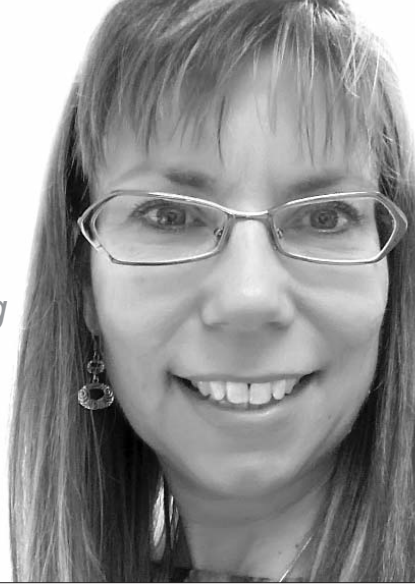
THE LUNG ASSOCIATION™
ONTARIO RESPIRATORY CARE SOCIETY

UPDATE

"ORCS is pleased to move forward with a new plan and some exciting new directions."

Shelley Prevost
Chair, ORCS



SPRING/SUMMER 2016 VOLUME 32, NUMBER 2

Features
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Regular Columns

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CYCLE: An Innovative Research Program of Early In-bed Cycling with Mechanically Ventilated Patients

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Introduction

When one thinks of physical activity or rehabilitation, typically the intensive care unit (ICU) is not the first place to come to mind. Indeed, the ICU is traditionally considered an environment where patients receive bed rest to achieve optimal physiologic stability and recovery from critical illness[1]. Fortunately, as medical technology has advanced over the years, so has the management of critical illness, and more patients are surviving their ICU stay[2,3]. However, this increased survival often comes at a cost, reflected in poorer physical function after hospital discharge, which can persist for years after critical illness[4,5]. Functional deficits can persist from 5 to over 8 years, as seen in a landmark Canadian cohort of acute respiratory distress syndrome survivors (median age 45 years) and in older survivors of sepsis (mean age 77 years), respectively[4,5].

JULIE C REID

MICHELLE E KHO

Given the acute and severe nature of critical illness, patients may experience prolonged immobilization[3] resulting in physical deconditioning (including weakness, reduced exercise capacity)[3,4]. Muscle atrophy begins within 48 hours after critical illness onset[6], and patients receiving mechanical ventilation experienced up to 14% reduction in quadriceps cross-sectional area during the first week of their ICU stay[7]. ICU-acquired weakness (ICUAW) has been documented in 25%-100% of adult patients with critical illness[6], and is defined as clinically detected weakness in the absence of any other plausible cause (e.g., stroke, etc.)[8]. ICUAW can lead to significant decline in physical function from patients' pre-admission baseline[6].

Physical Activity in the ICU

To mitigate the effects of ICUAW, research over the last decade has focussed on physical activity (PA) interventions to improve functional outcomes[2,3,6,9,10]. Initially focusing on improving function *after* critical illness[11], research progressed to studying interventions while patients were still in ICU[12,13]. In recent years, the field has further evolved to investigating interventions initiated early in the critical illness trajectory, in order to combat the precipitous muscle and strength loss associated with an ICU admission.

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UPDATE
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ONTARIO RESPIRATORY CARE SOCIETY

Vision

Improved lung health through excellence in interdisciplinary respiratory care.

Mission

Furthering excellence in the provision of interdisciplinary respiratory care through education, research, collaboration, provision of professional expertise and support for Lung Association efforts to improve lung health.

CHAIR'S MESSAGE

It was a pleasure catching up with many ORCS members at Better Breathing 2016 in January. As always, Better Breathing provides us with a great program of well received talks, workshops and networking opportunities. During the Friday evening dinner sponsored by ProResp, the Provincial Committee had the opportunity to introduce members to the new directions developed as part of the new ORCS plan.

The new ORCS plan is focused on aligning our work with the strategic directions of the OLA. We recognize the importance of our current activities to members and we want to continue to remain relevant and connected with members.

We also want to be as effective and efficient as possible by working more closely with the other departments at OLA, including our colleagues at OTS.

We are hoping to engage more members in their communities to ensure that lung health issues remain at the forefront of our healthcare system. We know that changes are underway and we want to continue advocating for lung health.

Over the next few years, the ORCS will be focusing on fostering partnerships with other professional organizations in an effort to continue developing our inter-professional membership. The inter-professional nature of the ORCS is one of its unique features and we want to strengthen it.

Our education program will be more integrated with all of the OLA education programs and we hope to provide more easily accessible seminars via a range of mediums.

Our publications have been one of the key benefits of membership. We are hoping to improve our capacity to reach members by moving to an updated electronic format and by combining both publications (*UPDATE* and RHEIG's *CONNECTIONS*). This move will be taking place with the involvement of both the Editorial Board and the RHEIG Executive to ensure that none of the elements of the publications are lost.

Lastly, on behalf of the ORCS I would like to thank Natasha Cabot for her dedication and leadership to the ORCS and wish her the very best in her future endeavours.

Wishing you all a very good summer!

