



Ontario Respiratory Care Society | Autumn 2021 Issue 14



on Respiratory Health, Research and Education

Update on Respiratory Health, Research and Education is the official publication of the Ontario Respiratory Care Society (ORCS), a section of the Lung Health Foundation. *Update* is published three times per year and includes peer-reviewed original articles, clinical practice tools, health news, and communications between the ORCS and its membership. The beginning section is a snapshot. Click the "Read more" links to view the full articles below.

Chair's Message



To say that 2021 has been a tumultuous year would be a large understatement. From the on-going pandemic to the rebirth of the Ontario Lung Association (OLA) into the Lung Health Foundation (LHF) with a national mandate to the soon-to-come transition of the societies into a Healthcare Provider Network, members of the Ontario Respiratory Care Society (ORCS) have weathered a lot. However, just as the leaves fall in autumn only to reappear again in the spring, so too do I look forward to the new opportunities we will have in the coming year. **Read more**

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There is something special, yet familiar about changing seasons. While mostly familiar and predictable, as we transition from summer to fall, we embrace the excitement of new beginnings each new season brings. Now, more than ever, in the fast paced, fluid and uncertain times we live in, still in the midst of a global pandemic, let's embrace the sense of familiarity and comfort found in the predictable arrival of the new season and remember the impact we have on each other, our colleagues and patients. Let's remember to appreciate the ground-breaking research and tireless work done in healthcare over the past year and continue to bring information that promotes lung health. **Read more**



Featured Article 1



Long-COVID: long after the virus recedes!

Submitted by Manali Mukherjee¹, PhD and Sarah Svenningsen², PhD 1 Division of Respirology, Department of Medicine, McMaster University, Hamilton, ON 2 Firestone Institute for Respiratory Health, Research Institute of St. Joe's, Hamilton, ON

In March 2020, the World Health Organisation announced the start of a global pandemic caused by a positive-stranded RNA virus called the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The resulting out-break of the coronavirus disease 2019 (COVID-19) has now affected an estimated 240 million people worldwide, with >5 million deaths and counting. While the vast majority of patients who get infected have mild respiratory symptoms, a subset present with hypoxia and develop rapidly progressive acute respiratory distress syndrome (ARDS), associated with morbidity and fatality (1-4). Read more

Featured Article 2

An RT's Pandemic Experience in the ICU

Submitted by Shirley Quach, MHSc, RRT, CRE, HBSc

Whispers of SARS-CoV-2 were first heard near the end of November 2019. For many of us it was a passing thought, that perhaps this then local virus would become global and reach us here, in Canada. By March 11, 2020, remove "perhaps" from that sentence. SARS-CoV-2 or COVID-19 – had reached all corners of the world. It had reached Canada and the World Health Organization officially declared it a pandemic. **Read more**

Featured Article 3

Pharmacy Technicians During COVID-19 – An Evolving Profession

Submitted by Jennifer Antunes, Registered Pharmacy Technician, Sunnybrook Health Sciences Centre, Toronto, ON

Over the last year and a half, many of us have gone through a lot of changes, both from a personal and a professional aspect. The responsibilities of a pharmacy technician and the important roles that we play in a multi-disciplinary team truly began to show.

The primary role of the pharmacy technicians is to manage and ensure the safety and accuracy of medications to maintain their efficient distribution and delivery to patients or hospital units. From the start of COVID-19 pandemic, pharmacy technicians have played a key role in ensuring product availability to patients in a timely manner. There were global shortages on many raw products which caused lifesaving medications to go on back-order. Pharmacy technicians worked together with their partners to ensure that product was readily available for emergency use in the hospital and community settings. **Read more**



In the Spotlight

Miriam Freymond-Turnbull

Submitted by Yvonne Drasovean, ORCS Editorial Board chair

Miriam Freymond-Turnbull is a skilled respiratory therapist, a passionate leader and an amazing woman who enjoys working with people. Many more words are needed to describe the passion for lung health research and education Miriam shares with anyone who is lucky enough to work with her. It is all evident in her work with both patients and health care providers, and I am privileged and honoured to share some of Miriam's work with you. Read more

Toolbox 1

Respiratory Medications For Inhalation Available In Canada: Products & Devices

Submitted by Lawrence Jackson, BScPhm

- Table 1: <u>Dry Powder</u> Inhalers Availability and Dose Counter Features
- Table 2: Metered Dose Inhalers (MDIs pressurized): Availability, Dose Counter Features, and Priming Instructions

Read more

Toolbox 2

Synopsis: Long-term non-invasive ventilation in patients with chronic obstructive pulmonary disease (COPD): 2021 Canadian Thoracic Society Clinical Practice Guidelines update *Submitted by Julie Duff Cloutier, RN, MSc, PhD candidate*

Marta Kaminska, Karen P. Rimmer, Douglas A. McKim, Mika Nonoyama, Eleni Giannouli, Debra L. Morrison, Colleen O'Connell, Basil J. Petrof & François Maltais (2021): Longterm non-invasive ventilation in patients with chronic obstructive pulmonary disease (COPD): 2021 Canadian Thoracic Society Clinical Practice Guideline update, Canadian Journal of Respiratory, Critical Care, and Sleep Medicine. https://doi.org/10.1080/24745332.2021.1911218

Chronic hypercapnic respiratory failure is common in advanced COPD and is associated with adverse outcomes, such as repeat hospitalization and death. Historically, long-term non-invasive ventilation (NIV) had been associated with uncertain efficacy, but recent evidence suggests possible survival benefit and reduced hospitalizations. Read more

Respiratory Article of Interest #1

Prone positioning during COVID-19 early or late is there a difference.

Summary by Shirley Marr RN, BScN, MHScN, MHEd CNCC(c)

Mathews, Kusum, MD, MPH, Soh, Howard, MD, MS, Shaefi, Shahzad, MD, MPH, et al. (2021). Prone Positioning and Survival in Mechanically Ventilated Patients With Coronavirus Disease 2019-Related Respiratory Failure*. Critical Care Medicine, 49, 1026-1037. https://doi.org/10.1097/CCM.00000000004938 Read more



Respiratory Article of Interest #2

Mechanical insufflation-exsufflation and available funding for Canadian adult patients. A Canadian Thoracic Society Position Statement

Submitted by Jane Lindsay, Co-Chair of ORCS Editorial Board, PT (retired)

CANADIAN JOURNAL OF RESPIRATORY, CRITICAL CARE, AND SLEEP MEDICINE 2021, VOL. 5, NO. 3, 150–159 https://doi.org/10.1080/24745332.2021.1898845 Read more

Education & Events

The Lung Health Foundation hosts various continuing medical education programs including 3 annual conferences (Better Breathing, Respiratory Health Forum, and TB) and periodic webinars on a wide range of topics related to respiratory lung health, many of which are Mainpro+ certified. **Read more**

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Our first networking opportunity of 2022 will be the Better Breathing Conference that will take place from Monday January 24th to Friday January 28th. I am pleased it will return in the virtual format pioneered last year and hope that will allow all of you to participate. More information on this event will be available soon on social media, the LHF website, and our ORCS Weekly newsletter.

