THE DEVELOPMENT OF EDUCATION MODULES FOR TEACHING CLIENTS/FAMILIES WITH CHRONIC LUNG DISEASE IN A PROVINCIAL PULMONARY REHABILITATION PROGRAM

by © Lindsey M. Smith

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Abstract

Background and Purpose: There are over three millions Canadians living with chronic lung disease. Chronic lung disease is burdensome and debilitating to individuals and the health care system. Pulmonary Rehabilitation serves as a comprehensive intervention for individuals living with chronic lung disease. It improves overall quality of life, slows disease progression, enhances self-management abilities, and reduces hospitalizations and health care visits. The purpose of this practicum project was to develop relevant evidenced-based education modules to be utilized for teaching clients/families with chronic lung disease in a Provincial Pulmonary Rehabilitation Program.

Development of Resource: An integrative literature review and consultation with key stakeholders was conducted to gather literature and information related to chronic lung disease, pulmonary rehabilitation, and client/family education. Ten education topics emerged, which guided the development of ten relevant evidence-based education modules to be utilized as a teaching resource. Pender's Health Promotion Model (2006) and Knowles Adult Learning Theory (1970, 1984) served as a theoretical framework. Various teaching aids/activities were incorporated to augment the module information.

Conclusion: The education modules will assist to improve client outcomes and confidence by enhancing self-management abilities. They will also serve as a resource to nurses working in the Pulmonary Rehabilitation setting, for education delivery. Ultimately, it is hoped that the developed modules will be utilized for teaching clients/families with chronic lung disease in a Provincial Pulmonary Rehabilitation Program.

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The Development of Education Modules for Teaching Clients/Families with Chronic Lung Disease in a Provincial Pulmonary Rehabilitation Program

In Canada, there are currently over three million individuals living with chronic lung diseases (Public Health Agency of Canada, 2012). The conditions are known to be burdensome and to cause debilitation. It is estimated that chronic lung disease will become the third leading cause of death by 2030 (World Health Organization, 2007). Financially, chronic lung diseases are estimated to cost the Canadian health care system 12 billion dollars annually and are associated with increased mortality rates, hospital admissions, and readmissions (Public Health Agency of Canada; Canadian Thoracic Society, 2010). The physical and psychosocial burden to individuals living with chronic lung diseases far outweighs that of the financial impact. Pulmonary rehabilitation serves as a secondary prevention "evidence-based, multidisciplinary, and comprehensive intervention for patients with chronic respiratory diseases who are symptomatic and often have decreased daily life activities" (American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR), 2011, p.1). It encompasses patient assessment and goal setting, self-management education, supervised exercise, psychosocial support, and outcome measurement. The ultimate goals of pulmonary rehabilitation are to optimize functional capacity and reduce or alleviate symptom, to encourage self-management and active participation, and to decrease dependence on the health care system (Nici et al., 2006; Moamary et al., 2014; Ries et al., 2007). The program is aimed at clients and families living with various chronic lung diseases. The term chronic lung disease refers to respiratory conditions such as, chronic obstructive pulmonary disease

(COPD), which also encompasses chronic bronchitis and emphysema, pulmonary fibrosis, asthma, lung cancer, pulmonary hypertension, and tuberculosis.

Although pulmonary rehabilitation does not provide a cure to chronic lung disease, various benefits are seen through participation in such programs including: optimal symptom management including a decrease in shortness of breath, improved overall quality of life, an increase in functional and exercise ability, an increase in energy level, support in managing anxiety and depression, and improvement in measurable items such as blood pressure, weight, and cholesterol levels (Capital Health, n.d; National Institute of Health, 2010). It is recognized and recommended as an essential component of medical care for those living with chronic lung disease (AACVPR, 2011).

Until January of 2017, pulmonary rehabilitation programming was not available to residents of Prince Edward Island (PEI) living with chronic lung disease. Based on current recommendations, an obvious need existed within the province. Pulmonary rehabilitation programming, in a community setting, was initiated but lacked an established education curriculum. An informal needs assessment was conducted with the Acting Chronic Disease Prevention and Management Manager, who oversees the Provincial Pulmonary Rehabilitation Program, in which the development of educational modules was identified as a current need. The Manager also served as the contact person for the practicum project, Based on this need, I proposed to developed education modules for teaching clients/families with chronic lung disease within the Provincial Pulmonary Rehabilitation Program.

I currently work as the registered nurse within the Provincial Pulmonary Rehabilitation Program and therefore had a personal interest in the practicum project.

This, along with the identified need, provided rationale for the project. Health PEI (2013) indicated that the financial costs associated with managing chronic disease in the province are crippling and it is only realistic to question the sustainability. They further indicated that through enhancement of community-based services disease could be better managed, decreasing the likelihood of exacerbations and hospitalizations. The practicum project is an excellent example of a community-based secondary prevention program. The previously discussed benefits to pulmonary rehabilitation signify the importance of the project to the particular population. It will have a positive contribution on the overall effectiveness of the Pulmonary Rehabilitation Program in the province. The program has the potential to empower individuals, making them better equipped to be active participants in their own health care.

Practicum Goal and Objectives

The overall goal of this practicum project was to develop relevant evidenced-based education modules to be utilized for teaching clients/families with chronic lung disease in a Provincial Pulmonary Rehabilitation Program. It is hoped that the developed modules will help education delivery in a group setting, while also maximizing program benefit for clients/families in the setting. The following list describes the practicum project's objectives:

1. Gather current evidence and relevant information related to chronic lung disease, pulmonary rehabilitation, client/family education, Pender's Health Promotion Model (2006), and Knowles Adult Learning Principle (1970, 1984) through the

conduction of a comprehensive literature review and consultation with key stakeholders.

2. Develop content for educational modules for a 12 week Pulmonary Rehabilitation Program, based on a previously conducted literature review and consultation with key stakeholders.
3. Disseminate current evidenced-based findings and research to classmates, faculty, and stakeholders and gain support for implementation of the practicum project from stakeholders. This will be achieved through a presentation of the practicum project and production of the final practicum report.
4. Demonstrate increased awareness and knowledge related to the advanced nursing practice competencies research, leadership, and consultation. This will be achieved through integration of these competencies throughout the development of the practicum project.

Overview of Methods

Prior to the development of the education modules an integrative literature review was conducted, followed by consultation with identified key stakeholders. Literature critically appraised through the integrative literature review and information gathered through consultation would ultimately guide the content of the education modules.

Integrative Literature Review

The purpose of the conducted literature review was to examine the topics of pulmonary rehabilitation, chronic lung disease, and client/family education. A document describing the completed *Integrative Literature Review* in detail, with summary tables, can be found in Appendix A. Literature detailing a description of the background,

benefits, and relevance of pulmonary rehabilitation was obtained and critically appraised in order to present rationale for the development of the proposed education modules. Recommended education topics, to be included within pulmonary rehabilitation programming, were specifically examined and noted through the review. The importance of a theoretical framework was recognized through the practicum project. Aligning with this, both Pender's Health Promotion Model (2006) and Knowles Adult Learning Principles (1970, 1984) were explored through the conducted integrative literature review. Both the CINAHL and PubMed databases, assessed though the Memorial Health Sciences Library website, as well a subsequent Internet search of grey literature were utilized to conduct the review.

Consultation with Key Stakeholders

Consultation was recognized as an essential component of the practicum project. Backer et al. (1992) referred to consultation as a process in which one seeks advice or information from another, providing an overall benefit to a service or product. It is assumed that the consultant, or individual being approached for advice or information, has an expertise and/or unique knowledge base related to a particular topic. The purpose of consultation was to gather information related to pulmonary rehabilitation and education topics to be included within the developed education modules. The completed *Consultation Report* can be found in Appendix B. It was also intended that through consultation the practicum project would be introduced to key stakeholders, ultimately assisting with gaining approval for implementation of the education modules within the Provincial Pulmonary Rehabilitation Program post development. Prior to consultation, a

consultation plan was developed. The plan identified eight key stakeholders for consultation, six of which participated in a consultation interview including a Respirologist, the Acting Chronic Disease Prevention and Management Manager, a Registered Respiratory Therapist, a patient representative sitting on the Cardiac and Pulmonary Rehabilitation Program Advisory Board, and two Registered Nurses working within established Pulmonary Rehabilitation Program in Atlantic Canada. An Interview Guide for Key Stakeholders, found within the Consultation Report in Appendix B, was developed for developed for consultation to ensure all stakeholders were asked identical questions. Stakeholders provided suggestions related to education topics to be considered for incorporation within the Pulmonary Rehabilitation Program, identified strategies of how individual patient learning needs and goals could be incorporated into education to maximize patient benefit, and addressed barriers to education through consultation.

Summary of Literature Review

Through the conducted integrative literature review it was identified that there are currently over three million individuals currently living with chronic lung disease in Canada (Public Health Agency of Canada, 2012). The term chronic lung disease refers to respiratory conditions such as, chronic obstructive pulmonary disease (COPD), which also encompasses chronic bronchitis and emphysema, pulmonary fibrosis, asthma, lung cancer, pulmonary hypertension, and tuberculosis. The reality of living with chronic lung disease is burdensome and causes debilitation to both the individuals living with the conditions and the health care system. Individuals often report experiencing extreme shortness of breath while doing simple tasks associated with day-to-day living and are often left feeling breathless (World Health Organization, 2007). Chronic lung disease has

a significant economic impact on the Canadian health care system, costing approximately 12 billion dollars annually (Public Health Agency of Canada). Chronic lung diseases are the leading cause of hospital admissions and are associated with higher rates of readmission when compared to all other chronic diseases (Canadian Thoracic Society, 2010). The World Health Organization (2007) estimates that chronic lung disease will become the third leading cause of death by 2030. In fact, COPD is the only chronic condition that is still associated with an increasing mortality rate in Canada (Canadian Thoracic Society, 2010).

Pulmonary rehabilitation serves as a secondary prevention "evidence-based, multidisciplinary, and comprehensive intervention for patients with chronic respiratory diseases who are symptomatic and often have decreased daily life activities" (AACVPR, 2011, p.1). It is considered to be comprehensive and holistic, encompassing patient assessment and goal setting, self-management education, supervised exercise, psychosocial support, and outcome measurement. Pulmonary rehabilitation is recommended as an essential component of medical management for those living with chronic lung disease. Its ultimate goal is to improve the overall physical and psychological health status of individuals living with chronic lung disease (AACVPR, 2011; Collins et al., 2014).

It was discovered through the integrative literature review that Canadian specific education guidelines for pulmonary rehabilitation do not currently exist (Camp et al., 2015). However, suggestions from established Canadian programs, such as *Living Well with COPD: A Plan of Action for Life* (2017), developed in partnership by McGill University Health Center and the Quebec Health Ministry, and guidelines developed by

associations, such as the AACVPR (2011) provided suggestions in relation to various education topics. Educations topics included: normal pulmonary anatomy and physiology, pathophysiology of chronic lung disease, description and interpretation of medical tests, breathing strategies, secretion clearance, medications, respiratory devices, benefits of exercise and maintaining physical activities, activities of daily living, eating right, irritant avoidance, early recognition and treatment of exacerbations, leisure activities, coping with chronic lung disease, energy conservation, oxygen therapy, anxiety and panic control, sexuality related to lung disease, and end of life (AACVPR, 2011; Moamary et al., 2014; Camp et al., 2015). Wilson, O'Neill, Reilly, MacMahon, and Bradley (2007) detailed the patient perspective in relation to pulmonary rehabilitation education, adding the suggested topic of welfare and benefits systems. Similarly, the *Living Well with COPD* (2017) program suggested management of breathlessness, energy conservation, overview of action plan and management of an exacerbation, COPD medication and appropriate use of inhalation devices, management of stress, anxiety, and depression, and continuing exercise and self-management strategies as topics to be including within education in the program.

Emerging from the integrative literature review was also the concept of self-management education (Moamary et al., 2014). Self-management education encourages clients to be active participants in their care and in turn make healthy behavioral changes. In addition, it was identified that education topics should be tailored to individual client needs and goals (Nici et al., 2006).

The importance of a theoretical framework was recognized through the practicum project. Through the integrative literature review, Pender's Health Promotion Model

(2006) and Knowles Adult Learning Principles (1970, 1984) were explored. Pender et al. (2006) defined health promotion as "behavior motivated by the desire to increase well-being and actualize human health potential" (p. 7). This definition aligned with the underlying goals of pulmonary rehabilitation, which include optimizing functional capacity and alleviating symptoms and encouraging active participation. Pender further identified three constructs through her Health Promotion Model including: individual characteristics and experiences, behavior specific cognition and affect, and behavioral outcomes. These constructs aligned with the concept of self-management education previously identified through the integrative literature review. Knowles (1970) identified that adults can learn and that it is the responsibility of the educator to foster this ability to learn. As adults were the intended population for the education modules, the question of how health care professionals can effectively educate adults became important. Knowles (1970, 1984) identified various characteristics, significant to adult learning, including: self-concept, unique experience, readiness to learn, orientation to learning, and motivation to learn, that would ultimately be incorporated into the development of the education modules. It was determined that both Pender's Health Promotion Model (2006) and Knowles Adult Learning Principles (1970, 1984) were applicable to the topic of pulmonary rehabilitation.

Summary of Consultations

Eight key stakeholders, including seven health care professionals and one patient representative, were selected and approached for consultation prior to the development of the education modules. An e-mail of invitation for consultation, which can be found in Appendix B, was sent to all key stakeholders. The e-mail was utilized to introduce the

practicum project, identify the rationale for the project, and identify a recommendation for implementation and evaluation of the education modules after completion. Six of the eight identified stakeholders agreed to participate in consultation. An Interview Guide for Key Stakeholders, located within Appendix B, was developed for use during the consultation interviews to collect qualitative data from key stakeholders. The guide contained four open-ended questions and was developed to ensure that all stakeholders were asked identical questions during interview. All stakeholders were asked the initial three questions, and only key stakeholders representing an established Pulmonary Rehabilitation Program were asked the fourth question. The methods of face-to-face interview, telephone interview, and electronic distribution of the interview questions were utilized for data collection. It was determined that approval by a Health Research Ethics Review Board was not required for consultation due to the nature of the project. Implied consent was assumed from the stakeholders based on agreement for participation. Participant confidentiality was protected during the project.

Once interviews were completed, thematic analysis was utilized to categorize and analyze collected data. Chesney (2015) identified that thematic analysis allows themes to emerge from data rather than having collected data be assigned to pre-defined themes. This was thought to be important as pre-defined themes, or identified topics to be included within pulmonary rehabilitation education, were identified through the conducted integrated literature review. The overall goal of consultation was to collect additional relevant information based on stakeholder experience and expertise. After familiarities of data were ensured, data were assigned an initial code based on the topic that emerged from the particular piece of data. Coding of similar topics were categorized

into themes and assigned a representing name. Once assigned to a theme, all data were reviewed to ensure they had been assigned to an appropriate theme. Nine themes, representing education topics, emerged from the collected data including: *nutrition, managing breathing and energy conservation, physical activity, anatomy and physiology, understanding lung disease, stress and anxiety, environmental factors, pulmonary medications, and moving forward*. Stakeholders were also asked how individual patient learning needs and goals can be best incorporated into educational content. Three themes emerged from the analyzed data including *individual characteristics, patient goal setting, and teaching strategies*. Additional data was collected related to strategies that could be utilized to maximize patient benefit, related to education. Four themes emerged from the data including *teaching methods, teaching strategies, utilization of multidisciplinary staff, and physical environment.*

Unfortunately, due to a family emergency one key stakeholder, a Respirologist and Acting Medical Lead for the Provincial Pulmonary Rehabilitation Program, was unable to participate in consultation during the allotted time. The stakeholders did subsequently complete the interview electronically at a later date. Results of this consultation interview can be found in Appendix C. Due to the delay in data collection, the resulting information from this interview was not analyzed or categorized with other data but was considered during the development of the education modules.

Summary of Resource

Following the completion of the integrative literature review and consultation, ten evidenced-based education modules were developed to be utilized as a teaching resource within a group setting. It was intended that the modules be utilized with clients/families

living with chronic lung diseases, while attending the Provincial Pulmonary Rehabilitation Program.

Module Topics

Ten module education topics emerged from the integrative literature review and consultation, which ultimately guided the development of the modules, including:

- Module 1: Orientation/Keeping A Healthy Lifestyle
- Module 2: Understanding Lung Disease
- Module 3: Lung Disease Anatomy and Physiology
- Module 4: Managing Breathing, Energy Conservation, & Environmental Factors
- Module 5: Puffers and Device Use
- Module 6: Additional Pulmonary Medications
- Module 7: Self Management & Signs of Acute Exacerbation
- Module 8: Navigating the Health Care System & Test and Interventions
- Module 9: Stress & Anxiety
- Module 10: Moving Forward

The identified topics are comprehensive and holistic, addressing physical, mental, and social aspects of health, while also promoting self-management education for the participants.