SHELLEY PREVOST, CHAIR, ORCS

EDITOR'S COMMENT

Well, I believe that spring has finally arrived to stay as we have sunshine, blue sky and occasional showers, along with temperatures going into the double digits! Of course spring brings with it the season for grass cutting, raking, flowers and allergies. At present with the terrible news about Fort McMurray being consumed by forest fires, I think of the people fleeing the fire and breathing the smoke. My heart goes out to all those affected by this terrible situation.

The Editorial Board has been working hard at getting the Spring/Summer Issue of *UPDATE* ready to circulate to you are valued members. I am sure that you will find the content both interesting and informative.

We bring you two interesting articles which both look at different subjects which fit into the area of mobilization. One is an article by Elise Cunningham about Nordic pole walking, and the other is about In-bed cycling for ventilated patients by Michelle Kho.

Our usual section "Respiratory Articles of Interest" has new reviews for you, "Coming Events" may guide you to interesting meetings and educational opportunities, and we have one of our ORCS members featured "In the Spotlight".

The Editorial Board of the ORCS would like to thank MacArthur Medical. Thank you for providing the financial sponsorship which allows us to bring you this issue of *UPDATE*.

We have received the recent news that Natasha Cabot is no longer working for the OLA and we would like to acknowledge and thank her for her work with the ORCS. I would also like to thank Clarys Tirel and my colleagues on the Editorial Board for all their support and work getting this issue out to you

JOCELYN CARR, EDITOR

The Editorial Board would welcome members who are interested in joining the Board and, as always we welcome your feedback and ideas for future submissions.

IN THE SPOTLIGHT

Jennifer Olajos-Clow

2015 Meritorious Service Award Winner

Jennifer Olajos-Clow is a life-long learner with a passion for education. She graduated from Queen's University with her nursing degree in 1993, then completed a Master of Science in Nursing Research in 2001 and followed that with Post-Masters Nurse Practitioner Certificate in 2006. On top of that, she is also a Certified Respiratory Educator.

Jennifer has seen her career span across community and hospital practice settings, with a recent move back to community at the Belleville Respirology Clinic where she is enjoying a return to direct patient care. She is widely respected for her knowledge and expertise in asthma and chronic disease management, with her patients being the ultimate beneficiaries of her expertise.

The Ontario Lung Association and ORCS have been so very fortunate to have Jennifer as a volunteer, member, advocate and all around resource. Her ORCS membership began in 1993 and soon thereafter Jennifer began offering her time, treasure and talent across the broader organization. She has been a long-time member and chair of the Eastern Ontario Regional Planning Group and has supported Lung Association fundraising and awareness activities in the Kingston area. Jennifer has also been a member of the ORCS Provincial Committee since 1996, serving as Chair from 2013-2015.

Jennifer provides expert advice as a member of the Provider Education Program Steering Committee and as a recent member of the Asthma Advisory Committee. She was instrumental in the development of the Emergency Department Asthma Care Pathway, now being used to improve outcomes for patients in ER's across the province.

Jennifer Olajos-Clow and her award with Shelley Prevost and Kelly Muñoz

As a staunch Champion of The Lung Association's mission to improve lung health, Jennifer has also assisted with OLA advocacy efforts such as the campaign for a Lung Health Action Plan and she has offered her services to the OLA as a local media contact on several occasions.

Personally, I have had the pleasure of working alongside Jennifer on the OLA's Board of Directors and Strategic Directions Committee and have witnessed her tremendous ability to relate to people from all walks of life. Her warm and engaging personality facilitated her board and committee work garnering her respect and admiration. Observing her in these roles made me feel proud to be an ORCS member.

I was honoured to present Jennifer with the 2015 Meritorious Service Award at the 2016 Better Breathing Conference. She is a true Lung Health Hero whom I respect and admire immensely.

KELLY MUÑOZ, RRT, CRE

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For lung health information and resources, call 1-888-344-LUNG (5864).

COMING EVENTS

September 22-24, 2016
The Nurse Practitioners' Association of Ontario Annual Conference at the Sheraton Hotel Centre in Toronto, for more details go to www.npao.org/education/conferences/

September 29, 2016
The ORCS Greater Toronto Area Planning Committee is organizing an evening seminar providing an update on the treatment of Idiopathic Pulmonary Fibrosis to be held at the Ontario Lung Association offices, 18 Wynford Drive. Details will be posted at www.on.lung.ca/orcs

October 18-19, 2016
The Association of Family Health Teams of Ontario Annual Conference at the Westin Harbor Castle in Toronto, for more details go to www.afhto.ca/events/afhto-events/2016-conference/

October 20, 2016
Health Quality Transformation, the Annual Conference presented by Health Quality Ontario to be held in Toronto, for more details go to www.hqontario.ca/events

November 15-16, 2016
The OLA TB committee is organizing a two days conference "TB Elimination: Back to Basics" at the Chelsea Hotel in Toronto. For more details go to www.on.lung.ca

November 24-26, 2016
The College of Family Physicians of Ontario is holding its 54th Annual Scientific Assembly in Toronto at the Royal York Hotel. The theme this year is "*Excellence within the Complexity of Primary Care*". For more details go to https:// www.eventscribe.com/2016/asa/