In this edition of Update on Respiratory Health, Research and Education, we bring you three feature articles that highlight the important work of our healthcare professionals and the impacts the pandemic experience has had on them and their clients over the past year. Jennifer Antunes writes about her perspective as a Respiratory Therapist; Shirley Quach writes about her perspective as a Pharmacy Technician, and Drs. Mukherjee and Svenningsen write on what they have learned about long haul COVID-19 symptoms in their patients. In the Toolbox, Lawrence Jackson provides an updated table on *"Respiratory Inhaled Medications in Canada"* while Julie Duff-Cloutier provides a summary of the 2021 Canadian Thoracic Society Clinical Practice Guideline Update, *"Long-term non-invasive ventilation in patients with chronic obstructive pulmonary disease (COPD)"*. In the Spotlight is the past Chair of the ORCS, Miriam Freymond-Turnbull, and we round out the edition with two summaries from the recent literature that will spark your interest in reading the full articles.

Thank you all for the work you do in these challenging times. I wish you all continued health and strength.

Respectfully, Christina McMillan Boyles, RN, MScN, PhD candidate Chair, Ontario Respiratory Care Society



Editor's Message

There is something special, yet familiar about changing seasons. While mostly familiar and predictable, as we transition from summer to fall, we embrace the excitement of new beginnings each new season brings. Now, more than ever, in the fast paced, fluid and uncertain times we live in, still in the midst of a global pandemic, let's embrace the sense of familiarity and comfort found in the predictable arrival of the new season and remember the impact we have on each other, our colleagues and patients. Let's remember to appreciate the ground-breaking research and tireless work done in healthcare over the past year and continue to bring information that promotes lung health.

I invite you to explore the content of this new edition of Update on Respiratory Health, Research and Education, read all or choose one of the informative articles that speaks to you and consider sharing your experience and knowledge with us in future editions.

For a close look at the work behind the scenes, in the article *An RT's pandemic experience in ICU*, Shirley Quach provides a first hand insight into frontline work specific to respiratory therapy in intensive care during the past year and half.

Jennifer Antunes discusses the importance of new engagement opportunities in healthcare, highlighting a new experience for pharmacy technicians, with her article *Pharmacy Technicians During Covid-19 – An Evolving Profession*.

One of the top interest subjects at this point in the pandemic, the long term effects of COVID-19 are presented by Dr. Manali Mukherjee & Dr. Sarah Svenningsen, from the Firestone Institute of Respiratory Health in their article *Long-COVID: long after the virus recedes!*

In the Toolbox, Lawrence Jackson provides an updated table on *Respiratory Inhaled Medications in Canada* while Julie Duff-Cloutier provides a summary of the 2021 Canadian Thoracic Society Clinical Practice Guideline Update, *Long-term non-invasive ventilation in patients with chronic obstructive pulmonary disease (COPD)*.

I invite you to get inspired by an outstanding story of commitment to volunteer service and professional dedication to lung health research and education. We shine the spotlight on Miriam Freymond-Turnbull, for her past and current work with the Lung Health Foundation.

As always, we offer summaries of articles of interest and look forward to suggestions for future topics in this section of our publication.

Happy reading, and let's all breathe with hope for good change.

Sincerely, Yvonne Drasovean, BSc, RRT, MEd, FCSRT Co-chair, ORCS Editorial Board



Featured Article 1

Long-Covid: long after the virus recedes!

Submitted by Manali Mukherjee¹, PhD and Sarah Svenningsen², PhD 1 Division of Respirology, Department of Medicine, McMaster University, Hamilton, ON 2 Firestone Institute for Respiratory Health, Research Institute of St. Joe's, Hamilton, ON

In March 2020, the World Health Organisation announced the start of a global pandemic caused by a positive-stranded RNA virus called the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The resulting out-break of the coronavirus disease 2019 (COVID-19) has now affected an estimated 240 million people worldwide, with >5 million deaths and counting. While the vast majority of patients who get infected have mild respiratory symptoms, a subset present with hypoxia and develop rapidly progressive acute respiratory distress syndrome (ARDS), associated with morbidity and fatality(1-4).

In Canada itself, COVID-19 has affected over 1.7 million Canadians, with 91 percent of them deemed to have "recovered" as per public health guidelines. Despite the recovery, a considerable proportion (10-15%) of COVID-19 survivors, irrespective of their acute severity (hospitalized or home-isolated), continue to have symptoms or develop new ones. These vary in type and severity between individuals, ranging from chronic fatigue, anosmia, and dyspnea, to diffuse pain, anxiety, and cognitive impairment that is not attributed to any clinical diagnosis. The NICE guidelines from UK first came up with the definition of "Long-Covid," which the CDC (Center for Disease Control, USA) termed as post-acute sequalae of COVID-19 or PASC. The "affected" call themselves Long-Haulers. The current definition now stands as "those who have symptoms consistent with COVID-19 infection lasting for 12 weeks or more". Symptoms after 4 weeks of recovery are considered to be "sub-acute," while those persisting beyond 12 weeks, not attributable to any other diseases, is considered to be "chronic PACS". Much remains unknown as to what causes this constellation of symptoms and what more severe pathologies they can lead to. In contrast to increasing age and male sex being risk factors for the acute infection severity, PASC seems to be more prevalent in females, with diverse age ranges being reported nationwide. In Canada, it is projected that approximately 150,000 will be affected.