Development

The modules were developed to contain all necessary information and resources required for a registered nurse to utilize while facilitating a one-hour group education session on the particular topic. Beyond the integrative literature review, each module

required extensive examination of current evidence, best practice guidelines, and current available resources related to the module topic for development. Each module was created with the same format to assist with ease of familiarity for the presenter.

Each of the ten education modules contains:

- A module description
- A list of participant learning objectives
- Teaching aids/activities to be utilized throughout the module including: handouts, videos, models, and/or participant activities
- Content relevant to the module topic
- Potential questions to aid with facilitation of group discussion
- A list of key messages for participants/family members
- An associated PowerPoint presentation

Contained within the content section of each module is information pertinent to both the presenter and participants. Content would be utilized to familiarize the presenter with each topic and also within a group education session. Tips for participants and applicable resources or services, related to the module topic, available in Prince Edward Island were also provided in the content. Developed PowerPoint presentations parallel content within each module, but were developed specifically for the participants, incorporating concepts within Knowles Adult Learning Principles (1970, 1984). Utilization of language within each module was selected with cognisance placed on reading level, as well as ease of understanding and comprehension. Various medical terms were utilized throughout the modules, which due to the nature of the project was unavoidable. It is recognized that

these terms may present a challenge to some clients/family members. Every effort was made to define or explain terms as simply as possible.

Theoretical Framework

The importance of a theoretical framework was recognized through the practicum project. Pender's Health Promotion Module (2006) and Knowles Adult Learning Principles (1970/1984) served as a theoretical framework during the development of the education modules.

Pender's Health Promotion Model. Pender's model was selected due to its applicability to both the underlying goals of pulmonary rehabilitation and of the practicum project. Pender et al. (2006) defined health promotion as "behavior motivated by the desire to increase well-being and actualize human health potential" (p. 7). Pender's definition aligns with the underlying goals of pulmonary rehabilitation including optimizing functional capacity and alleviating symptoms and encouraging active participation.

Pender identified three constructs through her Health Promotion Model including individual characteristics and experiences, behavior specific cognition and affect, and behavioral outcomes. The model identifies that patients will have *individual characteristics and experiences* that will define the knowledge they currently have, and will potentially influence the way they learn or process information. This emphasized the importance of tailoring education to individual patient needs and/or experiences and utilizing patient goal setting in curriculum development. This was reflected during the development of the education modules through the incorporation of facilitated group discussions, providing opportunity for participants to share their unique experiences and

knowledge. It was also reflected through facilitating the development of individualized participant SMART goals for the program. *Behavior specific cognition and affect* refers to variables that are essential for intervention. Nursing actions can influence modification of these variables. Delivery of pulmonary rehabilitation education is an example of a nursing action that will potentially influence behavior modification. Self-management behavior modification is the ultimate goal of pulmonary rehabilitation. Pender's model serves as a tool in facilitating patients to the phase of developing health-promoting behaviors, which is the ultimate goal of pulmonary rehabilitation education. It would be expected that through participation at pulmonary rehabilitation, clients/families would develop *behavioral outcomes.* This could also be described as the development of health-promoting behaviors through self-management education gained from attendance at pulmonary rehabilitation.

Knowles Adult Learning Principles. Adult Learning Principles, described by Knowles (1970/1984) provided a theoretical foundation for adult learning during the development of the education modules. This was important as the modules were intended for an adult population. Knowles identified various characteristics significant to adult learning that were incorporated into the development of the modules including self-concept, unique experience, readiness to learn, orientation to learning, and motivation to learn. Modules were developed to allow time for facilitated group discussion in order to provide opportunity for participants to share *unique experiences* and knowledge. The ultimate goal of pulmonary rehabilitation is to promote self-management behavior aligning with both self-concept and readiness/motivation to learn. *Self-concept* refers to the idea that adults are self-directed and feel a responsibility for their own learning. An

introduction was provided for each module to ensure participants were aware of the intended purpose. Handouts provided throughout the modules also served as tools to foster these characteristics. Feedback was requested throughout the modules from participants and time was allotted for group discussion and questions. *Orientation to learning* signifies that adults are often problem or performance centered while learning. This aligns well with the concept of self-management education. Various demonstrations, tips, and strategies are provided throughout the modules aimed at problem solving, troubleshooting, or performing a particular task, such as administration of medication devices or breathing techniques to elevate or manage shortness of breath. Related to *motivation*, Knowles (1970) indicated that adults learn best if they perceive education to be personally relevant. This to was taken into consideration during the development of the modules. Information provided within the content of each module encompassed various chronic lung diseases to ensure relevance for all participants. It was of great importance during the module development to be inclusive of various chronic lung diseases to reach as many clients/families as possible.

While serving as a theoretical framework, Pender's Health Promotion Module (2006) and Knowles Adult Learning Principles (1970, 1984) also enhanced the quality and relevance of the developed education modules. Both were determined to align closely with the underlying concept and goals of pulmonary rehabilitation.

Discussion of Advanced Nursing Practice Competencies

The Canadian Nurses Association defined advanced nursing practice (ANP) as "an umbrella term describing an advanced level of clinical nursing practice that maximizes the use of graduate educational preparation, in-depth nursing knowledge and

expertise in meeting the health needs of individuals, families, groups, communities and populations" (Canadian Nurses Association, 2008, p.9). They further described four competencies related to advanced nursing practice: clinical, research, leadership and consultation/collaboration. The opportunity to demonstrate various ANP competencies was possible throughout the practicum project.

Clinical Competency

Clinical competency provides opportunity for a clinician to develop an expertise in an area of nursing for utilization with patients and families (Canadian Nurses Association, 2008). Various components of clinical competency are identified by the Canadian Nurses Association (2008) including decision making, education, assessment, intervention, and managing client health concerns. Due to the nature of this practicum project and the fact that there was not a required clinical placement, the competency was not demonstrated. Clinical competency could be demonstrated post completion of the practicum project through implementation of the developed educational modules with clients and families in the clinical setting or pulmonary rehabilitation.

Research Competency

Through the role of ANP, current research is examined and utilized (Canadian Nurses Association, 2008). For this project the overall goal was to develop relevant evidenced-based education modules. Research skills were demonstrated through critical appraisal and the synthesis of information of current evidence and data during the conduction of the integrative literature review. Following the development of the education modules, the practicum project was presented to faculty and fellow classmates. This provided an opportunity to disseminate current evidenced-based findings and

research. It is hoped that post completion of the practicum project the developed education modules will be utilized within the Provincial Pulmonary Rehabilitation Program. This will contribute to nursing practice, while helping to facilitate health related behavioral change among the population of individuals living with chronic lung diseases.

Leadership Competency

ANP requires nurses to be leaders in their workplace, creating change and improving outcomes of care (Canadian Nurses Association, 2008). Leadership is evident throughout the practicum project. The project serves as an example of a nursing led secondary prevention strategy, aimed at improving the overall health and well-being of individuals living with chronic lung diseases. The practicum advocates for better health outcomes, though enhanced self-management education. The practicum project was based on an identified educational need and identified a gap in current health care delivery. Educational modules were developed by a registered nurse and were intended for utilization by registered nurses working within the Provincial Pulmonary Rehabilitation Program. Leadership was displayed throughout the practicum project as it provided opportunity to advocate for a specific population and has the potential to initiate change at the individual and community level. The practicum project further provided opportunity to assist colleagues as a goal of the project was to assist with ease of education delivery for staff, through a developed resource. It is ultimately hoped that the Provincial Pulmonary Rehabilitation Program in Prince Edward Island will utilize the developed education modules.

Consultation and Collaboration Competency

Consultation is essential to ANP (Canadian Nurses Association, 2008). Initial consultation was seen through the identification of a contact person for the practicum project. The contact person served as a resource throughout the project and identified a need for the development of the educational modules. Formal consultation was conducted with various health care disciplines through the practicum project. Consultation provided an opportunity to engage others and gather information related to pulmonary rehabilitation and the development of the education modules. Prior to the implementation of the developed modules it is assumed that the quality of developed resource will be assessed through consultation with key stakeholders. Consultation was also seen through gaining input from other established Pulmonary Rehabilitation Program during consultation. Due to the developmental nature of the practicum project, collaboration was not demonstrated.

Next Steps

Following the completion of the practicum project, the plan is that the developed education modules will be implemented and utilized within the Provincial Pulmonary Rehabilitation Program. Prior to implementation, approval of the education modules will be required from the Acting Chronic Disease Prevention and Management Manager, Acting Medical Leads for the Program, and the Cardiac and Pulmonary Rehabilitation Program Advisory Board. The Acting Chronic Disease Prevention and Management Manager identified a need for the developed education modules and all were involved with the practicum through consultation, expressing support for the project. It is assumed

that approval for implementation will be easily gained. Front line staff in the setting will require time to gain familiarity with the modules prior to implementation.

Evaluation of the developed education modules will be essential following implementation. It is proposed that the education modules be piloted within the Provincial Pulmonary Rehabilitation Program during a 12-week cycle of the program. An evaluation tool will need to be selected and/or developed for this purpose. At that point, it would be suggested that the tool be utilized with front line staff, clients/families participating in the Program, the Program Lead, the Acting Chronic Disease Prevention and Management Manager, and the Acting Medical Leads for the Program. Following evaluation, the education modules would be edited appropriately.

Conclusion

Through the practicum project the topic of chronic lung disease was explored in great detail, highlighting the overall impact on both individuals living with the conditions and the health care system. It was easily identified that chronic lung disease presents significant challenges requiring intervention. Pulmonary rehabilitation serves as a secondary prevention intervention aimed at optimizing functional capacity and reducing or alleviating symptoms, encouraging self-management and active participation, and decreasing dependence on the health care system. Through the conduction of an integrative literature review and consultation with key stakeholders relevant literature and information related to pulmonary rehabilitation, chronic lung disease, and client/family education was obtained, ultimately guiding the development of an educational resource.

The overall goal and objectives of this practicum project were met. Ten relevant evidenced-based education modules were developed intended for utilization of teaching

clients/families with chronic lung disease in a Provincial Pulmonary Rehabilitation Program. An integrative literature review and consultation with identified key stakeholders was conducted, which guided the development of the education modules. The practicum project was disseminated to faculty and fellow classmates and various ANP competencies were displayed throughout the project.

It is ultimately hoped that implementation of the developed education modules within the Provincial Pulmonary Rehabilitation Program will improve the overall health/wellness and self-management abilities of individuals living with chronic lung disease in Prince Edward Island. The resource will assist in advance nursing practice within the setting and with education delivery. Steps for both implementation and evaluation have been identified within this report. This practicum project has provided opportunity for both personal and professional growth. Extensive knowledge related to chronic lung disease and pulmonary rehabilitation has been gained that I will utilize day to day while working with clients/families in clinical practice. I have genuinely enjoyed the course work associated with this practicum project and will be forever grateful for these opportunities.

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Appendix A

Integrative Literature Review

Memorial University of Newfoundland

School of Nursing

Master of Nursing Program

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Integrative Literature Review

There are over three million individuals currently living with chronic lung disease in Canada (Public Health Agency of Canada, 2012a). The term chronic lung disease refers to respiratory conditions such as, chronic obstructive pulmonary disease (COPD), which also encompasses chronic bronchitis and emphysema, pulmonary fibrosis, asthma, lung cancer, and tuberculosis. Several terms currently exist referring to respiratory conditions. For the purpose of this literature review the term chronic lung disease will be used which also represents the terms chronic respiratory disease and chronic pulmonary disease.

The reality of living with chronic lung disease is burdensome and debilitating to both individuals living with the conditions and the health care system. Individuals often report experiencing extreme shortness of breath while doing simple tasks associated with day-to-day living and are often left feeling breathless (World Health Organization, 2007). Ries et al. (2007) described chronic lung disease as disabling and indicated an association between chronic lung disease and increased mortality. In fact, COPD is the only chronic condition that is still associated with an increasing mortality rate in Canada (Canadian Thoracic Society, 2010). Chronic lung disease has a significant economic impact on the Canadian health care system, costing approximately 12 billion dollars annually (Public Health Agency of Canada). COPD is the leading cause of hospital admission and is associated with higher rates of readmission when compared to all other chronic diseases (Canadian Thoracic Society, 2010). To support the importance of intervention by various health care disciplines, the World Health Organization (2007) estimates that chronic lung disease will become the third leading cause of death by 2030. Also noteworthy is the fact

that several conditions encompassed by chronic lung disease are in fact degenerative, indicating the potential for a gradual decline over time (Canadian Thoracic Society). Early intervention has the potential to slow this process and provide an overall benefit to individuals living with chronic lung disease. The American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR, 2011) indicated that pulmonary rehabilitation demonstrates a secondary prevention intervention aimed at improving the quality of life of those living with chronic lung disease.

The AACVPR (2011) recognizes and recommends pulmonary rehabilitation as an essential component of medical care for those living with chronic lung disease. Pulmonary rehabilitation includes exercise training and education, delivered by multidisciplinary health care professionals, with the goal of improving the overall physical and psychological health status of individuals living with chronic lung disease (Collins et al., 2014). Pulmonary rehabilitation has been found to have a substantial impact on the overall quality of life of individuals living with chronic lung disease, regardless of age, sex, or current lung function (Roman et al., 2013).

Until recently, pulmonary rehabilitation programming was not available to residents of Prince Edward Island (PEI) living with chronic lung disease. Based on recommendations discussed above, an obvious need existed within the province in order to better assist and manage the care of individuals living with chronic lung disease. Pulmonary rehabilitation programming was initiated in the province in January 2017. The program is new and currently lacks an established education curriculum. The proposed practicum project seeks to develop evidenced-based education modules to be

utilized by multidisciplinary staff for client and family teaching within the Provincial Pulmonary Rehabilitation Program.

The purpose of this integrative literature review is to examine the topic of pulmonary rehabilitation, with a specific focus on recommendations of education topics to be incorporated into pulmonary rehabilitation programming. Literature appraised through this review will be utilized in the development of education modules for the Provincial Pulmonary Rehabilitation Program in the province of PEI. A detailed description of pulmonary rehabilitation, from reviewed literature, as well as background and topic relevance will be discussed, in order to present an argument for the development of the pulmonary rehabilitation education modules. Pender's Health Promotion Model, first developed in 1982 (Pender, Murdaugh, & Parsons, 2006), and Knowles Adult Learning Principles (1970), will also be reviewed in relation to providing a framework for the development of the education modules. Literature summary tables can be found in Appendix A detailing all relevant research studies discussed in the following integrative literature review. The Critical Appraisal Tool Kit, developed by the Public Health Agency of Canada (2014) was used for critical appraisal of reviewed quantitative research studies. Guidelines related to critical appraisal of qualitative research, provided by Moralejo (2016), were utilized for a reviewed qualitative study.

Description of Search Strategy

An extensive literature search was conducted utilizing both the CINAHL and PubMed databases, accessed through the Memorial Health Sciences Library website. The search was initiated within the CINAHL database using the search terms "pulmonary rehabilitation", yielding 2971 results. The search results were limited to academic

journals that had been published within the past five years in English. This yielded 532 results, 78 of which were deemed relevant to pulmonary rehabilitation. A second search was completed utilizing the CINAHL database for the search terms "pulmonary rehabilitation" and "education". This yielded 41 results of which 11 were deemed relevant to pulmonary rehabilitation. Six of the 11 results had been found with the previous search, leaving five additional results. A search was then conducted utilizing the same search terms and narrowing criteria on the PubMed database, yielding 4541 results. Due to the large number of results, the search term "education" was added to narrow results, yielding 231 results, 54 of which were deemed relevant to pulmonary rehabilitation. Despite being relevant to pulmonary rehabilitation, not all results were selected for utilization within the following integrative literature review. For example, articles describing online or telehealth rehabilitation, studies pertaining to adolescents and children, and studies post rehabilitation were excluded.

Journal articles and books describing Pender's Health Promotion Model (HPM) and Knowles Adult Learning Principles (1970, 1984) were also obtained during the following literature search. A search was conducted on the CINAHL database with the search terms "Pender" and "Knowles" utilizing the field author. Various unrelated results were obtained from this search. Another search was then completed also utilizing the search term "pulmonary rehabilitation". No studies were found specifically relating to either of the researchers and pulmonary rehabilitation, which was expected. It was hoped that primary sources could be obtained detailing Pender's HPM and Knowles' adult learning principles. This was not found on the CINAHL or PubMed databases. A

primary source detailing Pender's HPM was obtained from the University of Prince Edward Island Library and a copy of Knowles work was obtained via the Internet.

A subsequent Internet search of grey literature was also conducted in order to obtain relevant statistics and educational resources applicable to pulmonary rehabilitation. Various relevant resources were found and are included within the following integrative literature review.

Background of Chronic Lung Disease

Historically, chronic lung disease has been documented as far back as the 1600's (Ebner, 2015). Medical terminology has varied over the course of several centuries but the fundamentals of findings remain the same. Physician documentations from several centuries ago have clearly documented alterations in lung size, inflammation to the mucous membranes, breakdown of lung tissue, and air trapping (Ebner, 2015; Heffner, 2013). Despite various advancements in pulmonary health, in relation to both knowledge and modern equipment, much of current practice still relies on historical developments. Of great significance to pulmonary health and wellness is Dr. Rene Laennec. Through his development of the stethoscope in 1816, Dr. Laennec revolutionized pulmonary medicine and is know historically as the father of chest medicine (Vatanoglu-Lutz & Ataman, 2016). Today, over 200 years later, the stethoscope is widely utilized by health care providers, in various setting, on a daily basis.

