational therapy/therapist; PSW = personal support worker; RN = registered nurse; RPN = registered practical nurse (also known as licensed practical nurse [LPN]); RT = respiratory therapy/therapist.

Newfoundland and Labrador	
Respondent # 8	
Patient Transfer Destinations	<p>Patients in this health region are currently assessed on an individual basis and care needs are subsequently determined. Initial transfer out of ICU would be to a medical ward in the hospital. Once medically stable, the patient would be considered for discharge to the most appropriate LTC facility within the region. To date, chronic ventilated patients have been managed in only 1 LTC facility within our region. This is a reflection of demographics of patient versus any designation of a single site within this region.</p>
Patient-specific Criteria for Safe and Optimal Transfer	<p>Initial transfer from ICU would be to a medical ward. Once stable, determination would be made for the most appropriate LTC facility. To date, this region has not had requests for home ventilation, but requests would be assessed and it would be determined if care needs could be managed within available supports.</p> <p>When a medically stable ventilated resident in the LTC facility becomes acutely ill, they are assessed within one of the region’s acute-care facilities. They would also go to acute care for any treatment, monitoring, and support needed by the ICU and Respiratory Team. Discharge planning from the acute-care facility may include ensuring prescriptions are written; follow-up appointments for reassessment, tracheostomy changes, etc. are confirmed; notification of the resident’s return to the LTC facility is made (usually, RN covering unit will be notified upon transfer); follow-up support and education by Respiratory Department as it relates to any changes in the resident’s care plan are arranged; and ensuring a transfer data record is prepared to be sent back with the resident to the LTC facility to give the nursing staff a clear picture of the resident’s care and ventilator needs. The LTC ventilated resident is always transferred to and from this facility for tracheostomy changes or emergency admission by one of the RNs who are very familiar with tracheostomy care. The resident also travels with their own ventilator when going to tracheostomy changes and emergency admissions, as the resident is comfortable with this ventilator.</p>
Effectiveness Review Processes	<p>No provincial program.</p>
Ancillary Professional Support Resources	<p>Primary care is provided by trained RNs. One RN has taken the lead on overseeing the ventilation care provided at this LTC centre, including ensuring all policies and procedures related to ventilation are up to date, ordering needed supplies, educating new RNs on the process of ventilation of a LTC resident, updating each resident’s care plan as needed, booking tracheostomy tube changes and other appointments as needed, and acting as a consultant to nursing staff as it relates to the care of a ventilated resident in LTC.</p> <p>RT coverage is based in acute care but they will consult to this LTC centre on an as-needed basis.</p> <p>Physician support is available daily and after hours by an on-call roster. If there is no on-call coverage, the patient would be transferred to acute care as needed.</p>

Newfoundland and Labrador	
Respondent # 8	
Model of Care and Skill Mix for LTVD Patient Care, and How Patients are Integrated	<p>Staffing level on the unit with a ventilated resident (unit has 25 residents, 1 of which is a medically stable ventilated resident) is as follows:</p> <ul style="list-style-type: none"> • 0.5 FTE RN (24 hours a day, 7 days a week) • 2 FTE LPNs (24 hours a day, 7 days a week) • 2 FTE PCAs (24 hours a day, 7 days a week) • 0.5 FTE Resident Care Coordinator (Monday to Friday, 0800 h to 1600 h) • The majority of residents on this unit are in private rooms due to complex medical needs or behavioural issues.
Staff and Family Training	<p>The unit to which ventilated patients are admitted in this region’s LTC centre has instituted a ventilator training program to educate RNs on the care of the ventilated resident in LTC. Topics covered in the training include:</p> <ul style="list-style-type: none"> • tracheostomy dressings, ties, cannula – type used, and tracheotomy care • ventilator circuit and function, exhalation valve • operation of the ventilator and checklist • procedure for putting resident on and off of the ventilator • suctioning and bagging • cleaning of supplies, cannula, plug, sending circuit for regular disinfection • changing ties and dressings • overview of ventilator manuals, troubleshooting, emergency resources • oxygen concentrator function • review of the ventilator monitoring sheet. • Policies and procedures have been developed and documented for: <ul style="list-style-type: none"> • tracheostomy dressing change • endotracheal tube suctioning with instillation • inflation and deflation of the tracheostomy tube cuff • cleaning of the tracheostomy inner cannula and plug • tracheostomy tube suctioning • ventilator equipment and supply cleaning.
System Processes and Support Required for Implementation a Transition Program	<p>In order for a medically ventilated resident to successfully repatriate to a LTC setting, a number of areas need to be covered:</p> <ul style="list-style-type: none"> • Requires a facility that can safely accommodate ventilated residents • Having policies, procedures, and standards of care in place for care of a ventilated resident are vital to the success of the program. • Interdisciplinary support is vital. The following trained and qualified disciplines all have to work together to meet the individual and unique treatment and care needs of the ventilated resident:

Newfoundland and Labrador	
Respondent # 9	
	<ul style="list-style-type: none"> ▪ respiratory department ▪ RNs/Resident Care Coordinators/managers ▪ physicians ▪ social work ▪ nursing staff ▪ family ▪ OT/PT ▪ registered dietitian. <ul style="list-style-type: none"> • Education and support must be provided to the nursing staff who will care for the resident • Support from respiratory therapy staff for problem shooting, etc. would be vital.
Health System Cost Savings and Other System-related Benefits	Improvement to quality of life for patients is seen as the highest priority.
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Patient Transfer Destinations	The majority of chronic ventilated patients in this health region have transferred from critical care to a level 4 nursing home bed. There have been 3 patients that were transferred from critical care to home in the last 10 years. There are currently 8 ventilated patients who are on home ventilation. Some patients have been transferred to an in-patient hospital unit as a short-term transition to home, and some have transferred back to a smaller community hospital in another RHA.
Patient-specific Criteria for Safe and Optimal Transfer	<p>General patient specific criteria for safe and optimal patient transfer out of critical care would include:</p> <ul style="list-style-type: none"> • failure to wean from the ventilator after several attempts over a period of time, usually close to at least 2 months before this determination is made • mental capacity to communicate need for assistance • ability to cough • ability to breathe without ventilator assistance for a period of time (e.g., overnight ventilation) • minimal suctioning requirements • minimal secretions • stable oxygenation (i.e., blood gases) • minimal fluctuations in respiratory status. <p>An assessment of overall medical care needs and management, and existence of comorbidities and chronic diseases would also be a consideration for each individual case, and would impact suitability for safe transfer out of critical care.</p>

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	<p>Further criteria for safe transfers specifically to the community include:</p> <ul style="list-style-type: none"> • the availability of appropriately trained caregivers (provided by private home care agency or family members) • continuing education and training • technology support from a private service provider • backup/emergency generator power • a Fire Department home inspection. <p>Criteria for patient transfer out of critical care specifically to an in-patient unit include the availability of respiratory therapists to monitor, evaluate, and adjust settings and provide backup support for physicians and nursing staff on the in-patient units, and to provide education and training for staff providing care.</p>
Effectiveness Review Processes	No current provincial repatriation program in place.
Ancillary Professional Support Resources	<p>For transfer to LTC, the following professional support resources are required:</p> <ul style="list-style-type: none"> • RT availability (24 hours, 7 days a week) – to provide regular visits and on-call coverage for respiratory support • physiotherapy (on admission and then frequency determined by admission assessment and as needed) – to provide physiotherapy treatment to the residents based on assessment. Chest physiotherapy has been identified by our physiotherapy department as a need for ventilated residents • clinical nutrition (on admission and then frequency determined by admission assessment and as needed) – provides guidance regarding swallowing and nutrition • physician coverage availability (24 hours, 7 days a week) – provides regular visits and emergency on-call coverage • nurse practitioner coverage (0800 h to 1600 h, Monday to Friday) – provides regular medical coverage within scope of practice and assists with education on the unit • occupational therapy (on admission and then based on necessary interventions and as needed) – OT usually has a high amount of involvement due to the need for pressure-relieving mattresses and chairs to accommodate the ventilators • biomedical support (as needed basis) – biomedical department checks new equipment, performs required maintenance, and repairs equipment. • educator (as needed basis) – to provide ventilator education to new staff and ongoing education to current staff about new policies and procedures with regards to the ventilated residents • nursing (24 hours, 7 days a week) – a mixture of RNs, LPNs, and PCAs provide nursing care.