Many ugly heads of Long-Covid

One of the earliest reports of PACS was in ~1700 Chinese hospitalised individuals at 6-month follow-up post discharge (5). Fatigue or muscle weakness was reported in 63%, sleeping disorders in 26% and anxiety in 23%, while pulmonary diffusion capacity, lower 6 minute walk test scores and abnormal CT manifestations were associated with those more critically ill (5). Indeed, fatigue, joint pain, and myalgia are the most frequent rheumatic and musculoskeletal symptoms that are being reported globally. Another common term that has emerged is "brain fog," which is often difficult to explain and indicates cognitive weakening – a neuropsychiatric component that can be often mislabelled. Aberration in blood pressure, orthostatic hypotension, exertional arrhythmia, unexplained tachycardia, and other cardiac anomalies are some serious PASC associated symptoms. In a recent study of 100 German patients (within 3 months of COVID-19 infection), cardiac MRI (magnetic resonance imaging) revealed cardiac involvement in 78% patients and ongoing myocardial inflammation in 60%, independent of pre-existing conditions, severity and overall course of the acute illness. The more "milder" symptoms are associated with persistent loss of smell (anosmia), or aberrant smells (parosmia), headaches, diffuse pain in joints, etc. PASC is not exclusive within those who were hospitalised. Instead, there are increasing reports of PASC in those who recovered at home and were deemed to have "mild-to-moderate" acute illness. Indeed, COVID-19 has been linked to long-term lung injury in young, otherwise healthy patients who did not require escalation of treatment, according to preliminary research. There are few studies that are now attempting to study this moderate recovered-at-home population.

Why are we studying respiratory physiology in Long-Covid?

To start with, the lung is the primary site of pathology in COVID-19. What we know thus far is the majority of PACS patients complain of dyspnea, and mostly exertional dyspnea. There is shortness of breath and chest pain consistent with radiological findings in sub-acute PASC patients. A three month follow-up in a British Columbia cohort reported almost 58% of the hospitalised patients to have had compromised findings on lung function tests and 88% with abnormal computed chest tomography (CT) or radiological findings(6). Again, lung volumes are reported to be normal in many PASC patients who report dyspnea and breathing difficulties, adding to anxiety and disappointment. Evidence from Alberta suggests a distinct phenotype of PASC where exertional dyspnea is reported despite "normal" lung volumes.(7) A six-month follow-up CT study showed fibrotic-like changes in the lung in more than one-third of patients who survived severe COVID-19. These changes



were associated with an older age, acute respiratory distress syndrome, longer hospital stays, tachycardia, non-invasive mechanical ventilation, and higher acute chest CT score(8). That said, more sophisticated lung imaging techniques such as hyperpolarized Xenon-129 MRI results reveal alveolar capillary diffusion limitation in almost all patients, 6 months post COVID-19 pneumonia, despite normal or nearly normal results on CT(9). Understanding the prevalence of typical respiratory symptoms within PASC patients via objective clinical tests, imaging techniques and physician evaluation is paramount, and currently is the subject matter of a nation-wide study being conducted by the Canadian Respiratory Research Network.

Why are we studying immunology in Long-Covid?

In the acute phase of the infection, severity and mortality is predicted by high T1 inflammation (cytokines such as interleukin-6,8, tumour necrosis factor alpha [TNFa], increased levels of acute phase inflammatory mediators such as C-Reactive protein and D-dimers. That said, in the recovered individuals there has been numerous studies that are reporting increased levels of these markers, indicating a delayed resolution of inflammation. We have unpublished data that suggests markers of T1 inflammation persist in individuals post-Covid up to 6 months and there is lasting changes in the lymphocyte population (collaborative work with Professor Dawn Bowdish)(10). There is also accumulating evidence of aberrant lymphocytes (that can produce autoantibodies de novo) increased post-acute infection(11). This echoes the immune dysregulation theory that might underlie these persistent symptoms long after the viral titers diminish/deplete.

Why are we studying autoimmunity in Long-Covid?

First, diverse circulating autoantibodies, neutrophil extracellular traps (NETs), and lymphopenia are associated with COVID-19 severity(12). Second, though the male: female sex ratio for contracting the infection and recovery rate is comparable, recent studies indicate PACS to be more prevalent in females, with increasing age and BMI. Taken together these are hallmark etiological factors and demographics underlying diverse autoimmune pathologies. Third, the lung being the primary affected organ may be the site of chronic autoinflammation itself. There is evidence of autoreactivity and detectable autoantibodies in sputa associated with autoimmune diseases with pulmonary complications (such as rheumatoid arthritis, vasculitis). Finally, there is a growing body of anecdotal evidence highlighting autoimmune diagnoses post-Covid, ranging from Guillain Barre to vasculitis to lupus, in otherwise previously healthy individuals(13). Our preliminary data suggests approximately 30% of individuals post-Covid have >2 circulating autoantibodies at a high disease-modifying titer, compared to an age-sex matched non-Covid healthy (pre-vaccinated) control population. While viruses, in general, have the innate capacity to induce autoimmunity(14) and similar post viral sequalae to SARS-CoV1 and MERs was seen, <u>it the epidemiological phenomenon of the sheer magnitude of PACS individuals affected that warrants detailed investigation</u>.

Food for thought

New Covid variations (variants of concern), about which nothing is known, have become more common in recent months. How they will affect our immune system, and health and change patterns within the PASC phenotypes remain another challenge. Most of what is known is coming from convenient sample sizes, or single centres, and the bias in those findings cannot be disregarded. There are even less compact study designs that look at matched clinical evaluation, imaging and immunological measurements to investigate PASC symptoms and their etiological underpinnings. Instead of cross-sectional cohort studies, longitudinal studies are needed, and national/international collaborations. There are many questions that the SARS-CoV2 virus has left us with, and indeed the pandemic crisis has given us an opportunity to gain a deeper understanding of our physiology, immunology and their conjoint answer to extraneous threat. We are living through unprecedented times - the virus mutates, the anti-vaxxers campaign, and the symptoms amongst the survivors persist. It seems like Covid is here to stay, in the form of Post-acute sequalae, or in more colloquial term – Long-Covid.

Funding sources and ongoing long-Covid projects undertaken by authors:

1. Title: Prospective longitudinal study to characterize and understand the clinical relevance of SARS-CoV2 related ventilation and perfusion injury evaluated by V/Q SPECT-CT in an asthmatic and healthy population. Funded by: Cyclomedica Canada Ltd.

PI: Sarah Svenningsen; co-PI: Parameswaran Nair, Manali Mukherjee

2. Title:SARS-CoV-2 triggers Autoimmunity: implications for the pathogenesis of Post-Acute COVID-19 Syndrome - (AI-PACS). Funded by: Canadian Institutes of Health Research

PI: Manali Mukherjee; co-PI: Konstantinos Tselios, Sarah Svenningsen;



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Featured Article 2

An RT's Pandemic Experience in the ICU

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Whispers of SARS-CoV-2 were first heard near the end of November 2019. For many of us it was a passing thought, that perhaps this then local virus would become global and reach us here, in Canada. By March 11, 2020, remove "perhaps" from that sentence. SARS-CoV-2 or COVID-19 – had reached all corners of the world. It had reached Canada and the World Health Organization officially declared it a pandemic.