Globally, the World Health Organization (2009) estimates hundreds of millions of individuals living with chronic lung disease worldwide, accounting for approximately 4 millions deaths annually. The prevalence of lung disease is ever increasing in society. The Public Health Agency of Canada (2012b) estimates that approximately 770 000

Canadians are living with chronic lung disease. While not curable, chronic lung disease is often preventable requiring education related to tobacco prevention, diet and lifestyle factors, and effects of air quality. The financial impact of lung disease impacts both the health care system and individual families greatly (World Health Organization, 2009).

Description of Pulmonary Rehabilitation and Topic Relevance

Pulmonary rehabilitation has been widely discussed by various disciplines, including nursing, respiratory therapy, physiotherapy, and medicine, in reviewed literature. Reviewed literature recommends pulmonary rehabilitation as an essential component of treatment for individuals living with chronic lung disease (Moamary, Aloriny, & Al-Hajjaj, 2014; Roman et al., 2013; Lan et al., 2013). Pulmonary rehabilitation is designed for all patients with stable chronic lung disease that are living with associated symptoms, known to be at times disabling to the individuals (Ries, 2008). Pulmonary rehabilitation has been found to decrease dyspnea, enhance exercise tolerance, and improve overall health related quality of life (Rochester et al., 2015; Lan et al., 2013; Nici et al., 2006). According to AACVPR (2011):

> Pulmonary Rehabilitation is an evidence-based, multidisciplinary, and comprehensive intervention for patients with chronic respiratory diseases who are symptomatic and often have decreased daily life activities. Pulmonary rehabilitation includes patient assessment and goal setting, self-management education, exercise training, psychosocial support, and outcome measurement (p. 1).

This definition highlights three important characteristics of effective pulmonary rehabilitation programming: multidisciplinary, individualized, and attention to physical and social function (Ries et al., 2007).

The underlying goals of pulmonary rehabilitation are the following: (a) to optimize functional capacity and reduce or alleviate experienced associated symptoms, (b) to encourage active participation, and (c) to decrease dependence on the health care system, ultimately saving health care dollars (Nici et al., 2006; Moamary et al., 2014). In addition, pulmonary rehabilitation provides opportunity for patients to be actively involved in striving to achieve their highest level of functionality possible (Ries et al., 2007).

Pulmonary Rehabilitation in Canada

Aligning with AACVPR, the Canadian Thoracic Society (2010) recommended pulmonary rehabilitation for all individuals living with chronic respiratory disease. The Society also indicated that pulmonary rehabilitation decreases dyspnea and optimizes functional status for individuals living with lung disease. Despite documented benefits to pulmonary rehabilitation public access to these programs in Canada is low. Specific to COPD, it is estimated that only about one percent of individuals living with the chronic condition in Canada have access to pulmonary rehabilitation (Camp et al., 2015; Roman et al., 2013). Established programs in the country cannot meet current demand with an estimated national capacity of only approximately 10 000 patients annually. Of specific personal interest and supporting rationale for the current integrated literature review and resulting proposed practicum project, Camp et al., in association with the Canadian Thoracic Society, produced a document report describing access to pulmonary

rehabilitation programs in Canada. Background data in the report indicated that in 2005 there was no access to pulmonary rehabilitation for Canadian residents in the territories, Newfoundland and Labrador, or PEI. Camp et al. indicated in the 2015 report that at the time there were 155 facilities across the country offering pulmonary rehabilitation programming, stating that rehabilitation was offered in all provinces but still no access was available in the territories. The report indicated that pulmonary rehabilitation programs were identified through a list obtained by the Canadian Lung Association website. The only program listed on the site for PEI is a program that is no longer in place in the province. In 2016, government funding was secured for a pilot pulmonary rehabilitation program. Based on findings from the pilot, permanent funding for a Provincial Pulmonary Rehabilitation Program was secured. The Program was initiated in two locations across the province in January 2017. Literature appraised through this integrative review will be utilized in the development of education modules for the above-mentioned
Program.

Various delivery methods are currently incorporated into pulmonary rehabilitation programs within Canada including community based, hospital-based outpatient, hospital-based inpatient, telehealth, and home based (Camp et al., 2015; Rochester et al., 2015). Moamary et al. (2014) described community based pulmonary rehabilitation programs to be more cost effective in comparison to hospital-based programs. The Pulmonary Rehabilitation Program for which the proposed education modules are intended for is community-based for the province of PEI.

Benefits of Pulmonary Rehabilitation

There are several benefits to pulmonary rehabilitation and they are described in reviewed nursing literature. A report by Rochester et al. (2015), in association with the American Thoracic Society, indicated pulmonary rehabilitation is important to improve health related qualify of life (HRQOL), muscle strength and endurance, exercise capacity, functional capacity, and emotional function. They identified indicated that pulmonary rehabilitation reduces hospitalizations, healthcare visits, and symptoms of dyspnea. Also noteworthy, pulmonary rehabilitation has been shown to enhance knowledge, self-efficacy, and self-management abilities (Rochester et al.). Pulmonary rehabilitation guidelines developed by AACVPR (2011) states that pulmonary rehabilitation provides the most benefit, in relation to symptom management, exercise tolerance, and overall quality of life, to patients when compared to other treatment options. Based on the integrative integrated literature review, there is a paucity of information related to pulmonary rehabilitation for clients/families. Based on the literature review, research evidence describing the benefits of pulmonary rehabilitation was critically analyzed and will be presented below

A quantitative research study conducted by Jacome and Marques (2014) explored the benefit of pulmonary rehabilitation pertaining to various health domains including dyspnea, functional balance, muscle strength, exercise tolerance, emotional state, and health related quality of life (HRQOL). In support of relevance for the study, these authors identified that at that time no research was available that specifically examined the effects on pulmonary rehabilitation on the above mentioned health domains. Twenty-six participants attended a 12-week pulmonary rehabilitation program. Various outcome

measures were assessed for example, pre and post intervention utilizing both medical testing and questionnaire. Following data analysis, no impact was noted related to participant lung function. This would be an expected finding as there is no cure for chronic lung disease. The study did find a statistically significant improvement in participant dyspnea ($p < 0.003$), functional balance (pre 7.8 seconds and post 6.7 seconds; $p < 0.001$), and muscle strength (pre 2.3-4.1 kg and post 3.6-6.7 kg; $p < 0.001$). In addition, the participant pre and post exercise tolerance was also assessed, utilizing a Six Minute Walk Test (6MWT). Results found a mean improvement of 32 meters ($p < 0.001$). While Jacome et al. (2014) described a benefit of pulmonary rehabilitation in relation to various health domains, the results are not generalizable due to a small sample.

Researchers Lan et al. (2013) also identified a further gap in available research related to pulmonary rehabilitation. Although it is known that the overall benefit of pulmonary rehabilitation varies among individuals, they further hypothesized that all individuals, regardless of the severity of lung disease, benefit from pulmonary rehabilitation. They conducted a quantitative study to investigated the benefit of pulmonary rehabilitation among 26 participants with existing normal exercise capacity. Outcome measures were assessed both pre and post intervention of a 12-week pulmonary rehabilitation program. Results indicated a statistically significant improvement, $p < 0.05$ for the following domains: HRQOL, level of exertional dyspnea, and respiratory muscle strength. The researchers also noted a significant improvement ($p < 0.001$) in exercise capacity, defined by a mean increase of 101.3 ml/min and 8.2 watts on cardiopulmonary exercise test, despite participants having a pre intervention normal exercise capacity. They concluded that pulmonary rehabilitation is beneficial and appropriate for patients

with chronic lung disease who have a normal exercise capacity. Therefore this study demonstrates the benefit of secondary prevention. However, due to the small sample size, it is not generalizable to the general population.

Through the conducted integrative literature review, two research articles were found that specifically addressed the topics of anxiety and depression associated with chronic lung disease. Bhandari, Jain, Marolda, and ZuWallack (2013) stated that previous research indicates prevalence rates of anxiety and depression, associated with chronic lung disease, ranges from ten to 80 percent. Although these researchers hypothesized that pulmonary rehabilitation decreases symptoms of anxiety and depression; they also identified that little is currently known regarding the ability of pulmonary rehabilitation to produce a clinically meaningful improvement in these symptoms. A quantitative study by the researchers, encompassing a sample of 235 participants, investigated the effect of pulmonary rehabilitation on the domains of anxiety and depression. Study results indicated a statistically significant improvement ($p < 0.001$) on both domains. Rates of reported anxiety decreased from 25 to nine percent post intervention, while rates of depression decrease from 17 to six percent.

In The second study, Bentsen, Wentzel-Larsen, Henriksen, Rokne, & Wahl (2013) reported that chronic lung disease is complex with various associated symptoms, including anxiety and depression for individuals. They defined symptom as "a subjective experience reflecting changes in function, sensations, or cognition" (p. 541) and also identified the term self-efficacy through their work. They referred to self-efficacy as the confidence associated with self-management. Results of the study showed that increased exercise capacity, developed through a 6-week pulmonary rehabilitation program, was

associated with decreased levels of depression. They further found that increased self-efficacy occurred through pulmonary rehabilitation and it is associated with decreased levels of anxiety and depression. Interestingly, the study results indicated that women report higher levels of anxiety as compared to men. Therefore, Betsen et al. concluded that within their study, levels of anxiety and depression decreased during and post pulmonary rehabilitation, however results were not found to be statistically significant ($p > 0.05$). This was in part attributed to low levels of reported anxiety and depression pre intervention as well as a limitation of a low response rate (41%).

The majority of the previously discussed reviewed research identified an immediate benefit to pulmonary rehabilitation, but it did not address the impact over time. Donesky, Citron, Hilling, Cayou, and Millie (2015) examined long-term outcomes following pulmonary rehabilitation for individuals. The quantitative study by the researchers encompasses a large sample size of 755 participants. The researchers found that approximately 65% of participants self-reported an improvement in general health for at least three years post pulmonary rehabilitation programming. Participants also reported utilizing strategies taught in pulmonary rehabilitation and continuing an exercise regime at seven years post pulmonary rehabilitation. Of great importance was data collected related to utilization of health care services. Donesky et al. (2015) reported a decrease in emergency room visits and hospitalizations by approximately 18% one-year post pulmonary rehabilitation.

While Roman el al. (2013) raised the question as to whether delivery method and duration have an impact on long-term benefit to pulmonary rehabilitation, study results indicated minimal differences when comparing three month pulmonary rehabilitation

programming, identified as the RHB group, versus three month programming plus nine month follow-up, identified as the RHBM group (CRQ emotion score RHB group 0.7 to 0.5 and RHBM group 0.9 to 0.7, 95% CI and $p < 0.05$; CRQ fatigue score RHB group 0.3 to 0.3 and RHBM group 0.5 to 0.56). No statistical difference ($p > 0.05$) was found in relation to 6MWT or pulmonary function. This study introduces an additional area of required research in which both patient benefit and program cost would be assessed together.

Education in Pulmonary Rehabilitation

Previously discussed research clearly indicates a benefit to pulmonary rehabilitation. An essential component of pulmonary rehabilitation is education. Recommendations related to pulmonary rehabilitation education topics and delivery methods will be discussed below.

Education Recommendations

Education is a core component of pulmonary rehabilitation (Nici et al., 2006). Canadian specific guidelines for pulmonary rehabilitation do not currently exist (Camp et al., 2015). At the present time, the Canadian Thoracic Society recommends adhering to guidelines produced by the AACVPR (2011). The AACVPR indicated that education is an essential component of pulmonary rehabilitation. They further identified that educational needs of patients should be incorporated into the initial patient assessment. Education addressing specific patient needs should subsequently be incorporated into delivered materials. This idea was supported through recommendations of tailored education to individual patient needs and incorporation of patient determined goals into pulmonary rehabilitation programming (Moamary et al., 2014; Nici et al.).

Although specific guidelines for pulmonary rehabilitation do not currently exist within Canada, programming related to COPD education does exist with the program *Living Well with COPD: A Plan of Action for Life* (2017), with the first edition implemented in 1998. The program was developed in partnership by McGill University Health Center and the Quebec Health Ministry and provides evidenced-based education known to improve the overall quality of life of patients.

Only one study was found pertaining to the implementation of the *Living Well with COPD Program* in a Canadian pulmonary rehabilitation setting. Cosgrove, MacMahon, Bourbeau, Bradley, and O'Neill (2013) described this program as well structured, evidenced-based, and to promote self-management behaviors. They reported that the program has been widely utilized but not specifically in the pulmonary rehabilitation setting. A quantitative study by these researchers adapted the program for education within the pulmonary rehabilitation setting and subsequently evaluated the effectiveness of the programming. The adapted program encompassed six educational topics:

- Management of breathlessness
- Energy conservation
- Overview of action plan and management of an exacerbation
- COPD medication and appropriate use of inhalation devices
- Management of stress, anxiety, and depression
- Continuing exercise and self-management strategies

Educational sessions were also adapted to be delivered in 30 to 45 minutes. Study results indicated that the adapted education materials were well accepted by both patients and health care providers. Approximately 98% of the 57 participants rated the educational materials as good or excellent. Feedback obtained from the study lead to further adaption of materials and additions of topics such as, healthy eating and smoking cessation into the programming. The Understanding COPD Questionnaire (2012) was utilized to measure the effectiveness of educational programming. Statically significant results ($p < 0.001$) were observed on all five domains of the questionnaire post intervention. The mean change (%) was calculated for each domain resulting in the following: About COPD domain 23.78, Managing Symptoms domain 26.64, Accessing Help and Support domain 32.14, Section A Total 26.75, and BCKQ 10.64. Overall the researchers concluded that the *Living Well with COPD* program could be adapted and used for the delivery of excellent quality and consistent education sessions within a pulmonary rehabilitation setting. This study was of specific personal interest as the pilot program for the Pulmonary Rehabilitation Program in PEI based the educational component of the program on resources obtained from the *Living Well with COPD Program*.

Recommended Education Topics

The following list describes education topics recommended by the AACVPR (2011):

- Normal pulmonary anatomy and physiology
- Pathophysiology of chronic lung disease
- Description and interpretation of medical tests

- Breathing strategies
- Secretion clearance
- Medications
- Respiratory devices
- Benefits of exercise and maintaining physical activities
- Activities of daily living
- Eating right
- Irritant avoidance
- Early recognition and treatment of exacerbations
- Leisure activities
- Coping with chronic lung disease
- End of life planning

The previously listed educational topics are supported in the research conducted by Moamary et al. (2014) and Camp et al. (2015). Recommended topics by these researchers parallel those by AACVPR but require the addition of energy conservation, oxygen therapy, anxiety and panic control, and sexuality related to lung disease.

AACVPR (2011) and Moamary et al. (2014) further recommended education to be in the form of self-management education for individuals. Through self-management education patients learn by doing rather than simply sitting listening to a traditional lecture. Patients are encouraged to be active participants and as a result develop both knowledge and self-confidence. Self-management education promotes problem solving, goal setting, and healthy behavioral changes. Such education equips patients with the

knowledge and skills required to partake in problem solving, followed by action when faced with an acute exacerbation of their disease. This is turn promotes early intervention, decreases the likelihood of a hospital admission, and ultimately decrease incidence of mortality (Moamary et al., 2014; Nici et al., 2006). A review by Osadnik et al. (2015) identified behavioral modification as a goal of pulmonary rehabilitation education. The authors suggested that self-management education is required in order to stimulate behavioral modification. Self-management education promotes long-term, sustainable, health-promoting behaviors that will ideally extend beyond completion of a pulmonary rehabilitation program. Associated chronic lung disease risk factors such as smoking, obesity, poor nutrition, non-compliance with medications, and inactivity can be addressed through self-management education with the hope of enlisting behavioral modification among clients in the program.

Osadnik et al. (2015) raised the concern that research has been conducted indicating the benefit of exercise training in relation to pulmonary rehabilitation but little research currently exists pertaining to education and sustainability. While clearly indicating that education promotes knowledge and confidence related to disease self-management, the authors also questioned the benefit of education, related to method of delivery, indicating that traditional didactic teaching methods typically do not benefit patients. A lack of research related to pulmonary rehabilitation education was identified through this review and presents itself as an area for future research.