January 25-26, 2017
The OLA Primary Care Asthma Program is holding its Respiratory Health Forum at the Marriott Toronto Downtown Eaton Centre Hotel, details will be available on the OLA website- www.on.lung.ca

January 26-28, 2017
Better Breathing 2017 will be held at the Marriott Toronto Downtown Eaton Centre Hotel, details will be available on the OLA website - www.on.lung.ca

For information on the ORCS seminars that will be held in the fall in various region, please visit our website at www.on.lung.ca/orcs or contact us at 416-864-9911 ext: 236

CYCLE... *Continued from page 1*

Mobilization, defined in the context of ICU as physical activity sufficient to induce physiological changes (e.g., increased circulation, enhanced perfusion, improved ventilation, and increased alertness)[3], can improve functional outcomes by reducing immobility[10,12] and is both safe and feasible[2,6,14]. A 2015 systematic review and meta-analysis of early mobility in the ICU reported improved functional outcomes including improved independence with activities of daily living (ADLs), ability to walk longer distances and without assistance at hospital discharge, and improved quadriceps strength[3]. However, the authors also identified significant differences across studies in types of early mobility interventions and time to first mobility session[3].

One of the key components to early mobility to improve functional outcomes in patients with critical illness is in its very name – "early". Given the rapid onset of ICUAW, we believe mobility needs to start within the first few days of critical illness. Yet, you might be thinking, these patients are so sick…they aren't awake enough… they have an endotracheal tube and are mechanically ventilated… These thoughts are correct –the ICU houses the sickest patients in the hospital and could pose many potential barriers to mobility, including continuous sedation and patients tethered to numerous life support devices. Endotracheal intubation and sedation were important barriers to early mobility in a prospective study of mobilization practices within the first 14 days of ICU admission in 12 Australia and New Zealand ICUs[15]. So how can we offer "early mobility" to these patients?

There are several answers to this question. First, we broaden our definition of mobility to include activities that occur in bed (e.g., bed exercises, active range of motion, bed mobility, etc.) in addition to out of bed activities (e.g., up to a chair, ambulation)[3]. Second, early mobility is an interprofessional endeavour, including physiotherapists, nurses, physicians, respiratory therapists, occupational therapists, and patients and their families. Without support from everyone to optimize sedation, manage lines and tubes, monitor vital signs, and manage the patient, mobility can be an insuperable task. Teamwork is essential to be able to effectively and safely offer early mobility strategies to our critically ill patients.

Technology for Rehabilitation in the ICU: In-bed cycling

Finally, we need to consider the new technologies available for ICU rehabilitation, such as in-bed cycle ergometers. The cycle ergometer is a portable device on wheels that can be moved from bedside to bedside where it attaches to the end of a patient's hospital bed. This unique equipment has a motor, and offers the ability for a patient to cycle passively, actively, or a combination thereof[9]. In 2009, an innovative team from Belgium conducted a randomized clinical trial (RCT) of in-bed cycling versus standard care in ICU patients admitted for 5 days with an expected additional 7 day ICU stay[12]. The mean time to initiating cycling was 14 days; those who received cycling had longer 6-minute walk test distances at hospital discharge, improved quadriceps strength, and higher self-reported overall function compared to those who received standard care[12].

Since in-bed cycling offers both passive and active modes, it is a versatile intervention for people with different types and severity of illness, all levels of functional ability and endurance, and even patients who are sedated[16]. For patients with profound weakness, limited endurance, and limited exercise tolerance, cycling allows them to do as much as they can with the bike taking over when they need a break. Early pilot work of in-bed cycling identified that patients receiving mechanical ventilation and continuous sedation were able to engage in some active cycling[17]. If proven effective in larger randomized trials, early in-bed cycling could provide early mobility interventions to those patients who cannot partake in traditional mobility activities. This could help patients to get stronger faster and alleviate the age-old dilemma of "if you don't use it, you lose it".

The CYCLE Research Program

The CYCLE (Critical Care Cycling to Improve Lower Extremity Strength) research program is a Canadian-led, multi-phase, multi-center, interdisciplinary project investigating the effectiveness of early in-bed cycling on improving functional outcomes. CYCLE began with a single-center prospective cohort safety and feasibility study, TryCYCLE, which included 33 patients enrolled within the first four days of mechanical ventilation demonstrated that in-bed cycling was both safe and feasible initiated early in a patient's ICU stay[18]. Now in its second phase, the CYCLE pilot RCT will assess the feasibility of conducting in-bed cycling in seven academic ICUs across Ontario[19]. Patients are randomized to receive 30 minutes of daily in-bed cycling and routine physiotherapy or routine physiotherapy alone. Patients undergo a variety of assessments including strength and function, psychological distress, and quality of life outcomes at ICU awakening, ICU discharge, and hospital discharge. To-date, we have enrolled over 40 patients across 7 sites in the CYCLE Pilot RCT.