In comparison to our inter-professional colleagues, many times, respiratory therapists (RT) are in the shadows. As a RT, reintroductions to patients and families are a common occurrence, and often being mistaken for another discipline. The role of a RT is not commonly known; people often Google the job description and still struggle to understand the role. The RT's role is very specific, respiratory-specific.

RTs are always called when a patient shows signs of respiratory distress, increased work of breathing or has increased oxygen needs. As RTs, we are specifically trained to provide oxygen and respiratory support to meet the patient's physiological needs. You can find us everywhere in the hospital, including in the intensive care unit (ICU), at the head of the bed – responsible for airway management and all things respiratory related. In the ICU, RTs are integrated into the care team to collaboratively treat the critically ill, with our primary role in intubating and managing mechanical ventilation, patient pronation and assisting with critical lab work such as arterial line insertion and sputum collection.

When the cases increased, the number of calls we received increased too, directly increasing our workload.COVID-19 presented itself in many forms of severity, regardless of age or ethnicity. Our ICU has admitted patients ranging from their early twenties up to late nineties from different ethnic backgrounds; from those requiring minimal oxygen, to those needing life support. Many required intubation, the insertion of a breathing tube into their airway, because they were unable to breathe on their own anymore. This was the best solution to allow the care team to control their breathing, hopefully to improve their ventilation and oxygenation. Sometimes it worked, but when intubation and heavy sedation were not enough, we had to turn to other options. The COVID-19 infection was more than just pneumonia, it exacerbated their hosts' underlying diseases, complicating patient's ICU care and lengthened their stay. The changing presentation of the COVID-19 virus made it challenging, since the highest oxygen therapy and ventilatory support we could provide with ventilators were still not enough.

In addition to the increased workload associated with the new norm of stricter infection control practices, we found ourselves proning patients with COVID-19 (lying them on their stomach) more than other patient populations. When 100% of oxygen through the ventilator was insufficient, proning was used to improve their lung mechanics; anticipating favourable outcomes in their blood oxygen levels. The amount of manpower required to turn a patient receiving sedation and neuromuscular blockade is more than one would imagine. It takes immense teamwork and collaboration to safely turn these unstable patients with numerous lines and life supportive therapies. Any dislodgement of lines increases their risk of experiencing unintentional complications. An endotracheal tube is key to providing respiratory support and is a patient's lifeline. RTs are responsible for ensuring that the tube is secure pre and post proning, which involves re-tapping of the tube at each turn. A key responsibility, taken seriously and handled with confidence, as we stand at the head of the bed.

RTs in the ICU typically have six to ten beds to cover, but with COVID-19, it really stressed the limits. Having to care for six to ten, if not more, critically ill patients on ventilators, is taxing. Repeated donning and doffing procedures felt like an endless cycle as we assessed our patients one by one during our 12 hour shifts. Patient assessments and rounds lasting an hour or more at times as they were too critical to be left alone. With rounds lasting hours, it was common to complete one set of rounds just in time to start the next, without having the opportunity to catch a physical and mental break. As an RT's work priority is set by the critical status of a patient, more often than not, RTs are pulled away mid-patient assessment for a critical deterioration occurrence with another patient. Ventilator management requires frequent attention and modifications, this is a large responsibility of RRTs and they must adjust ventilator settings appropriately to respond to patients' dynamic changes, blood results and monitored parameters. Unpredictable alterations in workflow was not a new demand of the job once the pandemic was announced; however, the unstable nature of their health status and the greater frequency of treatment changes, intensified the workload as the overall number of cases and subsequently ICU admissions increased. For hospitals



in the COVID-19 hotspots, workloads were even heavier and workflow less predictable and exhausting. Divide and conquer: that was the motto, as we often called in colleagues to help ICU staff.

Early spring 2021, the weight of this pandemic deepened heavily - constant calls, patient arrests, intubations, emergency bronchoscopies, proning and the frequent head turns that accompanied them. It was non-stop. N95 masks were required for hours as we had to constantly re-enter patients' rooms to adjust their ventilator settings or provide additional respiratory care, for 12 hours; this was the life of an RT.

Getting caught up with the demand of the job affected one's perception of time - time was lost, the days and even months flew by. Before anyone knew it, it was already May, then June 2021. The number of hospitalized cases requiring ICU admission tapered down as the weather became warmer and more people spent time outside instead of inside. Vaccination played a large role in redirecting the incidences of COVID cases. This plateau and fewer confirmed cases compared to the same time last year allowed for restrictions to be lifted, just in time for summer. But amongst the medical community, this 'summer break' may have been just that. A break from the undeniable possibility of a heavy load of high cases of COVID in the coming winter months, the anticipated 4th wave and possibly another wave after that.

There are many uncertainties as we enter the fall and winter seasons. The anticipation of another spike in cases requiring hospitalization is like watching a sport's match with an unclear winner, an unclear outcome. Despite this, over this past year and half of the pandemic, we have learned many things. We enhanced our understanding of the impact of work place stress and become more conscientious of the importance of self-care and resilience. Our profession has received more appreciation and awareness than before. We have adapted and evolved, and regardless of what this pandemic may bring, the RT will always be at the head of the bed.



Featured Article 3

Pharmacy Technicians During COVID-19 – An Evolving Profession

Submitted by Jennifer Antunes, Registered Pharmacy Technician, Sunnybrook Health Sciences Centre, Toronto, ON

Over the last year and a half, many of us have gone through a lot of changes, both from a personal and a professional aspect. The responsibilities of a pharmacy technician and the important roles that we play in a multi-disciplinary team truly began to show.

The primary role of the pharmacy technicians is to manage and ensure the safety and accuracy of medications to maintain their efficient distribution and delivery to patients or hospital units. From the start of COVID-19 pandemic, pharmacy technicians have played a key role in ensuring product availability to patients in a timely manner. There were global shortages on many raw products which caused lifesaving medications to go on back-order. Pharmacy technicians worked together with their partners to ensure that product was readily available for emergency use in the hospital and community settings.

Since pharmacy technicians are well versed in drug procurement and safe storage of medications, it made sense to have pharmacy technicians involved in the forefront of managing COVID-19 vaccines, with the distribution, storage, and preparation of the vaccines. In addition to our regular roles and responsibilities, the Ontario government introduced temporary emergency regulations to allow registered pharmacy technicians to begin inoculating patients with the COVID-19 vaccine.