There is currently a lack of research that explores the benefit of structured education in pulmonary rehabilitation programming (Casey et al., 2013). In an attempt to expand such knowledge, the Pulmonary Rehabilitation in Nurse-led Environment

(PRINCE) study was conducted (Casey et al., 2013; Casey, Murphy, Cooney, Mee, & Dowling, 2011). Through the PRINCE study it was recognized that pulmonary rehabilitation is a key component of care for individuals living with chronic lung disease and that primary healthcare nurses are essential to the delivery of successful pulmonary rehabilitation programming (Casey et al., 2011). Education developed and delivered through the PRINCE study was defined as structured education. In comparison to unstructured education, structured education is more effective in fostering self-management behaviors in individuals living with chronic disease (Casey et al., 2013). Structured education is delivered by a trained educator, has a pre-planned and structured curriculum, is comprehensive and flexible in scope, and incorporates the expressed individual needs of patients participating in the program (Casey et al., 2011). Also of significance, structured education should incorporate principles of adult learning, be readily accessible, and utilize various teaching methods. Structured patient education was based on eight topics during the PRINCE study including:

- Setting the scene
- Managing medications and oxygen
- Introduction to exercise
- Managing breathlessness
- Knowing and managing your symptoms
- Recognizing and managing acute exacerbations
- Managing stress and anxiety
- Where to now (Casey et al, 2011)

The qualitative study utilized the Chronic Respiratory Questionnaire, developed in 2001, in order to measure disease specific quality of life post structured education intervention. Statistically significant results ($p < 0.01$) were observed, for individuals of the intervention group, in relation to the overall score on the Chronic Respiratory Questionnaire, with an adjusted mean pre and post difference of 1.11. Results also indicated a significant increase of calculated dyspnea scores, with an adjusted mean difference of 0.49, as well as physical scores, with an adjusted mean difference of 0.37 (Casey et al., 2013). A noted limitation of the study was the exclusion of patients classified as having severe COPD. Further research, incorporating the previously mentioned population would enhance the study's generalizability to the population.

The Patient Perspective

During the literature search, only one article was found detailing the patient's perspective in relation to pulmonary rehabilitation education. The qualitative study, conducted by Wilson, O'Neill, Reilly, MacMahon, and Bradley (2007), explored the identification of topics patients felt should be included in pulmonary rehabilitation education. Purposive sampling was utilized to obtain patients to participate in focus groups discussing educational needs and preference of delivery methods. Interestingly, patient identified education topics were similar to those recommended by AACVPR (2011) and Moamary et al. (2014). Six education topics, identified by patients in the focus groups, include:

- Disease education
- Management of breathlessness and the physical impact of COPD

- Management of an exacerbation
- Medication
- Psychosocial support
- Welfare and benefits system

Recommendations reviewed did not incorporate the patient identified topic of welfare and benefits system. Patients in the study identified a significant cost associated with chronic lung disease and further identified difficulty and frustration associated with accessing assistance from publicly funded programming.

Wilson et al. (2007) addressed the patient perspective in relation to education delivery. They found that patients prefer a group environment and enjoy the social support associated with a group setting, that education utilized should be accurate and credible, however, presented in layman's terms, and that patients would like supplemental information supporting education presented during pulmonary rehabilitation. Preference of frequency of programming varied from multiple times per week to monthly sessions. Overall participants expressed the idea that if the education was perceived to be beneficial they would attend it. A location with adequate parking, close to the facility, was also identified as important to patients (Wilson et al., 2007).

There was limited reference to the role of the family in relation to pulmonary rehabilitation in the reviewed literature. While Momary et al. (2014) suggested a benefit to family participation in pulmonary rehabilitation programming, Marques et al. (2015) indicated that family involvement in pulmonary rehabilitation programming is typically minimal. They reported that family involvement promotes collaborative care, helps build

an effective support system for patients, and increases the competence and confidence of family in relation to assisting their loved ones to manage chronic lung disease. A qualitative study by Marques et al., involving 35 patient and 35 family member participants, indicated that patients want their family members to participate in pulmonary rehabilitation programing. Patients in the study indicated that family member participation would result in an increase in knowledge by their loved one and would also provide opportunity to enhance relationships. The researchers indicated that further research is required to examine long-term benefits of family participation in pulmonary rehabilitation and associated economic costs.

Theoretical Framework

A theoretical framework is an essential component to evidence-based professional practice and nursing research (Nilsen, 2015) through validation of work and facilitation of implementation. For the purpose of the proposed practicum project, Pender's Health Promotion Model (2006) and Knowles Adult Learning Principles (1970) will be utilized as a theoretical frameworks.

Pender's Health Promotion Model

Dr. Nola Pender's Health Promotion Model (HPM) was first introduced to nursing literature in 1982 and was further developed and revised in 1996 (Pender et al., 2006). The revised HPM can be found in Appendix B. Pender et al. (2006) defined health promotion as "behavior motivated by the desire to increase well-being and actualize human health potential" (p. 7). They further referred to person as an individual with unique characteristics and experiences that can be influenced by the environment. Individuals seek environments that are health promoting. The environment has a social,

cultural, and physical component. Health and illness are separate entities that can coexist. Illness represents a discrete event, acute or chronic in nature, that can hinder or facilitate health. "Health can still be an aspiration to those with a chronic illness, and health can be achieved despite being diagnosed with a disease" (Pender et al., p. 19).

The HPM examines factors that influence health behaviors and incorporates an individual's interpersonal and physical environment. The model seeks to illustrate processes that motivate individuals to engage in health promoting behaviors. Acknowledged within the HPM is the idea that individuals have unique characteristics and experiences that in turn influence their actions or behaviors. The model also describes behavior specific variables that can be modified through nursing action. These variables represent health promoting behaviors that result from intervention. There are three underlying constructs of the HPM (Pender et al., 2006):

- *Individual characteristics and experiences* refer to the unique traits of an individual that influences their actions. Within the model actions are linked to health behaviors. Particular characteristics or experiences may be perceived as more relevant or significant depending on the desired health behavior. Prior related behaviors and personal factors encompass this construct.
- *Behavior specific cognition and affect* refers to variables that are essential for intervention. The HPM identifies the fact that nursing actions can influence modification on these variables. Both the concepts of perceived benefits and barriers to action, as well as perceived self-efficacy and encompassed within this construct.

- *Behavioral outcomes* or the health-promoting behavior is the outcome of the HPM. A developed health-promoting behavior ultimately leads to improved health, functional ability, and overall quality of life. A commitment to a plan of action is required to develop a health-promoting behavior. Competing demands may at times influence an individual's plan of action, ultimately affecting the probability of successfully developing a health-promoting behavior.

Pender's HPM (2006) has be widely utilized in nursing research and literature, speaking to the model's applicability (Alkhalaileh, Khaled, Baker, & Bond, 2011). Identification of health promoting behaviors and direction for intervention are provided through the model. However, the HPM has not been utilized as a theoretical framework in the pulmonary rehabilitation setting. This presents an area for future development and research. Concepts contained within the HPM are applicable to pulmonary rehabilitation and provide a theoretical framework that will be utilized during the development of the proposed education modules. The model identifies that patients will have individual characteristics and experiences that will define the knowledge they currently have, and will potentially influence the way they learn or process information. This emphasizes the importance of tailoring education to individual patient needs and utilizing patient goal setting in curriculum development, as previous discussed within this literature review. Delivery of pulmonary rehabilitation education is a multidisciplinary action that will potentially influence behavior modification. The model serves as a tool in facilitating patients to the phase of developing health-promoting behaviors, which is the ultimate goal of pulmonary rehabilitation education.

Principles of Adult Learning

Throughout the integrative literature review, education was clearly identified as an essential component of pulmonary rehabilitation programming. As the intended population for this review was adults, the question of how health care professionals can effectively educate adults becomes important. Work by Malcolm Knowles (1970) is recognized within nursing literature to have provided a theoretical foundation for adult learning (Mitchell & Courtney, 2005). Work by Knowles, related to principles of adult learning, identified various characteristics as significant to adult learning (Knowles, 1970; Knowles, 1984):

- *Self-concept* refers to the idea that as individuals move from childhood to adulthood they develop a personal self-concept, which moves away from dependence and towards self-direction (Knowles, 1970). Adult learners feel a sense of responsibility for their own learning. They require acceptance, respect, and support in the classroom setting. Adults have the ability to convey their own personal learning needs.
- Adults have personal and unique *experience* that influences their learning (Knowles, 1970). Adults often utilize their experience to define their identity. Theses experiences serve as a foundation for new learning and enable adults to contribute to education. Experience is associated with the development of habits, which may cause adult learners to be at times closed-minded.
- A *readiness to learn* is developed throughout the lifespan (Knowles, 1970). Adult readiness to learn is often dependent on their personal social roles.

- *Orientation to learning* refers to the time perspective that is associated with learning (Knowles, 1970). Adults associate immediacy of application with learning, and engage in learning based on a need related to their current life situation. Adult learners tend to be problem or performance centered.
- Adults are *motivation to learn* (Knowles, 1984). Motivation to learn is typically internal. Adults learn best if they perceive education to be personally relevant.

Knowles (1970) identified that adults can learn. It is the responsibility of the educator to foster this ability to learn. Adults typically have been away from formal education for a period of time. This may result in loss of confidence in one's ability to learn. Adult learners also present with physiological changes, as a result of aging, that may impact learning (Knowles, 1970). Conditions or environments of learning should recognize these changes.

Knowles work provides guidelines and principles to be incorporated into the development of education modules to be utilized in the pulmonary rehabilitation setting.

Conclusion

Chronic lung disease is a disabling condition, associated with various symptoms that can create barriers in an individual's overall quality of life. Therefore, evidence has shown that An pulmonary rehabilitation can play a valuable role in an individual's well-being. Examples include: decreasing dyspnea associated with chronic lung disease, enhancing exercise tolerance, and improving overall health related quality of life (Rochester et al., 2015; Jacome and Marques, 2014; AACVPR, 2011). Pulmonary rehabilitation is widely recommended as essential to the treatment and management of

chronic lung disease in individuals (AACVPR). Education delivered through pulmonary rehabilitation programming promotes self-management, which in turn facilitates health-promoting behavior modification. This encourages active participation by individuals, allowing them to take control of their disease. Pulmonary rehabilitation has also been identified to financially benefit the health care system through decreased utilization of resources.

Benefits of pulmonary rehabilitation were well documented through the current literature review. Despite this, various gaps in research were observed, presenting areas for future development and research. Multiple reviewed studies were in fact contributors of new knowledge to pulmonary rehabilitation literature. Standardized education guidelines specific to pulmonary rehabilitation in Canada do not currently exist. This presents a challenge related to educational curriculum development. It is currently suggested that guidelines developed by AACVPR (2011) be utilized for the development of pulmonary rehabilitation curriculum. Several topics applicable to pulmonary rehabilitation education have been identified through this review and will be utilized during the development of pulmonary rehabilitation education modules. Of importance is the fact that the patient perspective of key educational topics parallels that of current existing literature. Pender's HPM (2006) and Knowles Adult Learning Principles (1970), are relevant to the topic of pulmonary rehabilitation education and will serve as a theoretical framework during the development of education modules relevant to this literature review.

In closing, the integrated literature review indicates benefits of pulmonary rehabilitation to both individuals living with chronic lung disease and the health care

system. Essential to pulmonary rehabilitation is the delivery of quality, evidenced-based education by multidisciplinary health care professionals. The preceding step to education delivery is the development of pulmonary rehabilitation education modules. The proposed practicum program seeks to develop such education modules. Ultimately, it is hoped that these modules will be implemented within the Provincial Pulmonary Rehabilitation Program in PEI, and serve as a resource to both multidisciplinary staff in the setting as well as clients and family members of the Program.

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Appendix A

Table 1

Literature Summary Table

Author, Name, Date, Objective	Sample and Setting	Design and Methodology	Key Results and Findings	Strengths/Limitations	Conclusion and Rating
Jacome & Marques (2014). Impact of Pulmonary Rehabilitation in Subjects with Mild COPD Objective: to assess the effects of pulmonary rehabilitation (PR) on lung function, dyspnea, functional balance, muscle strength, exercise tolerance, emotional state, and HRQOL	Setting: Two primary care centers Participants: 26 participants, 16 male and ten female, mean age 67.8yrs Inclusion Criteria: • Diagnosis of mild COPD • > 18yrs of age • Clinically stable for 1 month prior to study Exclusion Criteria: • Severe psychiatric, neurologic or musculoskeletal condition • Unstable cardiovascular disease	Design: Quantitative; analytic uncontrolled before-after 12 week PR program with exercise training and education Socio-demographic and clinical data obtained to characterize sample Outcome measures obtained to assess lung function, dyspnea, functional balance, muscle strength, exercise tolerance, emotional state, and HRQOL pre and post PR program.	Level of significance set at < 0.05 PR program had no effect on lung function Reduction in dyspnea observed ($p < .003$) and improvement in functional balance and muscle strength observed ($p < .001$) 6MWT distance improved by ~32m Statistical significant not observed related to depression, anxiety, stress, or HRQOL despite a noted improvement in scores	Strengths: • Approval obtained from institutional ethics committee • Participant informed consent obtained prior to data collection Limitations: • No control group • Small sample size • Same health care providers delivered PR program and conduction evaluation of study	Strength of Design: Weak Quality of Design: Medium Identified as first study to examine effects of PR on various health domains. Study significant to nursing practice, provides rationale for future research on the topic.

Table 2

Literature Summary Table

Author, Name, Date, Objective	Sample and Setting	Design and Methodology	Key Results and Findings	Strengths/Limitations	Conclusion and Rating
Lan et al. (2013). Benefits of Pulmonary Rehabilitation in Patients with COPD and Normal Exercise Capacity Objective: to investigate the effects of PR in patients with normal exercise capacity on HRQOL, exercise capacity, dyspnea, and muscle strength	Setting: out-patient pulmonary rehabilitation program Participants: 26 participants Inclusion Criteria: • Diagnosis of COPD and Normal exercise capacity • Stable from exacerbations • Maximal O2 uptake of 85% during exercise test • Ability to mobilize independently Exclusion Criteria: • Use of oral corticosteroids • History of other lung disease • Cardiovascular impairment	Design: Quantitative; analytic uncontrolled before-after 12-week PR program, participants attended twice weekly Outcome measures obtained to assess PFT, respiratory muscle strength, exercise stress test, and HRQOL pre and post intervention.	Level of significance set at < 0.05 Participants displayed an 8.4% improvement in exercise capacity post PR despite having a normal exercise capacity pre PR. Statistically significant ($p < .001$) improvements in all domains of the St. Georges Respiratory Questionnaire were observed post PR. Improvement was noted in related to respiratory muscle strength ($p < .05$) and level of exertional dyspnea ($p = .01$)	Strengths: • Study identified gap in current research • Ethics approval obtained from associated hospital and medical foundation • Informed consent obtained from all participants Limitations: • Small sample size • Assessment of exercise capacity not assessed within study design pre PR • Lung function not assessed within study design • Participants recruited from single clinic	Strength of Design: Weak Quality of Design: Medium Identified as first study to examine effect of PR on individuals with normal exercise capacity Topic requires further study

Table 3

Literature Summary Table

Author, Name, Date, Objective	**Sample and Setting**	**Design and Methodology**	**Key Results and Findings**	**Strengths/Limitations**	**Conclusion and Rating**
Bentsen et al. (2012). Anxiety and Depression Following Pulmonary Rehabilitation Objective: to evaluate changes in anxiety and depression post PR and to identify predictive factors	Setting: 6-week outpatient PR program; study part of a larger study projected to incorporate a total of four studies Participants: 100 participants diagnosed with moderate to severe COPD invited to participate, 54 of which completed PR program; mean age 66.1yrs; 99% current or ex-smokers Inclusion Criteria: • >35yrs • Symptoms including breathlessness, chronic cough, and sputum production • FEV1/FEC <70% and FEV1 <80% predicted • Able to read Norwegian Exclusion Criteria: • Long-term oxygen treatment • Unstable heart disease	Design: Quantitative; analytic uncontrolled before-after; longitudinal Theoretical framework Bandura's Social Cognitive Theory Prior to intervention all participants assessed by physician Outcome measures obtained to assess exercise capacity and lung function. Questionnaires utilized to assess anxiety/depression, self-efficacy, and demographics	Anxiety and depression tended to decrease immediately post PR but results were not statistically significant Females reported higher anxiety rates ($p < .019$) Individuals with better exercise capacity reported decreased levels of depression ($p < .049$) Self-efficacy decreased anxiety ($p < .001$) and depression ($p < .005$)	Strengths: • Questionnaires valid and reliable. • Ethical approval and informed consent obtained • Longitudinal design with four repeated measurements Limitations: • Completion rate 54% • PR program only six weeks in duration • Pre levels of anxiety/depression reported as low, may speak to minimal change observed	Strength of Design: Weak Quality of Design: Medium Study applicable to nursing practice. Serves as a framework for future research. Significant topic due to rates of anxiety (eight-37%) and depression (16-88%) identified in previous research.