The scientific and professional opportunities afforded by the CYCLE Pilot RCT are numerous. We have a front-line multidisciplinary team including physiotherapists, intensivists, surgeons, clinical psychologist, research coordinators, and research assistants. As a new technology, in-bed cycling is not commonly available in ICUs across Canada[20]. While on the leading edge of ICU rehabilitation research, CYCLE offers access to advanced rehabilitation technology and the opportunity for knowledge development and generation to frontline staff who will become expert knowledge users. So far, we have taught over 35 frontline physiotherapists in 7 ICUs to bike and taught over 55 therapists to conduct standardized outcome measures in acute care. With different assessments administered by ICU and ward physiotherapists, physiotherapy assistants, a clinical psychologist, and research coordinators, CYCLE is unifying professions throughout the hospital to follow patients and assess their progress from ICU to hospital discharge.

Moreover, healthcare professionals, patients, and their families enjoy this intervention. Healthcare professionals are enthusiastic about their patients' achievements – it is not often that you associate a patient in ICU receiving life support with one that is also engaging in activities such as cycling. Patients are cycling kilometers at a time – while receiving life support – in bed – in an ICU. Anecdotally, patients are impressed and excited by their accomplishments. Families see hope when they watch their loved one on a bike, even though they are in bed with critical illness.

Participating ICUs in the CYCLE Pilot RCT include: St. Joseph's Healthcare Hamilton, Juravinski Hospital, Hamilton

Continued on page 5

CYCLE... *Continued from page 4*

General Hospital, Toronto General Hospital, St, Michael's Hospital, Toronto, Ottawa General Hospital, and London Health Sciences Center. The CYCLE Pilot RCT is funded by the Canadian Institutes of Health Research, Canada Foundation for Innovation, Ontario Ministry of Research and Innovation, Technology Evaluation in the Elderly Network (now Canadian Frailty Network), Ontario Thoracic Society, Canadian Respiratory Research Network Emerging Research Leaders Initiative, and Canada Research Chairs; it is also supported by collaborations with the Canadian Critical Care Trials Group and by Restorative Therapies (Baltimore, MD), who loaned 2 bikes for the research. CYCLE is making great progress.

Conclusions and Future Directions

With all of the interest and advancements to improve patient outcomes, this is an exciting era in ICU rehabilitation, and there is still much work to be done. The next stage of the CYCLE program is a large, multi-centre international RCT, economic evaluation, and knowledge translation intervention. Informed by the results of the CYCLE pilot RCT, this large RCT will evaluate the effectiveness of early in-bed cycling on patients' function at hospital discharge. Ultimately, CYCLE strives to bring early mobility and this state-of-the-art technology to the forefront of critical care rehabilitation. With CYCLE on the frontier, we are thrilled to continue engaging clinicians as we prepare the large RCT to move the field forward and, with this advanced technology, study opportunities to help patients recover faster from critical illness.

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Provider Education Program (PEP) Update

The Provider Education Program (PEP) develops, implements and evaluates accredited continuing medical education (CME) programs and materials with a focus on knowledge translation in accordance with the Canadian Thoracic Society (CTS) respiratory guidelines. Utilizing a knowledge translation platform, we specialize in transforming best practise guidelines into primary care practise so that the provider may manage respiratory disease with confidence.

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We are pleased to support the Adult and Pediatric Emergency Department Asthma Care Pathway(s) (EDACP), an evidence based approach to manage asthma in an urgent care setting. We have most recently developed an app to support the Pediatric EDACP and the use of PRAM (Pediatric Respiratory Assessment Measure) This app is available free, simply search PRAM in your app store. For more information on either pathway please contact edacp@on.lung.ca.

If you would like to contact me directly, I would be happy to discuss any questions and how we can offer you an exceptional, structured, accredited learning experience.

Gemma Styling, RRT, CRE (on behalf of PEP)
GStyling@on.lung.ca 416-864-9911 ext. 244

One Step at a Time

Improving the Quality of Life of Individuals with Lung Cancer

Elise Cunningham, Registered Kinesiologist, *Masters of Health Science Candidate at the University of Ontario Institute of Technology*

ELISE CUNNINGHAM

Individuals that have been diagnosed with lung cancer fear disability more than other complications that result from cancer or its treatments[1]. Lung cancer patients experience a high symptom burden including dyspnea, cough, fatigue, and pain[2]. Patients also struggle with sleep disturbances, anxiety, depression and fear, as well as reporting impaired quality of life[3]. Upon diagnosis, patients with lung cancer experience a decrease in physical activity levels. Over time, the cycle of inactivity and functional decline continues, leading to further deterioration of strength and cardiovascular fitness, with worsening symptoms[4,5]. Ultimately, exercise is being recognized for its potential to improve overall function in addition to increased longevity in this population[6,7].

This article summarizes the current research on lung cancer and exercise. Nordic pole walking is introduced as a potentially new form of exercise that may contribute to improving physical activity and quality of life for individuals who have lung cancer. Details of the ongoing pilot study looking at the effects of Nordic pole walking on individuals with lung cancer are discussed, and contact information is provided for those who are interested in participating.