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	<ul style="list-style-type: none"> • resident care management (24 hours, 7 days a week) – oversees care and is available to provide guidance and support to nursing staff • social worker (on admission and frequency, then based on assessment and need) – to assist with transfer to LTC and provide ongoing support to the ventilated clients and their families • pastoral care (as-needed basis) – to provide spiritual support to the ventilated residents and their families, as requested • ethics (as-needed basis) – to help with ethical considerations with the care of the ventilated residents • medical services aid (0800 h to 1600 h, Monday to Friday) – assists with obtaining necessary equipment for admission and ordering supplies, as needed. <p>In the community/home:</p> <ul style="list-style-type: none"> • case manager, usually a social worker • financial assessment officer for client financial assessment to determine continued financial eligibility for services • physiotherapy and occupational therapy; however, the availability of these services is limited in the community • services of a GP to provide physician services in the community. Any emergent issues would require transfer of the client to the nearest ED.
Models of Care and Skill Mix for LTVD Patient Care, and How Patients are Integrated	<p>In LTC:</p> <ul style="list-style-type: none"> • Nursing staff on the unit consists of RNs, LPNs, and PCAs. LPNs work to their full scope of practice, with some delegation of function necessary. Delegation of function refers to our professional association of nurses, the Association of Registered Nurses of Newfoundland and Labrador (ARNNL). It is the assignment of another person to carry out specific duties that are usually done by nurses. For example, the suctioning of a ventilated patient is within nurses’ scope of practice, but they are able to delegate this task to another professional, such as an LPN or PCA. • Ventilated residents are admitted to only 1 unit in the complex. This unit is a "cognitively well" unit. On this unit, all of the ventilated residents are cohorted in the same area for provision of care. <p>In the community/home:</p> <ul style="list-style-type: none"> • trained PCAs or home support workers, usually 24 hours per day • an assessed and committed level of client support and supervision by identified family members • social worker for case management within the RHA community sector.

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Staff and Family Training	<p>For staff, training requirements vary based on the education and past experience of nursing staff. However, the training topics that would be covered include:</p> <ul style="list-style-type: none"> • care of the tracheostomy • tracheostomy suctioning • oxygen module • procedures in the event of emergency (e.g., tracheostomy dislodgement) • use and care of necessary equipment (e.g., ventilator, suctioning machine) • normal parameters of the ventilator settings and, when the parameters are outside of normal, what they mean and what action is required • access to emergency services <p>Family education has been happening on the acute care end regarding the ventilator.</p> <p>For family to support the patient in the community, training requirements would include:</p> <ul style="list-style-type: none"> • a support plan for ventilator/tracheostomy dislodgement • access to emergency services • training for recognition of worsening condition • knowledge of equipment and familiarity with ventilating/suctioning • urgent management with bag-valve mask • ROM exercises • infection control procedures • safe patient handling • comprehensive personal care requirements. <p>Training and all education related to transfer of function would be client specific. Training requirements will be individualized based on specific client capabilities, limitations and risks.</p>
System Processes and Support Required for Implementing a Transition Program	<p>From this RHA's perspective, provincial policy related to repatriation to other RHAs would be required.</p> <p>Supports in the community would include:</p> <ul style="list-style-type: none"> • standard training of workers and professional staff responsible for care • access to a family physician familiar with needs of this patient group • access to expertise with the hospital in the area (specialty physician, RT, etc.) • Telehealth for remote areas to prevent unnecessary visits to the emergency department for non-urgent needs that could be managed at home

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	<ul style="list-style-type: none"> • chronic ventilated patient unit or facility that is more conducive to the needs of this patient population; currently the only facilities that can manage chronic ventilated patients in this region are hospitals or nursing homes • would also be beneficial to have appropriate supportive housing environments for these patients versus just institution-based care.
Health System Cost Savings and Other System-related Benefits	<p>Health system benefits include:</p> <ul style="list-style-type: none"> • decreased length of stay, and therefore preventing potential adverse events such as delirium, infections related to prolonged hospital stays • improved access to critical care beds for patients requiring critical care • positive psychosocial impact of improved setting, that allows for socialization, non-restricted visiting hours, participation in community events/activities, care provider expertise, sense of independence, and self-determination for those living at home.

FTE = full-time equivalent; GP = general practitioner; ICU = intensive care unit; LTC = long-term care; LTVD = long-term ventilator dependent; OT = occupational therapy/therapist; PCA = personal care attendant; PT= physiotherapist/physiotherapy; RHA = regional health authority; RN = registered nurse; LPN = licensed practical nurse; RT = respiratory therapy/therapist.

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