Table 4

Literature Summary Table

Author, Name, Date, Objective	**Sample and Setting**	**Design and Methodology**	**Key Results and Findings**	**Strengths/Limitations**	**Conclusion and Rating**
Bhandari et al. (2013). Comprehensive Pulmonary Rehabilitation Results in Clinically Meaningful Improvements in Anxiety and Depression in Patients with Chronic Obstructive Pulmonary Disease Objective: to examine clinically meaningful improvement in anxiety and depression post pulmonary rehabilitation	Setting: hospital based pulmonary rehabilitation center Participants: 366 patient records retrospectively reviewed, 235 records indicated completion of PR program and had post rehabilitation outcome data Inclusion Criteria: • Clinical diagnosis of COPD • FEV1 <80% predicted Exclusion Criteria: • Not identified	Design: Quantitative; analytic inadequate interrupted time series Outcome measures for 6MWT, number of unsupported arm lifts, Chronic Respiratory Disease Questionnaire (CRQ), and anxiety and depression scores assessed pre and post PR during the program Patient records, spanning eight yrs of PR program attendance, reviewed	Improvement observed on all outcome measures Percentage of improvement… 6MWT 18% Arm lifts 30% CRQ 22% Anxiety score 16% Depression 27% All improvements statistically significant ($p < .05$) Reported anxiety rate dropped from 25 to nine percent post PR Reported depression rate dropped from 17 to six percent post PR	Strengths: • Institutional review board approval received • Large sample • Use of valid and reliable outcome measures Limitations: • Authors did not state whether participant consent was obtained for record review • Retrospective design • No control group	Strength of Design: Weak Quality of Design: Medium Findings generalizable Study significant to nursing practice

Table 5

Literature Summary Table

Author, Name, Date, Objective	**Sample and Setting**	**Design and Methodology**	**Key Results and Findings**	**Strengths/Limitations**	**Conclusion and Rating**
Donesky et al. (2015). Additional Evidence for the Long-Term Benefits of Pulmonary Rehabilitation Objective: To evaluate long-term outcomes following pulmonary rehabilitation	Setting: Community based pulmonary rehabilitation program in San Francisco Bay Participants: 755 participants; mean age 71; 60% female; 85% diagnosed with moderate-severe COPD Inclusion Criteria: • Completed PR at the participating program between 2000 and 2009 • Completed at least one follow-up questionnaire Exclusion Criteria: • Not identified	Design: Quantitative; analytic inadequate interrupted time series, longitudinal Hypothesized that ER visits and hospitalizations would decrease post PR Participants mailed a questionnaire at 6mths, 1yr, and then yearly Questionnaire r/t ER visits, hospitalizations, current health, smoking, and adherence to strategies taught at PR designed by PR director t tests and chi-square test for statistical analysis; significance accepted at $p < .05$	2/3 of participants reported improved general health for the first three yrs following PR, 50% of which continued to report improved health at 7yrs following 68-72% reported participation in regular ongoing exercise 89% reported utilizing pursed-lip breathing and energy conservation 70% reported calling their health care provider at first sign of exacerbation ER visits reported… 26% pre PR, decreased to 9 % 1yr post PR Hospitalizations… 28% pre PR, decreased to 10% 1yr post PR	Strengths: • Review board approval obtained from hospital and university • Large sample Limitations: • Unclear as to weather validity and reliability of questionnaire was assessed • Participant consent not discussed • Collected data was self reported • Possible bias related to participants who did not fill out follow- up questionnaires, ? didn't want to opposed to unable	Strength of Design: Weak Quality of Design: Medium Study relevant to both nursing practice and globally to the overall health care system. Speaks to patient benefits and financial impact of PR related to health care utilization.

Table 6

Literature Summary Table

Author, Name, Date, Objective	**Sample and Setting**	**Design and Methodology**	**Key Results and Findings**	**Strengths/Limitations**	**Conclusion and Rating**
Roman et al. (2013). Efficacy of Pulmonary Rehabilitation in Patients with Moderate Chronic obstructive Pulmonary Disease: A Randomized Controlled Trial Objective: To compare the efficacy of three PR programs with varying delivery and duration	Setting: Primary care PR Participants: 97 participants; recruited from seven primary care practices in Spain over 12 months Inclusion Criteria: • 35-74yrs with moderate COPD • FEV1 < .7 and FEV1 50-80% Exclusion Criteria: • Musculoskeletal conditions preventing exercise • Terminal illness Physician confirmed participant eligibility	Design: Quantitative; analytic randomized control trial Randomized to three groups: RHBM group (3mth PR and 9mth follow-up), RHB (3mth RP and routine follow up with their physician or nurse), and control group (no PR; routine follow up with their physician or nurse) Outcome measures CRQ, PFT, exercise tolerance, and hospital admission assessed pre and post Extensive statistical analysis conducted	No significant change noted between groups r/t pulmonary function or 6MWT RHBM and RHB group showed significant improvement in CRQ emotion score, only maintained in RHBM group at 12mths RHBM group improved fatigue score Indicated minimal difference of improvement noted in exercise capacity, dyspnea, and HRQOL btw groups. Attributed to low attendance rates and reported HRQOL. Authors indicated these results do not parallel other available research	Strengths: • Group selection randomized • Follow up health care professionals blinded to participant's group • Bias assessed and controlled • Received approval from ethics and research committee Limitations: • Required sample size not recruited • 50% of participants withdrew from study after randomization • One study location not centrally located • Program attendance rates	Strength of Design: Strong Quality of Design: High Further research is required in order to fully understand the long-term effect of PR Requires further research identifying benefit to patients verses health care cost associated with 12 months PR program

Table 7

Literature Summary Table

Author, Name, Date, Objective	**Sample and Setting**	**Design and Methodology**	**Key Results and Findings**	**Strengths/Limitations**	**Conclusion and Rating**
Cosgrove et al. (2013) Facilitating Education in Pulmonary Rehabilitation Using the Living Well with COPD Programme for Pulmonary Rehabilitation: A Process Evaluation Objective: To adapt the LWWCOPD for use in PR and assess effectiveness	Setting: PR programs/focus groups; Ireland Participants: 57 patients and 25 health care providers Inclusion Criteria: • Health care professionals working in PR • Diagnoses of COPD and participating in PR • Understanding of written English Exclusion Criteria: • Not identified	Design: Quantitative; analytic uncontrolled before-after Six patient focus groups and one health care provider focus group utilized in process of adapting LWWCOPD material as well as current practice and research guidelines; identified key topics perceived important for inclusion in PR Likert scale questionnaires completed post each PR education session Outcome measure data collected post PR from patients (UCOPD and BCKQ questionnaire) and health care professionals (questionnaire r/t material use) Patient demographic data collected	LWWCOPD program easily adaptable for use in PR Health care professionals and patients reported good acceptance of LWWCOPD adapted program 87% of sessions rated good or excellent Patients suggested inclusion of family members in PR, supplemental materials, and requested additional sessions of shorter duration Patients requested topics of smoking cessation and healthy eating to be included in education Statistical significant improvement noted on all domains of outcome measures ($p < .001$)	Strengths: • Ethics approval obtained • Written consent received from participants • Health care professionals attended training workshop r/t utilization of adapted LWWCOPD program • No evidence of bias Limitations: • First study to utilized LWWCOPD program	Strength of Design: Weak Quality of Design: High Significant to PR programming in Canada as LWWCOPD is a Canadian program. Further research required in order to ensure generalizability

Table 8

Literature Summary Table

Author, Name, Date, Objective	**Sample and Setting**	**Design and Methodology**	**Key Results and Findings**	**Strengths/Limitations**	**Conclusion and Rating**
Casey et al. (2013) The Effectiveness of a Structured Education Pulmonary Rehabilitation Programme for Improving the Health Status of People with Moderate and Sever Chronic Obstructive Pulmonary Disease in Primary Care: The PRINCE Cluster Randomized Trial Objective: to evaluate the effectiveness of structured education in PR on health status	Setting: 32 GP in Ireland Participants: 350 participants of possible 431; randomized to control and intervention group; 15 month recruitment Inclusion Criteria: • Diagnosis of moderate to severe COPD based on spirometry • Extensive patient inclusion criteria (Figure 1 of study) • GP utilizing computerized medication system, employing nurse & >2500 patients Exclusion Criteria: • Not specifically discussed, simply stated medical grounds	Design: Quantitative; randomized control trial Various outcome measures utilized CRQ (assess 4 domains of health), ISWT (walk test), and self-efficacy scale pre and post intervention Intervention groups structured education program; control groups "usual care" Separate qualitative study conducted to assess "usual care" for control group Extensive statistical analysis conducted	Intervention group had statistically greater change in total CRQ score, dyspnea score, and physical score post PR ($p < .05$) Change in self-efficacy noted but not found to be statistically significant ($p < .176$) Accessibility of PR programming greatly influences attendance	Strengths: • Bias assessed • Research team blinded to baseline data • Accuracy of data entry assessed at 99.9% • Various health care professionals delivered education; intensive training provided, program manual available, and quality control measures assessed Limitations: • One intervention group eliminated due to attendance r/t H1N1 outbreak • ~20% of participants did not complete PR	Strength of Design: Strong Quality of Design: High Study relevant to PR curriculum development.

Table 9

Literature Summary Table

Author, Name, Date, Objective	**Sample and Setting**	**Design and Methodology**	**Key Results and Findings**	**Strengths/Limitations**	**Conclusion and Rating**
Wilson et al. (2007) Education in Pulmonary Rehabilitation: The Patient's Perspective Objective: To determine, from the patient's perspective, what topics should be included in PR education and how education should be delivered; compared to views of health care professionals	Setting: Respiratory and outpatient clinic in Ireland Participants: 32 participants, of an invited 49 & eight health care professionals Inclusion Criteria: • Diagnosis of COPD • Healthcare professionals experienced in PR and management of patients with COPD Exclusion Criteria: • Not identified	Design: Qualitative Purposive sampling Six patients focus groups and one multidisciplinary healthcare professional focus group Series of key open-ended questions r/t educational needs and delivery preferences utilized in focus groups Data analyzed utilizing Grounded Theory approach through debriefing, transcription, selective coding, and triangulation Saturation achieved during 5th focus group Focus groups videotaped	Six key topics related to PR education were identified: disease education, management of breathlessness, management of exacerbation, medication, psychosocial impact of COPD, and welfare and benefits system. Patients prefer education in a group setting, utilizing layman's terms, delivered by a knowledgeable professional. Education delivery should be supplemented with written and audiovisual materials Accessibility and location of PR are relevant to attendance	Strengths: • Healthcare professionals blinded to results of patient focus groups • Study approval obtained from ethics committee • Written consent obtained from participants • Participant confidentiality ensured Limitations: • Design may limit generalizability • Sensitive topics such as sexual relationships and end-of-life not incorporated into program	Study Rating: Strong Study unique in that it provides patient perspective in relation to PR education. Contributes to current knowledge r/t PR curriculum development.

Table 10

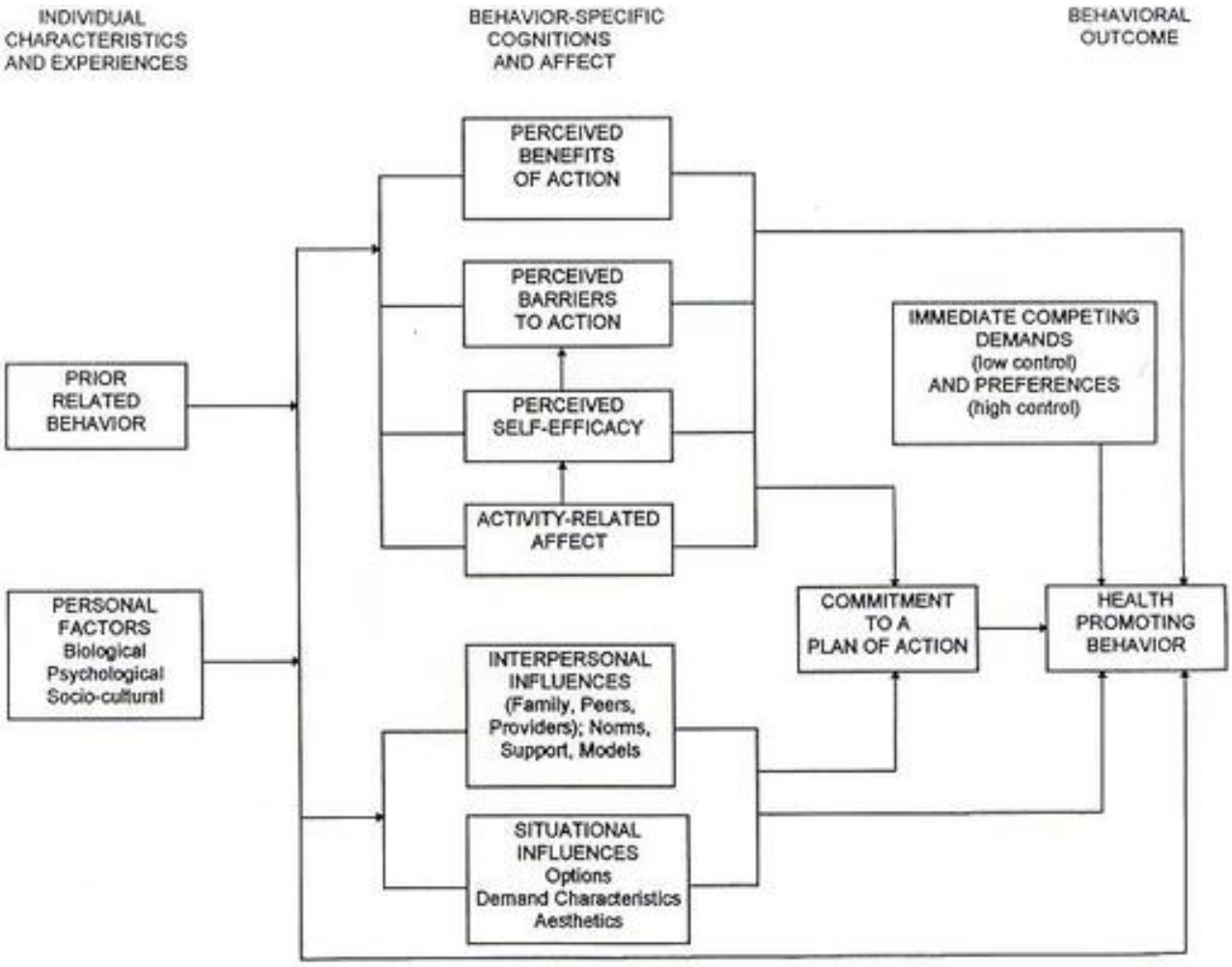
Literature Summary Table

Author, Name, Date, Objective	**Sample and Setting**	**Design and Methodology**	**Key Results and Findings**	**Strengths/Limitations**	**Conclusion and Rating**
Marques et al. (2015). Development of a family-based pulmonary rehabilitation programme: An exploratory Study Objective: to explore the needs of patients and families related to PR and to develop, implement, and evaluate impacts of PR on patients and families	Setting: primary care center Participants: 35 patients and 35 family members (63% were spouse) Inclusion Criteria: • Diagnosis of COPD • Family member providing care, or support • >18yrs • Able to understand purpose of study Exclusion Criteria: • Severe psychiatric conditions • Exacerbation or hospitalization one month prior to program • Patient or family member refused	Design: Mixed-methods; exploratory; uncontrolled before-after Three phases to study… qualitative study assessing expectation and needs r/t family based PR, interviews utilizing open ended questions conducted; family based PR program implemented based on qualitative study and literature review; impact of family based PR assessed using mixed methods design, various outcome measures assessed using pre existing measures of which assumed to be valid and reliable Statistical analysis conducted, level of significance assumed at $p < .05$; Interviews transcribed, coded, and reduced to essential concepts and relationships	Patients and family members have similar needs and expectation r/t PR Patients want family members to participate in PR Statistical improvement noted in muscle strength, exercise tolerance, and function balance No improvement was noted in dyspnea, contributed to low levels reported pre PR	Strengths: • Approval obtained from ethics committee • Written informed consent obtained • Expands current research Limitations: • Convenience sampling • 70% of participants male, ?generalizable to female population • No control group • In qualitative, saturation not assessed	Study Rating: Strong Significant to nursing practice as first study to develop, implement, and evaluate family based PR. Researchers suggest further research to assess long term effect and economic cost of family based PR

Appendix B

Figure 1. Pender's Health Promotion Model

Pender first published the revised Health Promotion Model, depicted below, in 1996 (Pender et al., 2006, p. 50-51).



Reference: Pender, N., Murdaugh, C., & Parsons, M. (2006). *Health Promotion in Nursing Practice* (5th ed.). Upper Saddle River, NJ: Pearson.

Appendix B

Consultation Report

Memorial University of Newfoundland

School of Nursing

Master of Nursing Program

April 2017

Consultation Report

In Canada, there are over three million individuals currently living with chronic lung disease (Public Health Agency of Canada, 2012). The reality of living with these respiratory conditions is burdensome and debilitating to both individuals living with the conditions and the health care system. Pulmonary Rehabilitation, which includes exercise training and education, is recommended as an essential component of medical care for those individuals. It encourages active participation and strives to optimize functional capacity, reduce symptoms associated with chronic lung disease, and decreases dependence on the health care system (American Association of Cardiovascular and Pulmonary Rehabilitation, 2011; Collins et al., 2014; Nici et al., 2006).