The moment I learned about this change to our scope of practice, I quickly started to search for immunization and vaccination courses that were approved by the Ontario College of Pharmacists. Upon completion of the course, I connected with the leaders at Sunnybrook Hospital to discuss about how pharmacy technicians can be integrated in the hospital's vaccine clinic to aid in the administration of the COVID-19 vaccines. I was asked to be part of a working group to plan and trial having pharmacy technicians actively vaccinating in the vaccine clinic. After brainstorming, consulting with our regulatory body, and trialling multiple ideas, we had come to a consensus that would allow pharmacy technicians to work in the vaccine clinic in a safe, patient-centered approach. This increased our exposure to the healthcare team as people who are not only able to mix and prepare vaccines, but administer them as well.

During the same time, I reached out to one of the physicians in the hospital, and asked him if he would be comfortable with letting me give him his vaccine. I told him that he would be the first person I ever vaccinated. Not only would this be the first time I ever vaccinated someone, this would possibly mark the very first time a pharmacy technician in Ontario administered a vaccine. I had felt a wide range of emotions, from nervousness to excitement. Not only that, but I was also going to be vaccinating a Nephrologist. Personally, I felt as this would be a huge steppingstone for having pharmacy technicians accepted in the multi-disciplinary team.

When eligibility criteria started to open up, the nephrology team that I work with approached me to help inoculate patients in our program. This project consisted of me managing the procurement, stability, storage, and preparation of the vaccine, in addition to being one of the vaccinators on the team.

Senior management of the hospital also wanted to offer vaccinations to the patients that were admitted. Unfortunately, everyone was burnt out, and did not want to take on more responsibilities. One of the managers at Sunnybrook reached out to me and asked about the process that we used to get our dialysis patients vaccinated. After explaining the process, she mentioned that inpatient vaccinations is a project that she is working on, and I offered to test out, and help implement the service to our admitted patients. Once we came up with a rough process, one of the advanced practice nurses and I went around to trial it. We made our recommendations on how to help streamline the process, and until a team was hired to take over, inpatient vaccinations was one of the projects I gladly spearheaded. By the time I trained the new staff, and handed the project over, I vaccinated over 200 admitted patients.

At the same time, there was a call for outreach programs to help vaccinate the community. I worked with 2 other colleagues, a pharmacist and another pharmacy technician about our role with outreach vaccine program. I helped vaccinate people in shelters, people living in congregate settings, TTC employees, and more. Since then, I have been giving third doses to qualifying patients and have been one of the point people for staff and patient questions.



Since being one of the first pharmacy technicians to vaccinate in Ontario, there had been a lot more media and social media attention than I had ever expected. I was interviewed with CBC, on and shared on many social media platforms. Pharmacists, pharmacy technician, and students I had never met recognized either my name or face from the posts on these platforms. My old professors from Humber College reached out to me, and even my kindergarten teacher!

I have always advocated for vaccine administration to be within the scope of practice of a pharmacy technician. I am hopeful that this is just the beginning of pharmacy technicians evolving role in the healthcare team.



In the Spotlight

Miriam Freymond-Turnbull

Submitted by Yvonne Drasovean, ORCS Editorial Board chair

Miriam Freymond-Turnbull is a skilled respiratory therapist, a passionate leader and an amazing woman who enjoys working with people. She approaches her work with boundless energy and infectious enthusiasm. Many more words are needed to describe the passion for lung health research, education and care delivery. Miriam shares with anyone who is lucky enough to work with her. It is all evident in her work with both patients and health care providers, and I am privileged and honoured to share some of Miriam's work with you.

Miriam started her career as a respiratory therapist in acute care. She expanded her clinical experience to community care where she allowed her leadership skills to find new horizons. In 1999, Miriam obtained an MBA degree from Wilfrid Laurier University, adding a new set of business skills and expertise to her experience.

From supporting educational seminars, making time to answer messages and attend meetings, to helping to organize the annual Better Breathing Conference, Miriam exemplifies the spirit of volunteer service with ORCS and the Lung Health Foundation, by offering her own time and expertise, or supporting others to do so.

To name just a few of her volunteer initiatives, Miriam served on the ORCS Southwestern Ontario Regional Group Executive for several years. As the first Chair of the ORCS Membership & Program Promotion Committee, Miriam led several new initiatives for the ORCS including the introduction of long-service pins for ORCS 5 - 25 year members.

As Vice President and General Manager of ProResp Inc, she encouraged the company to sponsor and exhibit at many educational events.

Miriam was a member of the OLA Marketing Communications Committee for several years. She has served on the ORCS Provincial Committee since 2001 in that capacity and as an ORCS Standing Committee Chair.

Between 2019 and 2021, Miriam served as the Chair of the ORCS. Miriam is currently a member of the Board of Directors of the Lung Health Foundation. Her dedication and supportive presence in the world of respiratory care education and respiratory patient care, has the power to make those around her want to reach for the stars. Ask anyone who ever worked with Miriam and the answer is invariably the same: a wonderful and dedicated professional and true leader who inspires others.

Sheila Gordon Dillane, Past Director of ORCS, speaking for all of us, "*Miriam has been an extraordinary ORCS volunteer for almost 30 years. From when I first met her, I was impressed with her commitment to continuing education for health professionals. She is fun to be with and very generous*".

Thank you Miriam for your ongoing dedication!



Toolbox 1

Respiratory Medications For Inhalation Available In Canada: Products & Devices *Submitted by Lawrence Jackson, BScPhm*