Current Research on Lung Cancer and Exercise

Exercise interventions for individuals with lung cancer pre- and post-surgery have been determined safe, feasible and well tolerated, even in those with advanced and metastatic disease[8-10]. Additionally, low to moderate intensity exercise was found to be well tolerated in individuals with lung cancer who underwent chemotherapy and/or radiation treatment[11,12]. Recent reviews of physical activity and exercise in lung cancer report that exercise has been shown to reduce symptoms, increase exercise tolerance, improve quality of life and potentially reduced length of stay and post-operative complications[13,14].

There is a growing body of evidence supporting exercise in the lung cancer population and health care professionals are encouraged to recommend that lung cancer patients participate in an exercise program. However, there is a need to establish the most appropriate and effective exercise prescription for this population. Currently, there is insufficient evidence regarding the optimal exercise type and prescription for the lung cancer population[10]. To assist health care professionals with making exercise recommendations for this population, more rigorous, methodological studies (i.e. randomized controlled trials) examining the effects of various exercise types and prescriptions, such as resistance training and Nordic pole walking, are needed. It has also been recognized that poor accessibility to rehabilitation programs for lung cancer patients is a barrier to exercise program participation[15]. Therefore, future studies need to consider a combination of community and home-based programs particularly for those with advanced disease.

Nordic Pole Walking

Nordic pole walking has been selected as an appropriate exercise for lung cancer patients because it is a low cost, convenient and effective form of exercise. It is a more intense and beneficial exercise than regular walking[16]. Nordic pole walking is a low impact form of exercise that involves walking with specially designed, hand-held poles that move in opposition to lower limb movement. The poles are customized to the participant's height and stride length. Nordic pole walking can be done all year round and has continued to become an increasingly popular type of exercise. It also allows patients to exercise independently.

Nordic pole walking first began in Finland in the early 20th century when cross-country skiers began using their ski poles in the summer months to maintain their physical fitness[17]. In 1997 a Finnish ski equipment manufacturer developed a fitness walking pole and coined the term 'Nordic pole walking'. Since then Nordic pole walking has grown in popularity within Europe and now North America[17].

Current Research on Nordic Pole Walking

Fritschi et al. conducted a systematic review on the effects of Nordic pole walking on the health of adults[18]. Comparing the results of the studies was challenging because of the differences in study populations, control groups and the outcomes measured[18]. However, all studies found at least one benefit to participating in a Nordic pole walking program[18]. The key benefits included improvement of cardiorespiratory measures, functional status, physical activity and quality of life[18]. The effects on pain, anthopometry, muscle strength and flexibility, fatigue, gait parameters and blood glucose levels were unable to be determined[18].

All studies that examined endurance as a cardiovascular outcome in the systematic review found that participating in a Nordic pole walking program was beneficial (even when individuals had a limited ability to walk functional distances) compared to the control group[18]. These studies included the following populations: COPD, Parkinson's, claudication pain and cardiovascular disease[18].

This review suggests that the research on Nordic pole walking is still developing[18]. The need for more research on the effects of Nordic pole walking on healthy and clinical populations is highlighted.

Pilot Study on Effects of Nordic Pole Walking

A community based, multi-centered, randomized controlled pilot study of individual/group exercise using Nordic pole walking is currently ongoing. It will be the first of its kind, examining the effects of Nordic pole walking on the physical function and quality of life of individuals with lung cancer. This is the first step towards conducting a larger scale trial. The *primary objective* of this study is to assess the feasibility of a Nordic pole walking program for individuals with stage I-IV non-small cell lung cancer by establishing the optimal design and operational processes. The *secondary objectives* are to determine the effects of Nordic pole walking on 1) physical function, and 2) health related quality of life.

Continued on page 7

Individuals with a primary diagnosis of histologically confirmed stage I-IV non-small cell lung cancer (with any concurrent cancer treatment) are needed for the study. Participants in the study must have approval of their primary treating physician, be 18 years of age or older and be able to communicate in English. Recruitment for the study is taking place at the Southlake Hospital in Newmarket, Ontario and the Lakeridge Hospital in Oshawa, Ontario. Any individuals located within Southern Ontario are welcome to participate.

Once participants have consented to being a part of the pilot study, they are randomly assigned to the intervention group or control group. Over an eight-week period, the intervention group participates in an individualized Nordic pole walking program, while the control group continues their usual daily routine. The physical function and quality of life of all participants is assessed at the beginning and at the end of the eight-week period.

The Nordic pole walking program prescription is individualized based on the participant's health history, current physical activity level, six-minute walk score and their personal goals. The program consists of one, group-based, Nordic pole walking session and up to three individual Nordic pole walking sessions per week. The group Nordic pole walking sessions are being held at the Magna Centre in Newmarket, Ontario and the Abilities Centre in Whitby, Ontario. Both of these community facilities have accessible indoor walking tracks and outdoor walking paths. Providing a community based program for individuals with lung cancer allows them to feel supported by other individuals with lung cancer as well as their family and friends.