Until recently, pulmonary rehabilitation programming was not available to residents of Prince Edward Island (PEI), identifying an obvious need in order to better assist and manage the care of individuals living with chronic lung disease. A Pulmonary Rehabilitation Program was initiated in January of 2017, however, currently lacks an established education program. The overall goal of the proposed practicum project is to develop evidenced-based education modules to be used for client/family teaching within a Provincial Pulmonary Rehabilitation Program.

An integrative literature review was completed to examine the topic of pulmonary rehabilitation, with a focus on suggested education for individuals/families living with chronic lung disease. It was discovered that Canadian specific education guidelines for pulmonary rehabilitation presently do not exist (Camp et al., 2015). However, the Canadian program *Living Well with COPD: A Plan of Action for Life* (2017), developed in partnership by McGill University Health Center and the Quebec Health Ministry, and

guidelines developed by the American Association of Cardiovascular and Pulmonary Rehabilitation (2011) provide suggestions in relation to education topics. In addition, it is also important that the education topics be tailored to individual client needs and goals (Nici et al., 2006) in the management of their chronic lung disease.

For the purpose of the proposed practicum project, a consultation plan was developed and submitted for approval. Once approved, the consultation plan was implemented with identified key stakeholders. The following report details these consultations.

Purpose of Consultation

The purpose of this consultation is to gather information, from key stakeholders, regarding education topics to be included within the proposed education modules. Consultation also provides an opportunity to involve key stakeholders prior to the development of the education modules. Backer et al. (1992) described consultation as a process in which one seeks advice or information from another, providing an overall benefit to a service or product. It is assumed that the consultant, or individual being approached for advice or information, has an expertise or unique knowledge base related to a particular topic.

There are two objectives identified for the consultations with the key stakeholders:

1. Through consultation I will introduce the proposed practicum project and its overall purpose to key stakeholders including: respirologists, associated managers within Health PEI, the PEI Lung Association, two other established Pulmonary Rehabilitation Programs, and a client representative.
2. Through consultation I will obtain information in relation to suggestions for

the education topics that will be considered in the development of the education modules for the Pulmonary Rehabilitation Program.

It is felt that both objectives were achieved through the process of consultation.

Summary of Participants and Conducted Consultations

Eight key stakeholders were selected and approached for consultation in preparation for the development of the proposed education modules. An e-mail of invitation for consultation was sent to all key stakeholders. Information contained within the e-mail introduced to the proposed practicum project, identified the rationale for the project, and identified a recommendation for implementation and evaluation of the education modules after completion (see Appendix A). Key Stakeholders include:

- Two *Respirologists* working in Prince Edward Island, whom are the Acting Medical Directors for the Provincial Pulmonary Rehabilitation Program. These medical specialists are experts in pulmonary health and wellness and are involved with all decision-making and approval of policies and procedures associated with the program. This approval will ultimately be required for all educational content developed for the Provincial Pulmonary Rehabilitation Program. To date, in particular to one of the Respirologists, no response was received in reply to the invitation. A follow-up email was sent, which has also yielded no response. Therefore, another contact will be made during Nursing 6661. Due to a family emergency, travel outside of the country was required, for the other Respirologist, during the time scheduled for the consultations. Because of this, a face-to-face interview was not possible. At the Respirologist's request, the Interview Guide for Key Stakeholders (see

Appendix B), was sent via e-mail. It was indicated by the stakeholder that a response would be sent back electronically, which to date has not been received. It is proposed that a face-to-face meeting be arranged with this Respirologist during Nursing 6661.

- The *Acting Chronic Disease Prevention and Management Manager/Physiotherapist* who oversees the Provincial Pulmonary Rehabilitation Program. This Manager is responsible for the approval for all educational content developed for the Provincial Pulmonary Rehabilitation Program. The discipline of physiotherapy's perspective is also essential. Therefore, as the Acting Chronic Disease Prevention and Management Manager is a physiotherapist by profession this perspective could be obtained during the same consultation. This consultation was conducted with the Manager via face-to-face interview at the office of Chronic Disease Prevention and Management on March 20th, 2017.
- The *Registered Respiratory Therapist (RRT)* working directly with the Provincial Pulmonary Rehabilitation Program. Consultation was conducted with the RRT via face-to-face interview at the office of Chronic Disease Prevention and Management on March 21st, 2017.
- *The Cardiac and Pulmonary Rehabilitation Program Advisory Board* play a role as key decision-makers in relation to the Provincial Pulmonary Rehabilitation Program. Two members of this Board for example, the Executive Director of the PEI Lung Association and a client representative

were identified for the consultation. At the Executive Director's request, a telephone meeting time was arranged for March 21st, 2017 for consultation. This was not conducted successfully as no response was received to the planned telephone call. A message was left and a follow-up e-mail was sent in attempt to arrange another meeting time. To date no response was received. A face-to-face meeting was arranged with the client representative. Due to weather circumstances, the client canceled the face-to-face meeting, but the consultation was conducted via telephone interview on March 23rd, 2017.

- *Two Established Pulmonary Rehabilitation Programs* located within Atlantic Canada serve as a model for proposed programming. Consultation was conducted via telephone interview with a registered nursing working at the Capital Health Pulmonary Rehabilitation Program in Halifax, Nova Scotia and at the Pulmonary Rehabilitation Program, associated with the Horizon Health Network, in Fredericton, New Brunswick. These consultations were approximately 45 minutes in duration and were conducted on March 21st, 2017 and March 24th, 2017.

Data Collection

Seven health care professionals and one client representative were identified as key stakeholders and included in the process of consultation. Through consultation, qualitative data were obtained from five key stakeholders. Effort was made to ensure that the process of consultation was convenient for the stakeholders.

The methods of face-to-face interview, telephone interview, and electronic distribution of the interview questions were utilized for data collection. The methods used

were based on factors such as stakeholder preference and physical location. Unforeseen circumstances, specifically a family emergency and weather, influenced the method of data collection. The Interview Guide for Key Stakeholders was developed for use during consultation interviews. The guide was developed to ensure that all stakeholders were asked the same questions during the interview. While all stakeholders were asked the first three questions of the guide, stakeholders representing an established Pulmonary Rehabilitation Program were asked question four. Question one encompassed two slightly varying questions. Stakeholders representing an established Pulmonary Rehabilitation Program were asked "What education topics do you currently have incorporated into the curriculum of your program*?"* and all other stakeholders were asked "What education topics should be incorporated into the Provincial Pulmonary Rehabilitation Program?". All questions contained within the Guide were open-ended. During interview, stakeholders were asked the Guide questions but were also provided the opportunity to share any other information they felt was relevant. Comprehensive handwritten notes were taken during interview with all stakeholders.

Ethical Considerations

Due to the nature of the proposed practicum project, review by a Health Research Ethics Review Board was not required. This was determined through completion of the Health Research Ethics Authority Screening Tool provided within course materials for Nursing 6660. The completed tool, specific to the proposed practicum project, can be found in Appendix C.

Implied consent was assumed based on agreement for participation in consultation by key stakeholders. Stakeholders were therefore not asked to sign a formal consent

form. Several safeguards were implemented during data collection and analysis in order to protect the confidentiality of key stakeholders. Personal identifiers were not linked to collected data. Handwritten notes were taking during each interview and labeled by stakeholder professional title rather than by name. Through this report, key stakeholders have been identified by their associated professional title rather than by name in order to further maintain confidentiality. Interviews were not audibly or visually recorded. All telephone interviews were conducted in a private setting. All e-mail correspondence with stakeholders was conducted through an account secured by Health PEI. Data collected during consultation was stored in a locked cabinet in my home office. Post completion of the proposed practicum project all collected data will be destroyed by shredder.

Data Management and Analysis

Through the consultation plan, it was identified that thematic analysis would be utilized to categorize and analyze collected data. The consultation plan identified thematic analysis as an effective strategy for categorizing qualitative data. This provided rationale for use of the proposed method of analysis due to the fact that all collected data was in fact qualitative. It was further indicated that the method synthesizes recurrent patterns and linkages within collected data. Thematic analysis allows themes to emerge from data rather than having collected data be assigned to pre-defined themes (Chesney, 2015). This was thought to be important as pre-defined themes, or identified topics to be included within pulmonary rehabilitation education, were identified through the conducted integrated literature review. The overall goal of consultation was to collect additional relevant data based on stakeholder experience and expertise related to the development of the proposed education modules. Pre-defined themes of the literature

review were not disclosed to key stakeholders in an attempt to minimize bias of collected data.

After the completion of stakeholder interviews, all collected data was re-read in order to ensure familiarity of data. Each segment of collected data were assigned an initial code based on the topic that emerged from the particular piece of data. An example of this can been seen through the statement "an important topic to discuss during pulmonary rehabilitation is the cause of the disease". This statement was originally coded with the term *cause* and later assigned to the theme *anatomy and physiology*. Once this was completed, coding of similar topics was categorized into themes and assigned a representing name. Once assigned to a theme, all data were reviewed to ensure they had been assigned to an appropriate theme. Nine themes emerged from the analyzed data and will be discussed in the following section of this report.

Handwritten notes taken during each consultation interview created a need for secure management of the collected data. Security of data was maintained within a locked cabinet in a home office. During the process of analysis, data was entered into an electronic document and kept secure on a password-protected personal computer.

Consultation Results

Three questions were asked to each key stakeholder during the interview process and a fourth question was asked to stakeholders representing an established Pulmonary Rehabilitation Program. Question one of the Interview Guide for Key Stakeholders examined suggestions of education topics to be included within pulmonary rehabilitation education. Nine themes emerged from the analyzed data. These themes represent

potential topics to be included during the development of the proposed education modules.

1. *Nutrition*: Two Healthcare professionals and a stakeholder representing the client perspective identified the topic of *dietary* or *nutritional requirements* to be included within the Pulmonary Rehabilitation Program. Stakeholders simply identified the topics and did not elaborate on specific aspects or objectives, such as cholesterol or a low salt diet.
2. *Managing Breathing and Energy Conservation:* All key stakeholders identified that managing breathing and energy conservation is essential within pulmonary rehabilitation education. Healthcare professionals indicated that such *strategies were currently being addressed in their programs* and that clients need to be taught *strategies to control shortness of breath* and *how to manage breathing*.
3. *Physical Activity:* Four stakeholders identified the importance of physical activity to individuals living with chronic lung disease. Education should include *an introduction to exercise*, *the importance of exercise*, and *how to balance exercise and shortness of breath*.
4. *Anatomy and Physiology*: Stakeholders identified that it is important to *understand the cause of chronic lung disease* and also *how an individual's lungs work*. Health care professionals identified that such *sessions are included within our programs*. A key stakeholder also indicated that the topic of *infection and its relation to chronic lung disease* should be addressed.
5. *Understanding Lung Disease:* All five stakeholders identified the importance of clients understanding lung disease. Healthcare professionals indicated that clients

require information related to *tests associated with lung disease*, *symptoms of decline*, and *contributing factors leading to progression*. Two stakeholders identified that clients need to *understand that lung disease is chronic* and *progressive and not curable*. Clients require support and development of coping strategies related to the *reality of not getting better*. Data collected representing the client perspective indicated that *understanding lung disease assists with effective coping*.

6. *Stress and Anxiety:* Stress and anxiety and their *relation to lung disease* were identified during consultation. A stakeholder suggested incorporating *meditation and relaxation* techniques into programming, to assist with anxiety and depression.
7. *Environmental Factors:* Two healthcare professionals addressed the topic of environmental factors and lung disease. They indicated that *clients should be aware that environmental factors influence lung disease* and should be *taught infection control practices and effective hand washing techniques*.
8. *Pulmonary Medications:* All key stakeholders identified education on pulmonary medications as important. Extensive data was collected related to this theme. Stakeholders suggested providing education on *medications*, *puffers*, and *device use*. They indicated that *clients need education regarding actions plans* and *oxygen use*. The topics of *current treatment management* and *medication compliance* also emerged from collected data. Stakeholders further indicated that other medications, such as cardiovascular or diabetic medications, should not be

addressed in pulmonary rehabilitation programming as it would be too time consuming and not relevant to all clients.

9. *Moving Forward:* Finally, stakeholders described *long-term plans*, *advanced care planning*, and information on *home exercise programs* as important.

These nine themes, representing information gathered from key stakeholders, parallel suggested topics of pulmonary rehabilitation education programming described within the integrative literature review.

Question two of the Interview Guide for Key Stakeholders examined how individual client learning needs and goals can be best incorporated into educational content. Three themes emerged from the analyzed data including individual characteristics, patient goal setting, and teaching strategies. Key stakeholders identified that an individual's literacy level influences his or her ability or capacity to learn. Collected data suggested identification of literacy levels and strategies such as developing educational content at a grade six-literacy level. Stakeholders further identified characteristics such as age or impairments such as a hearing deficit to influence capacity to learn. All five key stakeholders acknowledged patient goal setting during interview. Stakeholders identified that learning is individualized and that patients should be asked what they want to get out of education sessions or what their personals goals are. One stakeholder identified that individuals come to rehabilitation for different reasons and that these reasons may influence their motivation to learn. Another stakeholder identified that the goals of rehabilitation staff and individual patients may differ, indicating that it is the role of the nurse to ensure these goals align. Various teaching strategies were identified as helpful in ensuring that individual patient learning needs and goals are incorporated into educational

content. Stakeholders suggested that patients be encouraged to be active participants and to ask questions. It was suggested that education sessions be interactive and encompass discussion. Two stakeholders indicated that information related to various chronic lung conditions needs to be incorporated into programming and not just information related to chronic obstructive pulmonary disease (COPD). Finally, stakeholders suggested that one on one time with patients be allotted during pulmonary rehabilitation programming, specifically to address topics such as puffer administration and action plans.

Question three of the Interview Guide for Key Stakeholders examined strategies that could be utilized to maximize patient benefit, related to education. Four themes emerged from the data including teaching methods, teaching strategies, utilization of multidisciplinary staff, and physical environment. Related to teaching methods, stakeholders identified various approaches such as incorporating pictures into presentations, utilizing models for demonstration, and providing written materials or handouts to supplement presented materials. Stakeholders also indicated that patients should be provided time for hands on demonstrations, specifically suggesting that patients be permitted to demonstrate self-administration of puffers. Stakeholders suggested that utilization of multidisciplinary staff maximizes patient benefit. They suggested incorporating staff from various professions into programming and utilizing the resources of various professions. The physical environment was described to influence learning. Stakeholders suggested maintaining a comfortable environment through appropriate seating, lighting, and temperature. It was also noted that having access to parking close to the education setting is important for patients with chronic lung disease. It was noted that all data collected related to teaching strategies stemming from question three paralleled

data collected in question two, which was previously discussed. In response to question three, information was collected representing the patient perspective that did not fit into an associated theme. It was indicated that pulmonary rehabilitation education should involve both patients and their families. The stakeholder further indicated that patients and family members have different learning needs and both need to be addressed. Throughout the interview, the stakeholder reiterated the fact that the needs of family members must to be considered.

Stakeholders representing established Pulmonary Rehabilitation Programs were asked if they had experienced barriers to education within their programs. Minimal data were collected related to barriers. One program stated that to date no barriers had been experienced that had been thought to have an impact on education. The other program stated that they had patients with both hearing and visual impairments enrolled in their program, requiring individual attention.

Both established Pulmonary Rehabilitation Programs identified utilizing materials from the program *Living Well with COPD: A Plan of Action for Life* (2017), developed in partnership by McGill University Health Center and the Quebec Health Ministry, within their program. It was reported that they utilized materials from *BreathWorks* (2007), developed by the Canadian Lung Association, within the educational content of their program. While the program *Living Well with COPD* was identified through the integrative literature review, the *BreathWorks* program was not mentioned in any of the information.

Data collected through consultation will be useful during the development of the proposed education modules and provides support to information obtained through the

integrative literature review. Both the integrative literature review and information gathered through consultation will guide the development of the proposed education modules.

Conclusion and Consultation Implications

Through the process of consultation, information and advice related to suggested topics to be included within the Pulmonary Rehabilitation Program was gathered from key stakeholders. Data obtained through the interview process addressed various aspects of pulmonary rehabilitation education. Stakeholders provided suggestions related to topics to be included within pulmonary rehabilitation education, identified strategies of how individual patient learning needs and goals could be incorporated into education to maximize patient benefit, and addressed barriers to education. Thematic analysis was utilized during the data analysis and resulted in various themes emerging from collected data.

Ultimately, the integrative literature review will guide the development of the proposed education modules but information gathered through consultation will also be used to guide the development of the modules. Themes emerging from analyzed data provide additional supporting evidence to information gathered through the literature review. The completion of these consultations prior to the development of the education modules will also allow involvement, input, and support from key stakeholders. It is hoped that post completion of the practicum project, developed client/family educational modules will be approved and used by the multidisciplinary team within the Provincial Pulmonary Rehabilitation Program.

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Appendix A

_____,

I am a registered nursing working with the Provincial Pulmonary Rehabilitation Program. I am also currently enrolled in the Master of Nursing Program at Memorial University, St. John's, NL. As a partial requirement for the degree I will be completing a practicum project. For my project, I have proposed to develop client/family education modules to be utilized by the multidisciplinary staff within the Provincial Pulmonary Rehabilitation Program.