Table 1:	Dry Powder Inhalers -	Availability and Dose	Counter Features
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Drug(s) Generic (Brand Name)	Dose per Inhalation; # of doses	Device type	Dose Counter Features	
Bronchodilators				
Short-acting beta ₂ -agonist	(SABA)			
Salbutamol (Ventolin Diskus [®])	200 mcg; <i>60</i>	Diskus	Dose counter counts down from 60 to 1. The last 5 numbers are in red.	
Terbutaline (Bricanyl®)	500 mcg; 100	Turbuhaler	A red mark shows in the window underneath the mouthpiece when 20 doses are left. When the red mark reaches the bottom of the window, the device is empty.	
Long-acting beta ₂ -agonist	(LABA) 12-hour acting			
Formoterol (Foradil [®])	12 mcg; 60	Aerolizer	No dose counter (capsule inserted into the Aerolizer device)	
Formoterol (Oxeze®)	6 or 12 mcg; 60	Turbuhaler	A red mark shows in the window underneath the mouthpiece when 20 doses are left. When the red mark reaches the bottom of the window.	
Salmeterol (Serevent Diskus [®])	50 mcg; 60	Diskus	Dose counter counts down from 60 to 1. The last 5 numbers are in red.	
Long acting beta ₂ -agonist	(LABA) 24-hour acting			
Indacaterol (Onbrez®)	75 mcg; <i>10 and 30</i>	Breezhaler	No dose counter (capsule inserted into the Breezhaler device)	
Long-acting muscarinic ar	ntagonist (LAMA) (antichol	inergic)		
Aclidinium bromide (Tudorza [®] Genuair [®])	400 mcg; 30 and 60	Genuair	Dose counter counts down by 10 from 60 to zero. A red strip band appears in the dose counter window indicating time to obtain a new inhaler. When preparing the last dose, the actuation button will not return to its upper position.	
Glycopyrronium bromide (Seebri [®] Breezhaler [®])	50 mcg; 10 and 30	Breezhaler	No dose counter (capsule inserted into the Breezhaler device)	
Tiotropium bromide (Spiriva [®])	18 mcg; 10 and 30, 30 refill	Handihaler	No dose counter (capsule inserted into the Handihaler device)	
Umeclidinium bromide (Incruse [®] Ellipta [®])	62.5 mcg; 7 and 30	Ellipta	Dose counter counts down by one; when fewer than 10 doses are left, half of the dose counter shows red (as a reminder to refill prescription). After you have inhaled the last dose, half of the dose counter shows red and the number 0 is displayed. Your inhaler is now empty. If you open the cover after this, the dose counter will change from half red to completely red Discard when the dose counter reads "0", or 6 weeks after removal from foil tray, whichever comes first.	



Combination products (LAMA/LABA)			
Umeclidinium/vilanterol (Anoro [®] Ellipta [®])	LAMA/LABA 62.5/ 25 mcg; 7 and 30	Ellipta	Dose counter counts down by one; when fewer than 10 doses remain, half of the dose counter shows red (as a reminder to refill prescription). After you have inhaled the last dose, half of the dose counter shows red and the number 0 is displayed. Your inhaler is now empty. If you open the cover after this, the dose counter will change from half red to completely red. Discard when the dose counter reads "0", or 6 weeks after removal from foil tray, whichever comes first.
Aclidinum/formoterol (Duaklir Genuair®)	LAMA/LABA 400/12 mcg; 60	Genuair	Dose counter counts down by 10 from 60 to zero. A red strip band appears in the dose counter window indicating time to obtain a new inhaler. When preparing the last dose, the actuation button will not return to its upper position.
Indacaterol/ glycopyrronium (Ultibro [®] Breezhaler [®])	LABA/LAMA 110/ 50 mcg; 6 and 30	Breezhaler	No dose counter (capsule inserted into the Breezhaler device)
Inhaled corticosteroids (ICS))		
Budesonide (Pulmicort®)	100, 200, or 400 mcg; <i>200</i>	Turbuhaler	A red mark shows in the window underneath the mouthpiece when 20 doses are left. Discard when the red mark reaches the bottom of the window.
Fluticasone propionate (Flovent Diskus [®])	100, 250, or 500 mcg; <i>60</i>	Diskus	Dose counter counts down from 60 to 1. The last 5 numbers are in red.
Fluticasone propionate (Aermony Respiclick®)	55, 113, or 232 mcg 60	Respiclick	Dose counter counts down from 60 by 2, (ie, 60, 58). Numbers change to red from 20 downward. Discard inhaler when dose counter reaches zero. No priming. Do not use a spacer device.
Fluticasone furoate (Arnuity [®] Ellipta [®])	100 or 200 mcg; <i>14 and 30</i>	Ellipta	Dose counter counts down by one; when fewer than 10 doses are left, half of the dose counter shows red, to remind you to refill your prescription. After you have used the last dose, half of the dose counter shows red and the number 0 is displayed. Your inhaler is now empty. If you open the cover after this, the dose counter will change from half red to completely red. Discard when the dose counter reads "0", or 6 weeks after removal from foil tray, whichever comes first.
Mometasone	100, 200 or 400 mcg;	Twisthaler	Dose counter counts down by one, indicating number of
(Asmanex [®])	30 – 100 or 400 mcg 60 - 200 or 400 mcg		doses remaining. When counter reaches 00, the cap will lock.
Combination products (ICS/I	LABA)	1	
Budesonide/formoterol (Symbicort [®])	100/6 or 200/6 mcg; 120 - 100/6 mcg 60 & 120 - 200/6 mcg	Turbuhaler	Counts down. Every 20 th dose is marked by a number and every 10 th dose by a dash. A 0 on a red background in the middle of the window indicates empty.
Fluticasone/salmeterol (Advair Diskus [®])	100/50, 250/50, or 500/50 mcg; <i>28 and 60</i>	Diskus	Dose counter counts down from 60 to 1. The last 5 numbers are in red.
Fluticasone propionate/salmeterol (pms- Fluticasone/salmeterol DPI [®])	100/50, 250/50, 500/50 mcg; 60	Diskus device	Dose counter counts down by 1 from 60 to zero. The last 5 numbers are in red.
Fluticasone propionate/salmeterol (Wixela Inhub [®])	100/50, 250/50, 500/50 mcg; 60	Modified Diskus device	Dose counter counts down by one from 60 to zero. A red indicator appears when there are 9 doses or less remaining. The lever will not reach the end of the purple arrows when there are no doses remaining.



Fluticasone furoate/vilanterol (Breo [®] Ellipta [®])	100/25 or 200/25 mcg; <i>14 and 30</i>	Ellipta	Dose counter counts down by one; when fewer than 10 doses remain, half of the dose counter shows red to remind you to refill prescription. After you have inhaled the last dose, half of the dose counter shows red and the number 0 is displayed. Your inhaler is now empty. If you open the cover after this, the dose counter will change from half red to completely red. Discard when the dose counter reads "0", or 6 weeks after removal from foil tray, whichever comes first.
LABA/ICS Indacaterol/mometasone (Atectura [®] Breezhaler [®])	150/80, 150/160, 150/320 mcg <i>30</i>	Breezhaler	No dose counter (capsule inserted into the Breezhaler device)
Combination products (ICS/LAMA/LABA)			
Fluticasone furoate/umeclidinium/ vilanterol (Trelegy [®] Ellipta [®])	100/62.5/25 mcg; <i>14 and 30</i>	Ellipta	As above
LABA/LAMA/ICS Indacaterol/glycopyronium/ mometasone (Enerzair [®] Breezhaler [®])	150/50/160 mcg 30	Breezhaler	No dose counter (capsule inserted into the Breezhaler device)