Progress to Date (April 15th, 2016)

Currently two participants have been enrolled in the pilot study. Both participants are female between the ages of 60 and 75 years old and were diagnosed with non-small cell lung cancer four years ago. Participant 1 was originally diagnosed with stage 2 lung cancer which was treated surgically by having one of her lungs removed followed by radiation therapy and chemotherapy. Several years after this initial treatment, a metastasis on the adrenal glad was found and was surgically removed. Radiation therapy was used again to treat the metastases. Participant 2 was diagnosed with stage 3 lung cancer that was treated by both radiation therapy and chemotherapy.

The International Physical Activity Questionnaire indicated that both participants have a low level of physical activity. Participant 1 described feeling a lack of energy, overall weakness and being tired. She felt that this was a result of the second round of radiation therapy that she had just completed. In comparison, Participant 2, having finished her last chemotherapy and radiation treatments over three years ago, did not mention feeling the same type of fatigue. Rather, Participant 2 described feeling generally out of shape and significantly deconditioned since her cancer diagnosis. Both participants noted not being able to do the daily activities they once did. Every day activities now had to be carefully thought out. Decisions were constantly being made to prioritize what had to get done and on what they would spend the little energy they had.

To date Participant 1 was randomized into the Nordic pole walking group and has completed three weeks of the program. She has found walking with the Nordic poles to be an enjoyable activity that easily fits into her daily routine. Participant 1 is generally eager to see the difference that regular cardiovascular exercise can make in her lifestyle. Over the summer she has some activities planned and is hoping to be in better physical condition so that she is able to enjoy herself. It is encouraging to see that after only three weeks of walking there is a positive sense of accomplishment when talking to Participant 1 about the program.

Potential Impact of the Study

Current treatment plans for lung cancer patients involve surgery, chemotherapy and radiation therapy, all of which have side effects that can be devastating to an individual's quality of life. Exercise interventions are often not prescribed under the medical model even though research has shown that low to moderate intensity exercise may be well tolerated by this population. Community based recreational programs can contribute to improving an individuals physical, mental and spiritual health. These types of collaborative health care plans can potentially to allow individuals with lung cancer to maintain their independence.

Elise Cunningham is completing her Master's of Health Science degree at the University of Ontario Institute of Technology in Oshawa, Ontario. She is supervised by Dr. Mika Nonoyama and Dr. Robert Weaver. Anyone with non-small cell lung cancer who is interested in taking part in the study is asked to contact Elise Cunningham by phone at 905-721-8668 ext. 5329 or by email at elise.cunningham@uoit.ca.

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An Occupational Therapist's Perspective on Assistive Devices For People with Pulmonary Disease

Elizabeth Gartner, BScOT

ELIZABETH GARTNER

The following, an opinion article, contains thoughts and perspectives of an Occupational Therapist (OT) who has worked within a pulmonary rehabilitation program for over 15 years. The pulmonary rehabilitation population referenced in the article is comprised of individuals diagnosed with Chronic Obstructive Pulmonary Disease (COPD) and Pulmonary Fibrosis (PF).

OT Role in Pulmonary Rehabilitation

The main role of the Occupational Therapist working in pulmonary rehabilitation is the assessment for and prescription of assistive devices for individuals who experience significant dyspnea on exertion. When activities become too difficult, or in the case of those with COPD or PF the activity results in extreme shortness of breath, individuals stop doing the activity. In addition, anxiety related to the occurrence of dyspnea can plays a role in activity avoidance. Therefore, when working with this population, the primary goal of Occupational Therapy (OT) is to decrease the experience of dyspnea on exertion during ADLs.

Assistive Devices

OT treatment includes energy conservation education and reduction. A key energy conservation principle discussed with the pulmonary rehabilitation population is the use of assistive devices. The need for assistive devices is identified through assessment under the domain of activities of daily living (ADL). The level of independence with an ADL is examined considering both the client's physical ability and the impact of their dyspnea on ADLs. In general, the ability to complete ADLs for individuals living with COPD or PF, without comorbidities such as arthritis, is predominantly limited by the level of the dyspnea they experience. An increase in dyspnea affects the ease of completing the activity.

Clients with COPD and PF benefit from implementing energy conservation strategies facilitated through use of a rollator. Rollators, four wheeled walkers with a seat and basket, are among the most commonly prescribed assistive devices for those with COPD and PF. The purpose of these devices is to maintain independence and improve safety, hence enhancing quality of life. Rollators have proven to be a most useful assistive device for those diagnosed with COPD and PF.

The rollator's portable seat enables clients to pace their activity and take rests as required. In addition, having a seat available eliminates anxiety related to going out in public and worrying about where they will be able to sit. Energy is conserved through pushing or pulling instead of lifting and carrying. Further, the rollator basket eliminates the need to carry items. Holding onto the handles allows for support and fixation of the arms during walking. Finally, rollators provide support and stability for clients with balance issues, therefore increasing their confidence and safety with walking.