You are a key stakeholder with expertise related to pulmonary health and wellness and rehabilitation. Therefore, your thoughts and opinions of the required content would assist in the development of these education modules for the program. I would like to invite you to a meeting, at a time and location convenient for you.

Thank you for your consideration. I look forward to hearing from you.

Lindsey Smith

Appendix B

Interview Guide For Key Stakeholders

1. What education topics should be incorporated into the Provincial Pulmonary Rehabilitation Program?

OR

What education topics do you currently have incorporated into the curriculum of your program?

2. How can individual patient learning needs and goals be best incorporated into educational content?

3. What strategies could be utilized to maximize patient benefit related to the education component of the Provincial Pulmonary Rehabilitation Program?

4. Have you encountered any barriers to education within your program?

Appendix C

Health Research Ethics Authority Screening Tool

	Question	Yes	No
1.	Is the project funded by, or being submitted to, a research funding agency for a research grant or award that requires research ethics review	❒	☒
2.	Are there any local policies which require this project to undergo review by a Research Ethics Board?	❒	☒
	IF YES to either of the above, the project should be submitted to a Research Ethics Board. **IF NO** to both questions, continue to complete the checklist.	❒	❒
3.	Is the primary purpose of the project to contribute to the growing body of knowledge regarding health and/or health systems that are generally accessible through academic literature?	☒	❒
4.	Is the project designed to answer a specific research question or to test an explicit hypothesis?	❒	☒
5.	Does the project involve a comparison of multiple sites, control sites, and/or control groups?	❒	☒
6.	Is the project design and methodology adequate to support generalizations that go beyond the particular population the sample is being drawn from?	❒	☒
7.	Does the project impose any additional burdens on participants beyond what would be expected through a typically expected course of care or role expectations?	❒	☒
LINE A: SUBTOTAL Questions 3 through 7 = (Count the # of Yes responses)		**1**	
8.	Are many of the participants in the project also likely to be among those who might potentially benefit from the result of the project as it proceeds?	❒	☒
9.	Is the project intended to define a best practice within your organization or practice?	☒	❒
10.	Would the project still be done at your site, even if there were no opportunity to publish the results or if the results might not be applicable anywhere else?	☒	❒
11.	Does the statement of purpose of the project refer explicitly to the features of a particular program, Organization, or region, rather than using more general terminology such as rural vs. urban populations?	☒	❒
12.	Is the current project part of a continuous process of gathering or monitoring data within an organization?		☒
LINE B: SUBTOTAL Questions 8 through 12 = (Count the # of Yes responses)		**3**	
	SUMMARY: Sum of Line B > Line A and therefore, the most probable purpose is quality/evaluation. Proceed with locally relevant process for ethics review.		

Appendix C

Additional Consultation Interview

Memorial University of Newfoundland

School of Nursing

Master of Nursing Program

Interview Guide For Key Stakeholders

1. What education topics should be incorporated into the Provincial Pulmonary Rehabilitation Program?

I would like to see interactive sessions incorporated rather than just didactic lectures; e.g. having patients actually use demo inhaler devices rather than just looking at the teacher, interactive problem solving discussions, e.g how to cope with severe dyspnea in a public place, instructions/demonstrations of airway clearance techniques e.g. use of devices etc.

We need topics like sexual intimacy with spouses. I think many patients may be too afraid/anxious to have intimacy and may not ask at the program.

In addition to medications they are on, perhaps touching on the merits/demerits of over the counter and herbal remedies may be interesting to many.

Sleep/insomnia/sleep apnea are comorbidities that we find in COPD. Ditto acid reflux.

Travel related issues including they find out from their doctors if they need oxygen for air travel.

Topics to promote patient self-management skills will also be crucial. We should ensure visual aids and handouts for many of these topics.

These are by no means exhaustive!!

OR

What education topics do you currently have incorporated into the curriculum of your program?

2. How can individual patient learning needs and goals be best incorporated into educational content?

I believe this fits well with the items above. For the patient the goals are simple- improve quality of life, alleviate breathlessness and other respiratory symptoms like cough/sputum expectoration, improve exercise capacity/tolerance such that they can actually enjoy outdoor activities and not be afraid to leave their house, prevent and minimize physician office visits, ER visits and hospitalizations. Much of what I discussed are items that would help. Discussing actions plans and self management would minimize ER and physician visits and potentially avert

hospitalizations. Adherence to and proper inhaler techniques ensures they are on the right treatment to improve symptoms. Breathing techniques help ensure they can cope with dyspnea in the public place etc. Having the patients demonstrate these activities in an interactive manner will reinforce what they learn.

3. What strategies could be utilized to maximize patient benefit related to the education component of the Provincial Pulmonary Rehabilitation Program?

At the risk of sounding like a parrot, I personally learn better when I am engaged interactively. People's attention span for didactic lectures tend to be short!

Choosing engaging interesting topics that actually reflect the patients' main concerns will garner more interest. We can actually have patients submit topics they would want to learn more about. We should ensure we cover topics that pertain to all chronic lung disease and not just COPD. There will be patients with pulmonary fibrosis and other diseases.

The teachers must also be quite knowledgeable and comfortable with their topics. They must use visual aids and other props that drive home the pertinent points.

4. Have you encountered any barriers to education within your program?

N/A

Appendix D

Education Resource: Education Modules for Teaching Clients/Families with Chronic Lung Disease in a Provincial Pulmonary Rehabilitation Program

Memorial University of Newfoundland

School of Nursing

Master of Nursing Program

August 2017

EDUCATION MODULES FOR TEACHING CLIENTS/FAMILIES WITH CHRONIC LUNG DISEASE IN A PROVINCIAL PULMONARY REHABILITATION PROGRAM

Developed by Lindsey Smith RN, BScN, CCNP

Education resource developed as a partial requirement for Master of Nursing degree Memorial University, Newfoundland, Canada.

Table of Contents:

Resource Introduction

There are currently over three million individuals living with chronic lung disease in Canada (Public Health Agency of Canada, 2012). The term chronic lung disease refers to respiratory conditions such as, chronic obstructive pulmonary disease (COPD), which also encompasses chronic bronchitis and emphysema, pulmonary fibrosis, asthma, lung cancer, pulmonary hypertension, and tuberculosis. The reality of living with chronic lung disease is burdensome and debilitating to both individuals living with the conditions and the health care system. Individuals often report experiencing extreme shortness of breath while doing simple tasks associated with day-to-day living and are often left feeling breathless (World Health Organization, 2007).

Chronic lung disease has a significant economic impact on the Canadian health care system, costing approximately 12 billion dollars annually (Public Health Agency of Canada, 2012). Chronic lung diseases are the leading cause of hospital admissions and are associated with higher rates of readmission when compared to all other chronic diseases (Canadian Thoracic Society, 2010). The World Health Organization (2007) estimates that chronic lung disease will become the third leading cause of death by 2030. In fact, COPD is the only chronic condition that is still associated with an increasing mortality rate in Canada (Canadian Thoracic Society, 2010).

Early intervention has the potential to slow disease progression and provide an overall benefit to individuals living with chronic lung disease (AACVPR, 2011).

The American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR, 2011) indicated that pulmonary rehabilitation demonstrates a secondary prevention intervention aimed at improving the quality of life of those living with chronic lung disease. Pulmonary

Rehabilitation is recognized and recommended as an essential component of medical care for those living with chronic lung disease. Pulmonary Rehabilitation is an evidence-based, multidisciplinary, and comprehensive intervention for patients with chronic respiratory diseases who are symptomatic and often have decreased daily life activities. (AACVPR, 2011, p. 1)." Pulmonary rehabilitation encompasses patient assessment and goal setting, self-management education, exercise training, psychosocial support, and outcome measurement (AACVPR, 2011, p. 1).

This education resource is to be utilized for teaching clients/families with chronic lung disease within the Provincial Pulmonary Rehabilitation Program in Prince Edward Island. Modules within the resource were developed based on literature and information, related to chronic lung disease, pulmonary rehabilitation, and client/family education, obtained through conduction of an integrative literature review and consultation with key stakeholders. Pender's Health Promotion Module (2006) and Knowles Adult Learning Principles (1970) served as a theoretical framework during the development of the education modules. Information and resources contained within each module are intended to be utilized to assist with ease of education delivery during a one hour group education session. Various teaching methods have been incorporated within each module in the hopes of addressing the various learning styles of participants. This will also be useful in overcoming or addressing individual learning needs, deficits, and/or impairments. The ultimate goal of education delivered through pulmonary rehabilitation is health promoting, self-management behavior modification.

Module 1: Orientation/Keeping a Healthy Lifestyle

Module Description/Objectives

The module will provide a brief orientation to the program by defining pulmonary rehabilitation and describing various benefits. It will then describe several components of keeping a healthy lifestyle including medication compliance, exercise, diet, sexual activity, and smoking cessation. Throughout this module the term "program participant" will be utilized when referring to both clients and family members. A few potential discussion questions have been provided to aid with facilitation of group discussion.

Learning Objectives

By the end of a group education session participants will:

1. Identify education and exercise as components of pulmonary rehabilitation.
2. Identify two benefits of attending pulmonary rehabilitation.
3. Develop three personalized SMART goals to be achieved by the end of the 12-week program.
4. Take part in a group discussion pertaining to the concepts of health and chronic lung disease and share their personal definition health.
5. Be introduced to several components of keeping a healthy lifestyle.
6. Identify two related key messages learned during the module.

Teaching Aids/Activities

It is intended that the materials presented within this module be utilized during a one hour group education session. Various aids have been provided within the module to aide with ease of education delivery.

- Potential questions for facilitated group discussion
- Visual Aids: PowerPoint presentation containing various pictures/graph; whiteboard and markers
- Patient Activity and Handout: Patient SMART Goal Handout; smoking quiz

Background/Orientation

What is Pulmonary Rehabilitation?

- The American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR) (2011) define pulmonary rehabilitation as "an evidence-based, multidisciplinary, and comprehensive intervention for patients with chronic respiratory diseases who are symptomatic and often have decreased daily life activities. Pulmonary rehabilitation includes patient assessment and goal setting, self-management education, exercise training, psychosocial support, and outcome measurement." (p. 1)

- Pulmonary rehabilitation includes:

and is delivered by multidisciplinary health care professionals, with the goal of improving the overall physical and psychological health status of individuals living with chronic lung disease (Collins et al., 2014).

- The underlying goals of pulmonary rehabilitation are the following: (a) to optimize functional capacity and reduce or alleviate experienced associated symptoms, (b) to encourage active participation, and (c) to decrease dependence on the health care system, ultimately saving health care dollars (Nici et al., 2006; Moamary, Aloriny, & Al-Hajjaj, 2014).

- Pulmonary rehabilitation is an essential component of medical care for those living with chronic lung disease (AACVPR, 2011).

Each day while attending pulmonary rehabilitation, clients/families will participate in a one hour education session as well as a one hour exercise session, supervised by multidisciplinary staff including a Registered Nurse, Respiratory Therapist, and Physiotherapist. Family members are welcome to participate in all education sessions but may not be able to participate in exercise due to limitations with the amount of equipment. Family members are welcome to watch exercise and welcome to participate in the daily warm-up and cool-down lead by the Physiotherapist. Clients will have their vital signs, including blood pressure, heart rate, and SP02, monitored both pre and post exercise. Clients will wear an SP02 monitor during exercise.

Benefits of Pulmonary Rehabilitation

- Pulmonary rehabilitation has been found to have a substantial impact on the overall quality of life of individuals living with chronic lung disease, regardless of age, sex, or current lung function (Roman et al., 2013).

- Pulmonary rehabilitation provides the most benefit, in relation to symptom management, exercise tolerance, and overall quality of life, to patients when compared to other treatment options (AACVPR, 2011).

- Various benefits to pulmonary rehabilitation are described in current literature including:

    - ❖ Improved health related quality of life
    - ❖ Improved muscle strength and endurance
    - ❖ Improved functional and exercise capacity
    - ❖ Improved emotional function (reduction in anxiety and depression) and self-efficacy
    - ❖ Reduction in hospitalizations and health care visits
    - ❖ Enhanced knowledge and self-management abilities
    - ❖ Reductions in associated symptoms particularly shortness of breathe

(Rochester et al., 2015; AACVPR, 2011; Jacome & Marques, 2014; Bhandari, Jain, Marolda, and ZuWallack, 2013)

Patient SMART Goals

Education presented during pulmonary rehabilitation programming should be tailored to individual patient needs and incorporate patient determined goals (Moamary et al., 2014; Nici et al.).

After orientating clients/families to what pulmonary rehabilitation is and describing benefits of attending, facilitate clients to create three personalized SMART goals to be achieved by the end of the 12-week program. At the end of this module you will find a patient handout to be utilized for this activity.

Client goals should be:

Health and Chronic Lung Disease

The above picture, available at www.livingwellwithCOPD.com *represents two individuals with the same chronic lung condition (COPD) but depicts two varying associated qualities of life.*

- Health and disease are two different concepts that co-exist and influence each other. It is important for clients/families to be able to distinguish between the two. The World Health Organization (WHO) (1948) defines health as "a state of complete physical, mental, and social well-being and not merely the absence of disease." The Center for Disease Control and Prevention (2013) defines disease as a condition that impairs normal functioning, is self-limiting, is associated with distinguishing signs and symptoms, and with a duration of months or years.

- The reality of living with chronic lung disease is burdensome and debilitating to both individuals living with the conditions and the health care system. Individuals often report experiencing extreme shortness of breath while doing simple tasks associated with day-to-day living and are often left feeling breathless (World Health Organization, 2007).

- COPD is the leading cause of hospital admission and is associated with higher rates of readmission when compared to all other chronic diseases (Canadian Thoracic Society, 2010). The World Health Organization (2007) estimates that chronic lung disease will become the third leading cause of death by 2030.

- Early intervention has the potential to slow this process and provide an overall benefit to individuals living with chronic lung disease. Pulmonary rehabilitation demonstrates a secondary prevention intervention aimed at improving the quality of life and overall health of those living with chronic lung disease (AACVPR, 2011).

Group Discussion Questions:

1. What does **health** mean to you?
2. How does your chronic lung disease impact your day-to-day life?

Keeping a Healthy Lifestyle

There are various Components of Keeping a Healthy Lifestyle:

Image obtained from www.livingwellwithCOPD.com

The remainder of the module will introduce many of the components of keeping a healthy lifestyle. Remind clients/families that this is an introduction and that all topics will be discussed in detail in a subsequent education session.

Discussion Question: What do you do to stay healthy?

Medication Compliance

- Compliance is a term often used to describe clients or patients in relation to their adherence to medication instruction.

Approximately 50% of Canadians do not take their prescription medications as prescribed!! Medication non-compliance is the cause of 10% of all hospital admissions (Canadian Society of Hospital Pharmacists, 2017).

Discussion Questions:

1. Is it important to take your medications as prescribed?
2. Why would someone stop taking his or her medications?

- Taking medications will not cure chronic lung disease but will relieve symptoms and improve overall quality of life

Tip: If you cannot remember the name, dose, and administration time of each medication you take, keep an updated list in your purse or wallet. This is important when going to the hospital for treatment as the doctors and staff working at the hospital will not know what medications you are supposed to be taking and will rely on you to provide this information. If you have a cell phone, another option would be to take a picture of your medication list and then you will always have it with you.

In following weeks of the program we be covering presentations that will discuss your medications in detail.

Exercise

- The WHO (2017) suggests…
  - ❖ 150 minutes of moderate-intensity activity or 75 minutes of vigorous-intensity activity weekly &
  - ❖ Muscle-strengthening on 2 or more days

Only 15% of Canadians are currently meeting activity recommendations (Statistics Canada, 2015)

- Chronic disease **does not** prevent participation in exercise. Exercise just needs to be adjusted based on exercise capacity and health needs (WHO, 2017).

Types of Activity:

- Leisure physical activity time
- Transportation
- Occupational
- Household chores
- Games or sports
- Planned exercise

- The 150 or 75 minutes of weekly activity can be achieved in bouts of just 10 minutes at a time (WHO).

- Individuals who are currently inactive should begin with short durations and gradually increase over time.

- Inactivity financially impacts the Canadian health care system. Statistics Canada (2014) reported that inactivity costs over 5 billion dollars annually correlating to almost 3 percent of the total health care costs in Canada.

In following weeks of the program we be covering presentations that will discuss your exercise in detail as well as strategies to prevent shortness of breath during exercise.

Diet

- A healthy diet helps to conserve energy, improves overall quality of life, improves physical capacity, and prevents infections (Living Well with COPD, 2017).

- Breathlessness and fatigue prevent individuals with chronic lung disease from eating well. Shopping and preparing meals may be difficult (Living Well with COPD, 2017).

Later in the program you will participate in various education sessions with a Registered Dietitian who will discuss various aspects of healthy eating.