Approved by Health Canada but not marketed

<u>ICS</u>

pms-Fluticasone propionate (DPI) 100, 250, 500 mcg/ inhalation. Supplied: 60 in a Diskus device

pms-Fluticasone propionate HFA 50, 125, (250*) mcg/puff. Supplied:HFA 50 mcg (*120*), 125, 250 mcg (*60 and 120*) (Note: *250 mcg/puff strength is marketed)

ICS/LABA

Fluticasone propionate/salmeterol (DPI) Respiclick, Arbesda Respiclick[®] 55/14, 113/14, 232/14 mcg/inh Supplied:60

Zenhale 50/5 strength (Note: 100/5 and 200/5 are marketed)

LABA

Olodaterol 2.5 mcg/actuation. (Striverdi Respimat). Supplied 60 actuations



Table 2: Metered Dose Inhalers (MDIs pressurized): Availability, Dose Counter Features, and Priming Instructions

Drug Name (generic & trade)	Dose Counter Feature	Dose per puff; # puffs per device	Initial priming* (releasing spray into the air)	Re-priming* (releasing spray into the air)	
Bronchodilators					
Short-acting beta ₂ -agonis	st (SABA)				
Salbutamol Apo-Salvent CFC Free [®]	No dose counter	100 mcg; <i>200</i>	4 sprays	4 sprays if not used for 2 weeks	
Novo-Salbutamol HFA®	No dose counter	100 mcg; 200	4 sprays	4 sprays if not used for 4 weeks	
Salbutamol HFA (Sanis)	No dose counter	100 mcg; 200	4 sprays	4 sprays if not used for more than 5 days	
Ventolin HFA®	No dose counter	100 mcg; 200	4 sprays	4 sprays if not used for 4 weeks; 1 puff after cleaning	
Salbutamol (in ethanol) Airomir [®]	No dose counter	100 mcg; 200 (or 100 hospital)	4 sprays	4 sprays if not used for 14 days or more	
Short-acting muscarinic a	antagonist (SAMA) (aı	nticholinergic)	•		
Ipratropium bromide Atrovent HFA [®]	No dose counter	20 mcg; 200	2 sprays	1 spray if not used for more than 3 days	
Combination Products (S	AMA/SABA)				
Ipratropium/salbutamol Combivent [®] Respimat [®]	Pointer indicates approximate amount remaining	20/100 mcg 60 and 120	Until cloud appears + 3 more times	1 spray if not used for more than 3 days. Full priming if not used for more than 21 days	
Long-acting muscarinic a	ntagonist (LAMA) 24-	hour acting (anticholin	nergic)		
Tiotropium Spiriva [®] Respimat [®]	Pointer indicates approximate amount remaining	2.5 mcg; 28 and 60	Until cloud appears + 3 more times	1 spray if not used for more than 7 days. Full priming if not used for more than 21 days	
Combination Products (L	AMA/LABA)				
Tiotropium/olodaterol Inspiolto [®] Respimat [®]	Pointer indicates approximate amount remaining	2.5/2.5 mcg 28 and 60	Until cloud appears + 3 more times	1 spray if not used for more than 7 days. Full priming if not used for more than 21 days	
Inhaled corticosteroids (ICS	5)				
Beclomethasone (in ethanol) Qvar [®]	No dose counter	50 or 100 mcg; <i>100 and 200</i>	4 sprays	4 sprays if not used for 14 days or more	
Ciclesonide (in ethanol) Alvesco [®]	No dose counter	100 or 200 mcg; <i>30 and 120</i>	3 sprays	3 sprays if not used for 7 days or more	
Fluticasone propionate Flovent HFA [®]	No dose counter	50, 125 or 250 mcg; 60 and 120	1 spray	1 spray if not used for 7 days or more	
pms-Fluticasone propionate HFA [®]	No dose counter	*250 mcg; <i>120</i>	2 sprays	2 sprays if not used for 7 days or more	
APO-Fluticasone propionate HFA [®]	No dose counter	250 mcg; <i>120</i>	2 sprays	2 sprays if not used for 7 days or more. Only available in one dose	
Combination products (ICS/LABA)					
Fluticasone propionate /salmeterol Advair [®] with dose counter	Dose counter shows # puffs remaining	125/25 or 250/25 mcg; 120	1 spray; repeat until dose counter reads 120	2 sprays if not used for 7 days or more	
Mometasone/formoterol (in ethanol) Zenhale®	Dose counter shows # puffs remaining	100/5 or 200/5 mcg; 120	4 sprays; dose counter should read 120	4 sprays if not used for 5 days or more	

*Other strengths of pms-Fluticasone propionate (HFA) & all strengths of pms-Fluticasone propionate DPI are not marketed.



*Priming a Pressurized MDI:

Initial priming is recommended before using the inhaler for the first time and re-priming is recommended if the inhaler has not been used for a period of time (as specified in each product's instructions for use). When priming, shake the inhaler and direct the recommended number of test sprays into the air, away from the face.

Shaking a Pressurized MDI before Use:

Shake all pressurized MDIs before use except QVAR[®] and Respimat[®] products. QVAR[®] is formulated as a solution in HFA propellant. Respimat[®] products are formulated as propellant-free solutions.



Toolbox 2

Synopsis: Long-term non-invasive ventilation in patients with chronic obstructive pulmonary disease (COPD): 2021 Canadian Thoracic Society Clinical Practice Guidelines update *Submitted by Julie Duff Cloutier, RN, MSc, PhD candidate*

Marta Kaminska, Karen P. Rimmer, Douglas A. McKim, Mika Nonoyama, Eleni Giannouli, Debra L. Morrison, Colleen O'Connell, Basil J. Petrof & François Maltais (2021): Longterm non-invasive ventilation in patients with chronic obstructive pulmonary disease (COPD): 2021 Canadian Thoracic Society Clinical Practice Guideline update, Canadian Journal of Respiratory, Critical Care, and Sleep Medicine. https://doi.org/10.1080/24745332.2021.1911218

Chronic hypercapnic respiratory failure is common in advanced COPD and is associated with adverse outcomes, such as repeat hospitalization and death. Historically, long-term non-invasive ventilation (NIV) had been associated with uncertain efficacy, but recent evidence suggests possible survival benefit and reduced hospitalizations.

This guideline update reviews current evidence regarding long-term NIV in the treatment of chronic hypercapnic respiratory failure specifically related to advanced COPD. An expert panel was formed to develop the guideline. The panel performed a systematic literature review, assessed and graded the evidence and made evidence-based recommendations.

The panel concluded that there was sufficient evidence for the use of the long-term NIV to improve survival in patients with stable COPD with significant chronic hypercapnic respiratory failure.