The use of a rollator reminds clients to walk in an upright posture, so as not to restrict breathing. Proper posture relaxes the shoulders, lifts the chest and opens the rib cage allowing the lungs to expand and contract more easily. Without a rollator clients, who experience shortness of breath with walking, have a tendency to rush which only increases shortness of breath and recovery time. Clients walking with rollators tend to walk with a slower rhythmic or even cadence instead of pushing themselves to reach their destination quickly; making breathing easier and decreasing shortness of breath.

Assistive Device Prescription

Prescription of mobility devices involves decisions considering a number of factors. These include, but are not limited to, the client's actual physical and functional ability, level or extent of dyspnea experienced with activity, supplemental oxygen and delivery system, indoor and outdoor environments, support network and method of transportation. Another consideration is their psychological acceptance of the device.

Psychological acceptance for using an assistive device, especially one intended for use outside of the home, can be the most significant barrier for some clients. For example, statements such as these are often heard in response to recommending a rollator. "I do not want to become dependent on one;" "I don't want to look old;" "I would be embarrassed to be seen in public;" "What will other people think?" "I don't want people looking at me;" and "I can manage without it." The list of reasons is extensive.

COPD is no longer an "old man's" disease. Indeed, acceptance of an assistive device becomes more of a stumbling block as the population with COPD becomes younger. Psychological acceptance is so often tied to one's pride, self-esteem and self-worth. The fears around loss of independence and becoming dependent or a burden on others must be dealt with; otherwise a device may be prescribed, but never used. Certainly, nobody wants to use or rely on an assistive device if they can do something themselves.

The goal of OT education about rollators and other assistive devices is to address the client's perspective of assistive devices. The OT attempts to help a client see assistive devices as tools that will assist them in maintaining their independence rather than as being something that increases their dependence. The client's belief that they will become too dependent on a rollator is challenged. Individuals are encouraged to describe the enjoyable activities that they have abandoned or require help from someone else because of activity-related dyspnea or depleted energy reserves. This dialogue assists clients to understand that the rollator helps them to maintain an independent lifestyle. They are encouraged to ask themselves if it better to be able to go out and walk with a rollator rather than stay home because of shortness of breath.

In my experience as an Occupational Therapists working with this population, clients can be divided into two groups in relation to their acceptance of a rollator as an assistive device, those on supplemental oxygen and those who are not. In general, individuals who require portable oxygen have an easier time accepting the use of a rollator for ambulation. This group of clients have, to some degree, already dealt

Continued on page 9

Breathing Matters

An update from the Ontario Lung Association

Patients First

The Ontario Lung Association responded to the Ministry of Health's discussion paper, *Patients First: A Proposal to Strengthen Patient-Centred Health Care in Ontario*, with input from health-care providers, patients and caregivers.

One of the key government recommendations was the expansion of the role of Local Health Integration Networks (LHIN), including a greater role in primary care, home and community care, and public health. The Ontario Lung Association believes that our Lung Health Action Plan can provide an evidence-based framework to assist the LHINs in planning services for lung health patients. Our advocacy priority of adding Certified Respiratory Educators to the health-care system is well aligned with the objectives of Patients First. You can view our full submission here: http://www.on.lung.ca/patients-first-submission

E-cigarettes and Medical Marijuana

The Ontario Lung Association is publicly supporting proposed legislation to restrict the use of e-cigarettes and medical marijuana in public places. We want to ensure that all Ontarians are protected from any vapour or smoke that might be harmful to our lungs. You can view our statement here: http://www.on.lung.ca/new-regulations-for-e-cigarettes

Save the Date: TB Elimination: Back to the Basics

The Ontario Lung Association's bi-annual conference for health-care professionals working in the area of Tuberculosis treatment and research is being held November 15 and 16, at the Eaton Chelsea in Toronto.

Devices for People with Pulmonary Disease... *Continued from page 8*

clients have, to some degree, already dealt with the psychological acceptance of using supplemental oxygen; a visible sign of disease. Although some clients carry their oxygen delivery device or pull an oxygen stroller, the majority find a rollator requires less effort to manage their oxygen and therefore readily accept this device.

The group who do not require supplemental oxygen often initially decline the idea of using a rollator. The type of rehabilitation program, however, appears to affect this decision. For example, clients enrolled in an outpatient program often take much longer to even accept the idea of a rollator trial. Clients enrolled in an inpatient program only take a few weeks to realize the benefit of using a rollator. I suspect they perceive the inpatient unit as a "safe" supportive environment in which to trial a rollator. Perhaps the opportunity to see a number of inpatients using this assistive device assists them in making this decision more quickly.

Other common assistive devices frequently prescribed are long handled devices, like reachers and long handle dust pans; bathroom equipment, like bath seats and hand held shower heads. Again, most are used not because COPD and PF clients cannot perform an activity, but because use of the device conserves energy. Energy conservation enables clients to manage their shortness of breath better. Conserved energy with one activity of daily living enables client's to apply it to an activity they would prefer to engage in.

Many clients cannot believe how they managed without their new "long handle," "chariot," or "Cadillac." Based on my experience, I would say overall client satisfaction with assistive devices, especially rollators, is high. Clients more readily accept assistive devices as they realize how many aspects of their life are made easier and that, by using them to conserve energy and to better manage their dyspnea, their independence is maintained.

Funding

In Ontario, government funding is available for people who meet the eligibility criteria. Having access to funding can definitely help make the rollator more appealing to those who are not sure about using one. It is important to remember that if one does not qualify for Government funding it does not mean that they would not benefit from the use of a rollator, only that they do not meet the funding criteria.

Respiratory Articles of Interest

A Prospective Evaluation of Ventilator-Associated Conditions and Infection -Related Ventilator Associated Conditions Anthony F. Boyer , MD ; Noah Schoenberg , MD ; Hilary Babcock , MD , MPH ; Kathleen M. McMullen , MPH ; Scott T. Micek , PharmD ; and Marin H. Kollef , MD , FCCP B. CHEST2015; 147(1):68- 81

The impact of VAP on respiratory care in ICU is well known. This article presents a new perspective on the topic as the Center for Disease Control and Prevention has shifted policy away from using ventilator-associated pneumonia (VAP) and toward using ventilator-associated conditions (VACs) as a marker of ICU quality.

This prospective 12-month cohort study surveyed 1,209 patients ventilated for 2 calendar days. Sixty-seven VACs were identified (5.5%), of which 50.7% were classified as an infection-related VAC (IVAC), 16.4 % caused by ARDS, 14.9% caused pulmonary edema , and 9% caused by atelectasis. Mortality rate of patients having a VAC was also significantly greater than that of patients without a VAC. Furthermore, among IVACs, 44.1% were probable VAP and 17.6% were possible VAP. Although the study suggests that most VACS were non-preventable the high mortality associated with VAC suggests that all opportunities to prevent these events should be undertaken. The VAC criteria capture only a minority of VAP episodes. Like VAP, some type of prevention bundle or protocol will have to be developed to reduce VAP rates with concomitant improvement in patient outcomes.

Submitted by Yvonne Drasovean

Darveaux J, Busse WW. Biologics in Asthma—The Next Step Toward Personalized Treatment. J Allergy Clin Immunol Pract 2015;3:152-60.

Asthma is a multifaceted disease and is associated with significant impairment and risk, and a therapeutic response that is highly variable. Available treatments are usually effective, but patients with more severe asthma are often unresponsive to current efforts, and there remains a need for agents with properties that may achieve control in these individuals. Efforts to identify treatment targets have led to the development of monoclonal antibodies for the treatment of asthma. This article reviews the current and future use of biological agents for the treatment of asthma, their efficacy, and how certain patient phenotypes and endotypes may be associated with biomarkers that may be used to select treatments to achieve greatest effectiveness of their use. As knowledge of the effects of these biological agents in asthma emerges, as well as the patients in whom they are most beneficial, the movement toward personalized treatment will follow.

Paggiaro P, Halpin DMG , Buhl R, Engel,M, Zubek VB, Blahova Z, Moroni-Zentgraf P, Pizzichini E. The Effect of Tiotropium in Symptomatic Asthma Despite Low- to Medium-Dose Inhaled Corticosteroids: A Randomized Controlled Trial. "J Allergy Clin Immunol Pract. 2016 Jan-Feb;4(1):104-13

Tiotropium, a once-daily long-acting anticholinergic bronchodilator, has demonstrated efficacy in patients with asthma who were symptomatic despite treatment with at least medium- to high-dose inhaled corticosteroids (ICS). This study showed that once-daily tiotropium Respimat add-on to low- to medium-dose ICS maintenance therapy was an efficacious bronchodilator in adult patients with mild to moderate asthma, and its safety and tolerability were comparable with those of placebo at 12 weeks. The data presented in this trial provides further evidence for tiotropium Respimat as an efficacious alternative bronchodilator therapy when added on to ICS in inadequately controlled asthma. However, while the combination of a long-acting beta-agonist and an ICS (LABA/ICS) has been shown to reduce asthma exacerbation frequency, the impact of adding a long-acting muscarinic antagonist such as tiotropium to an ICS on prevention of asthma exacerbations is not known.

Submitted by Lawrence Jackson

Inaugural University of Toronto, Department of Physical Therapy Workshop:

Exercise Training in Pulmonary Rehabilitation: A Practical Approach

This hands-on course is offered on November 12th-13th, 2016 by the Department of Physical Therapy at the University of Toronto. The course also includes an interactive online component prior to the hands-on weekend workshop.

This course will provide an evidence-based overview of pulmonary rehabilitation with a special focus on exercise that will be relevant for rehabilitation and exercise professionals. Participants will have the opportunity to learn about exercise limitation and general training principles. They will administer and interpret the results of various exercise and functional tests commonly used in pulmonary rehabilitation programs such as field tests (6 Minute Walk, Incremental Shuttle Walk and Endurance Walk Test), strength, balance and inspiratory muscle testing and training. Oxygen therapy in the pulmonary rehabilitation setting will also be presented. A case study approach to exercise prescription will accompany the hands-on components.

Further information and registrations can be found here: http://www.physicaltherapy.utoronto.ca/?p=9347