This update represents an important shift from the previous recommendation against the use of long-term NIV in most patients with COPD and chronic hypercapnic respiratory failure, towards its suggested use. The panel supports the use of long-term NIV in highly selected patients with COPD and chronic hypercapnic respiratory failure along with the use of specific and closely monitored ventilatory strategies.



Respiratory Article of Interest #1

Prone positioning during COVID-19 early or late is there a difference.

Summary by Shirley Marr RN, BScN, MHScN, MHEd CNCC(c)

Mathews, Kusum, MD, MPH, Soh, Howard, MD, MS, Shaefi, Shahzad, MD, MPH, et al. (2021). Prone Positioning and Survival in Mechanically Ventilated Patients With Coronavirus Disease 2019-Related Respiratory Failure*. Critical Care Medicine, 49, 1026-1037. https://doi.org/10.1097/CCM.00000000004938

The objective of this multicentre cohort study was to assess whether early initiation of proning patients with COVID-19 improved their survival.

A total of 2338 patients, confirmed with COVID-19, from 68 US hospital were included in this cohort report. Identified patients were mechanically ventilated with partial pressure of oxygen (PaO2) and fractional oxygen (FiO2) ratio (P/F ratios) less than or equal to 200mmHg.

Thirty percent of these patients were proned within the first 2 days of intensive care unit (ICU) admission. Nineteen point five were proned later in their ICU course, the rest of the study population were not proned. Of the total patients, 47% died, 43.5% were discharged from hospital while the others were still hospitalized at the time of publication. The 1,101 patients who died included 327 of the 702 patients (46.6%) treated with early proning and 774 of the 1,636 patients (47.3%) not treated with early proning. There was a 30% increase in patient-proning compared to pre-COVID-19 studies, as COVID-19 presented many challenges and limited options for improving oxygenation.

Previous studies have shown proning to improve oxygenation; however, its effect on mortality is lacking, as are the effects of early versus late proning. Data on the duration of proning and the number of proning sessions were not collected. Patients were also excluded if they received extracorporeal membrane oxygenation, experienced a code blue or severe arrhythmia on ICU day 1 or were proned prior to ICU admission. Proned patients were found to be younger and had lower comorbidities, with higher occurrence of shock (26% vs. non-proned 12%), higher use of corticosteroids and neuromuscular blocking agents on day 1 of ICU admission.

The authors concluded that early proning within the first 2 days of ICU admission may increase survival in mechanically ventilated patients with moderate to severe hypoxemia due to COVID-19. The authors further discussed that although the rate of proning was higher than before, the overall rate of proning is still relatively low, which could be due to issues such as manpower limitations, high patient workloads and initial lack of familiarity with the process. However, it is noted that familiarity to this intervention is improving as policy and procedures, screening criteria and standards are more readily implemented.



Respiratory Article of Interest #2

Mechanical insufflation-exsufflation and available funding for Canadian adult patients. A Canadian Thoracic Society Position Statement

Submitted by Jane Lindsay, Co-Chair of ORCS Editorial Board, PT (retired)

CANADIAN JOURNAL OF RESPIRATORY, CRITICAL CARE, AND SLEEP MEDICINE 2021, VOL. 5, NO. 3, 150–159 https://doi.org/10.1080/24745332.2021.1898845

This Position Statement was prepared by a working group of the Canadian Respiratory Health Professionals (CRHP) to address the fact that there was no existing resource paper to outline provincial funding avenues for home use of mechanical insufflation-exsufflation (MI-E) devices.

MI-E devices are increasingly (although not universally) used in hospital to assist patients (primarily those with neuromuscular disease) who have weak or inadequate cough. In addition to assisting mucociliary clearance, these devices are also used to improve lung volume.

The article describes MI-E and its use in different disease states and in combination with mechanical ventilation. While describing the direct and indirect costs of MI-E (and ventilation for those who require both) it is noted that both of these interventions carry initial machine costs as well as additional costs for requirements such as external batteries, filters, tubing, connectors, masks etc.

A chart summarizes the coverage that is provided by each province, and the authors discuss alternative funding sources that may be available to some patients. Even when funding is available, it seldom covers all costs, and health professionals interviewed for the article noted that they sometimes avoid referring because of the known costs.

The authors make it clear that, since provision of appropriate devices can help prevent hospitalization expenses due to respiratory complications in these patients, more consistent funding across Canada is essential. Currently only six out of thirteen Canadian provinces and territories have some government funding for community use of MI-E.



Education & Events

The Lung Health Foundation hosts various continuing medical education programs including 3 annual conferences (Better Breathing, Respiratory Health Forum, and TB) and periodic webinars on a wide range of topics related to respiratory lung health, many of which are Mainpro+ certified. For more information or to set up a workshop for your healthcare team or organization please contact pep@lunghealth.ca.



Save the date for Better Breathing Week – The educational adventure where you can make new connections and help create a world where everyone can breathe better is now **January 24 - 28, 2022.**

The conference location is the same as last year: the internet. We heard loud and clear a virtual event is preferred. We get it and are happy to deliver.

Much planning is underway to develop programming that brings together:

- patient empowerment and education
- provider learning on issues that *really* matter
- powerful policy discussions

You're not going to want to miss this. Because it's free *and* virtual, we hope you don't have to. We'll let you know when registration opens. Until then, if you have any questions email info@lunghealth.ca and we'll get you answers.



ORCS members regularly receive news of upcoming workshops via the bi-weekly ORCS News. Recordings of past educational webinars can be found in our archives.



RESPIRATORY TRAINING RESPTREC® & EDUCATOR COURSE

RESPTREC is pleased to offer ORCS members a 10% discount on any individual course purchases (i.e., Asthma or COPD or Education for Chronic Disease). To receive the discount, please apply the code **ORCS10** at the time of registration. If you are a new RESPTREC learner, you can also register for all three courses as a value-bundled option.

To see what RESPTREC courses are currently available and to register, please visit www.resptrec.org.



ORCS Committees

As previously communicated to the Ontario Respiratory Care Society members throughout this year, both societies will come to a close March 31, 2022. Meetings are ongoing with each of the ORCS' respective committees to wrap up high priority activities, including this publication.

If you have any questions with respect to the Lung Health Foundation's plans to continue engaging healthcare providers beyond March 31, 2022. Please reach out to Natalie Bennett nbennett@lunghealth.ca.

If you have any questions with respect to committee activities leading up to March 31, 2022. Please reach out to Jess Rogers jrogers@lunghealth.ca and/or your committee chair.