Sexual Activity

- A satisfying sex life is important to your overall well-being. Individuals with lung disease can have a satisfying sex life (Living Well with COPD, 2017)!
- SOB and fatigue can have a negative impact on an individual's sex life.
- Strategies to reduce SOB…
    - ❖ Exercise regularly
    - ❖ Take bronchodilator (Ventolin) 20-30 minutes before having sex
    - ❖ Avoid positions that apply pressure to your chest or stomach and positions that require the support of your arms.

(Living Well with COPD, 2017)

Smoking

- Smoking is the leading cause of chronic lung disease with approximately 50% of smokers developing COPD. Smoking is further estimated to account for ten percent of deaths worldwide (Laniado-Laborin, 2009). Of importance, smoking is a preventable risk factor for chronic lung disease (CDC, 2017).

- Smoking, as well as exposure to second-hand smoke, has been found to have a negative impact on overall health and wellness. Both lead to the development of chronic lung disease and lung cancer, while also increasing risk of cardiovascular disease (CDC, 2017).

- One in five Canadians smoke (Public Health Agency of Canada, 2012).

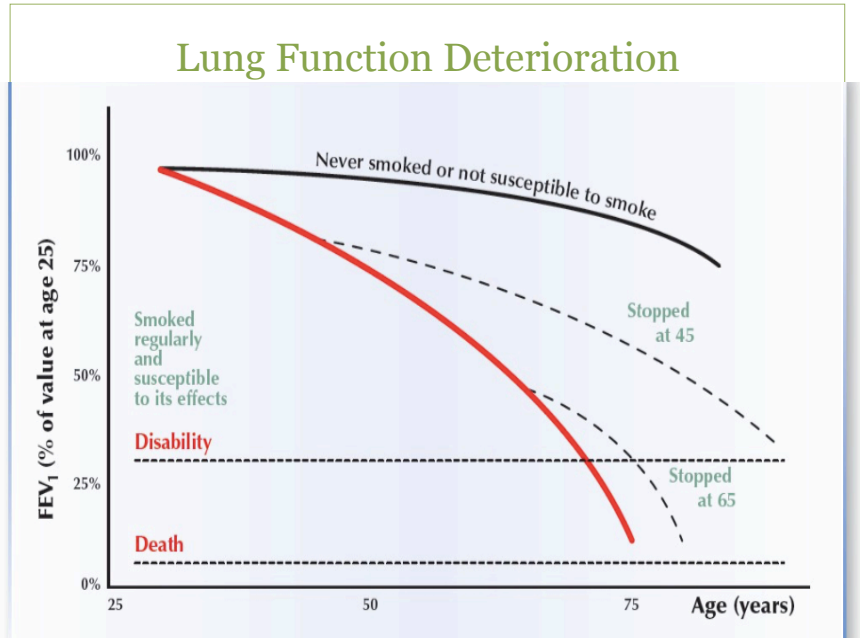
- Quitting smoking is the most effective and economical treatment for COPD (Laniado-Laborin, 2009). Attempts to quit smoking, even if not successful, can preserve lung function.

- Quitting smoking is very difficult and often requires multiple attempts and nicotine replacement therapy (NRT). Only about 2% of smokers succeed in quitting smoking without the help of NRT with approximately two-thirds relapsing in the first 48 hours (Laniado-Laborin, 2009).

- The Canadian Lung Association (2017) indicates that the use of electronic cigarettes potentially has a harmful effect on our lungs and does not recommend electronic cigarettes as a smoking cessation aid. They further indicate that more research is required examining the overall effect of electronic cigarettes.

- Cannabis or Marijuana is typically utilized as an illegal recreational drug but can also be prescribed legally as a medication treatment for various chronic conditions. Smoking cannabis has a similar effect on our lungs to smoking tobacco (Government of Canada, 2016).

Both the Registered Nurse and Respiratory Therapist working within the pulmonary rehabilitation program have taken specialized smoking cessation training and can help you quit smoking!



The above picture, available at www.livingwellwithCOPD.com *represents typical lung function decline with age. Estimated lung function at age 50 and 75 years of a non-smoker is easily compared to that of a smoker. Of interest, improvement in lung function can also be viewed of an individual who quit smoking at 45 and 65 years.*

Smoking Activity/Quiz (obtained from www.livingwellwithcopd.com**):**

Answers: T, T, F, T

Test your knowledge about the effects of cigarette smoke

Cigarettes contain over 7,000 chemicals. Most of them are poisonous and can cause respiratory disease and/or cancer.
□ True □ False

The self-cleaning mechanism of your airways is less efficient if you smoke or you are exposed to cigarette smoke.
□ True □ False

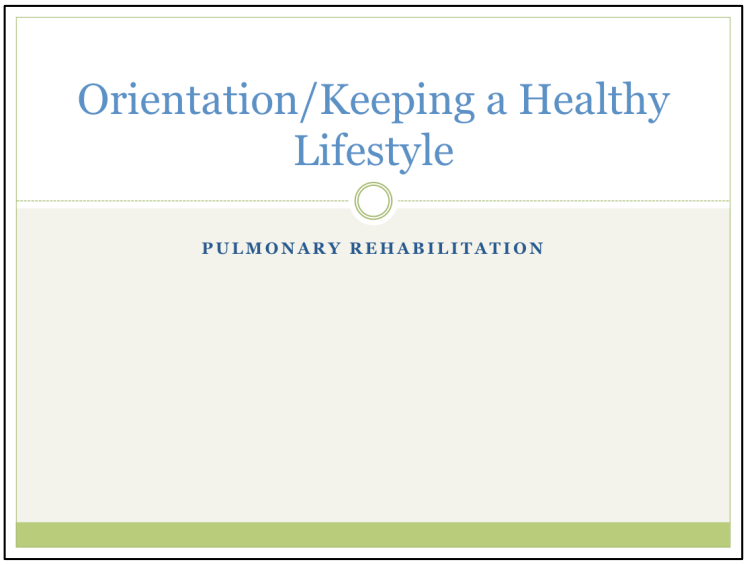
Second-hand smoke is not harmful for non-smokers.
□ True □ False

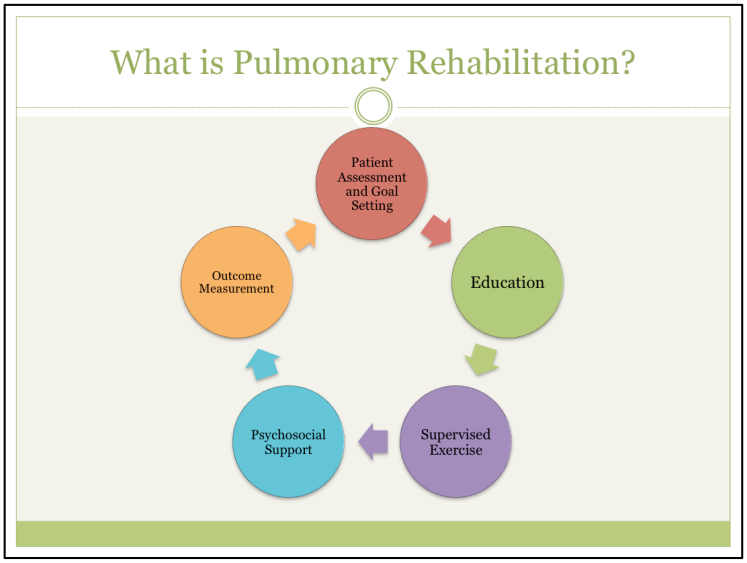
It is never too late to quit. Quitting can help slow down the progression of COPD.
□ True □ False

Module Key Messages for Participants

- Education + Exercise = Pulmonary Rehabilitation
- Pulmonary Rehabilitation improves overall quality of life.
- Taking medications will not cure lung disease but will relieve symptoms.
- Chronic disease does not prevent participation in exercise
- Quitting smoking is the most effective treatment for COPD and will reduce decline in lung function.

The following powerpoint presentation may be utilized with the above module during group education session.



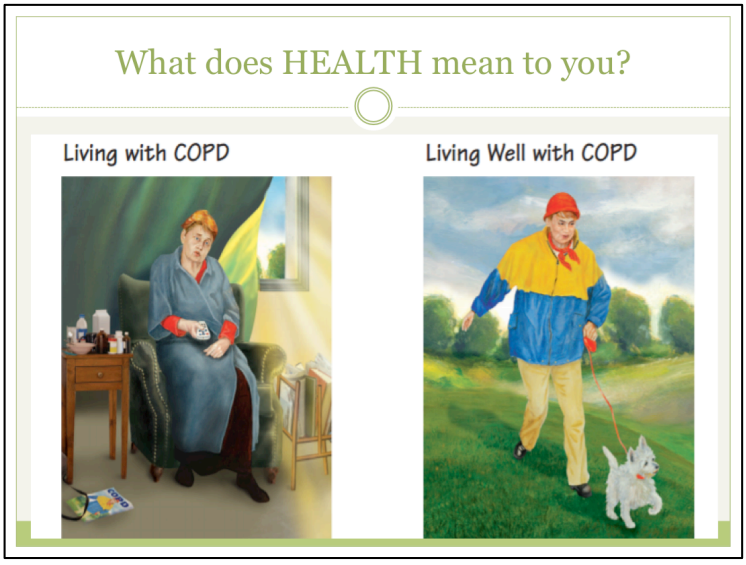


While attending pulmonary rehabilitation you will participate in both education sessions and supervised exercise. During the program you will work with and be supervised by multidisciplinary staff including a Registered Nurse, Respiratory Therapist, and Physiotherapist.

Benefits of Pulmonary Rehabilitation

- Improves overall quality of life
- Reduces symptoms of chronic lung disease such as shortness of breathe
- Increases knowledge
- Improves ability to participate in activities of daily life and to exercise
- Reduces hospitalizations and healthcare visits

Provide SMART goal handout and assist patients in developing personal SMART goals for Pulmonary Rehabilitation.



Discussion Question: What does health mean to you?

Health and disease are two different concepts that coexist and influence each other. It is important for clients/families to be able to distinguish between the two. The World Health Organization (WHO) (1948) defines health as "a state of complete physical, mental, and social well-being and not merely the absence of disease." The Center for Disease Control and Prevention (2013) defines disease as a condition that impairs normal functioning, is self-limiting, is associated with distinguishing signs and symptoms, and with a duration of months or years.


What do you do to stay healthy?
Quitting smoking
Exercising regularly
Complying with your medications
Getting a good night's sleep
Adopting a healthy diet
Having a satisfying sex life
Planning for leisure activities and trips

Tip: If you cannot remember the name, dose, and administration time of each medication you take, keep an updated list in your purse or wallet. This is important when going to the hospital for treatment as the doctors and staff working at the hospital will not know what medications you are supposed to be taking and will rely on you to provide this information. Another tip would be to take a picture of your medication list with you cell phone and then you will always have it with you.

In following weeks of the program we be covering presentations that will discuss your medications in detail.

Chronic disease **does not** prevent participation in exercise. Exercise just needs to be adjusted based on exercise capacity and health needs.

Types of Activity:

- Leisure physical activity time
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- Household chores
- Games or sports
- Planned exercise

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Individuals who are currently inactive should begin with short durations and gradually increase over time.

Inactivity financially impacts the Canadian health care system. Statistics Canada (2014) reported that inactivity costs over 5 billion dollars annually correlating to almost 3 percent of the total health care costs in Canada.

A healthy diet helps to conserve energy, improves overall quality of life, improves physical capacity, and prevents infections (Living Well with COPD, 2017).

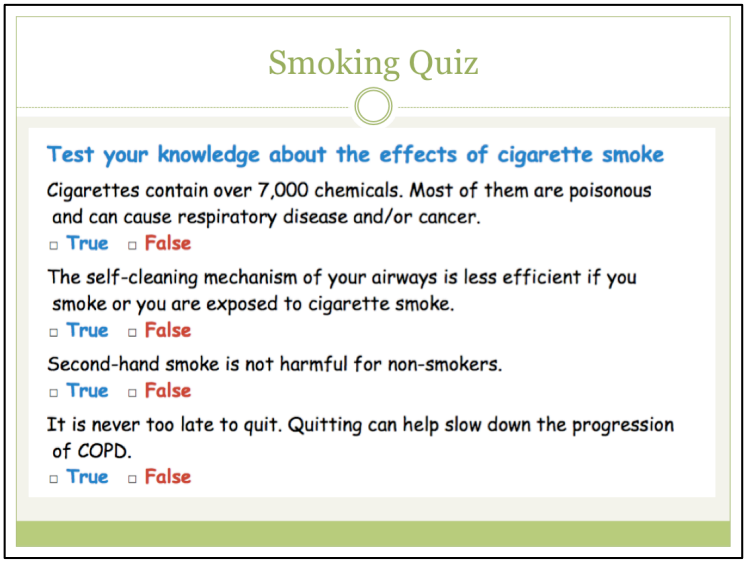
Breathlessness and fatigue prevent individuals with chronic lung disease from eating well. Shopping and preparing meals may be difficult (Living Well with COPD).

Later in the program you will participate in various education sessions with a Registered Dietitian who will discuss various aspects of healthy eating.

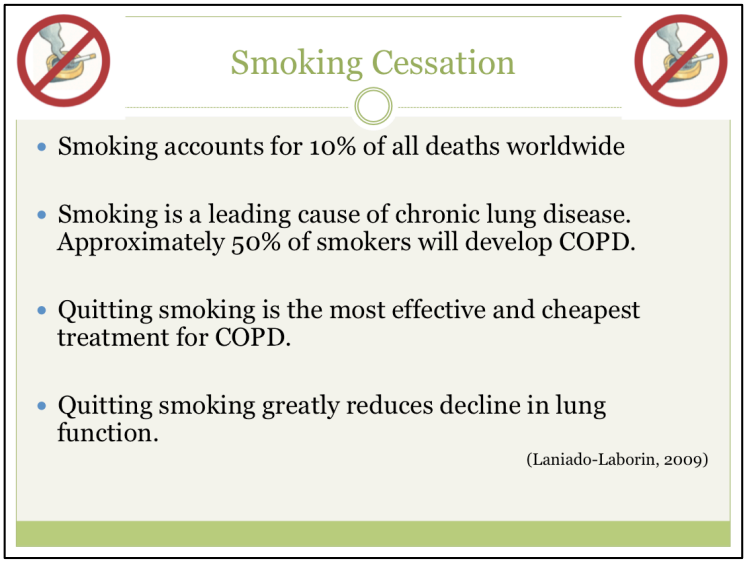
A Satisfying Sex Life

- A satisfying sex life is important to your overall well-being. Individuals with lung disease can have a satisfying sex life!
- SOB and fatigue can have a negative impact on an individual's sex life.
- Strategies to reduce SOB…
  - Exercise regularly
  - Take bronchodilator (Ventolin) 20-30 minutes before having sex
  - Avoid positions that apply pressure to your chest or stomach and positions that require the support of your arms.

(Living Well with COPD, 2017)



Answers: T, T, F, T



Tobacco is a preventable risk factor for chronic lung disease.

Smoking, as well as exposure to second-hand smoke, has been found to have a negative impact on overall health and wellness. Both lead to the development of chronic lung disease and lung cancer, while also increasing risk of cardiovascular disease (CDC, 2017).

(CDC, 2017)

One in five Canadians smoke.

Smoking causes inflammation to the lungs and airways.

Quitting smoking is associated with an increased life expectancy.

Attempts to quit smoking, even if not successful, can preserve lung function.

Quitting smoking is very difficult and often requires multiple attempts and NRT therapy. Only about 2% of smokers succeed in quitting smoking without the help of NRT with approximately 2/3 relapsing in the first 48 hours. Both the Registered Nurse and Respiratory Therapist have taken specialized smoking cessation training

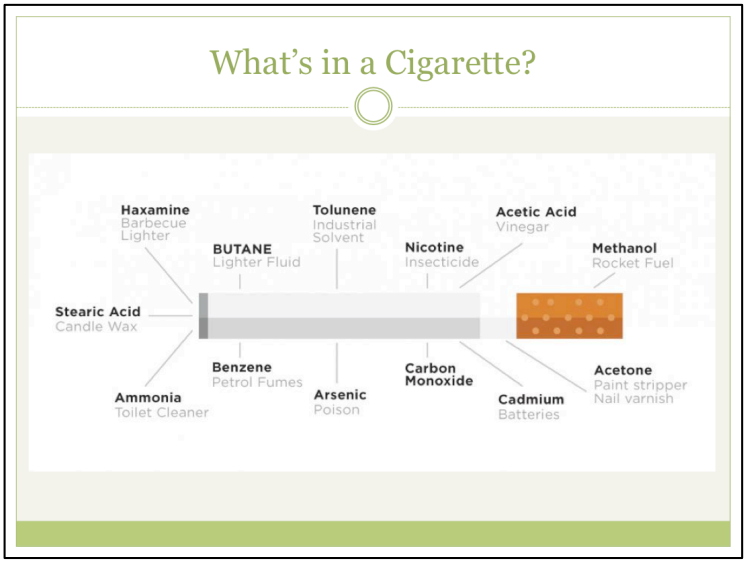


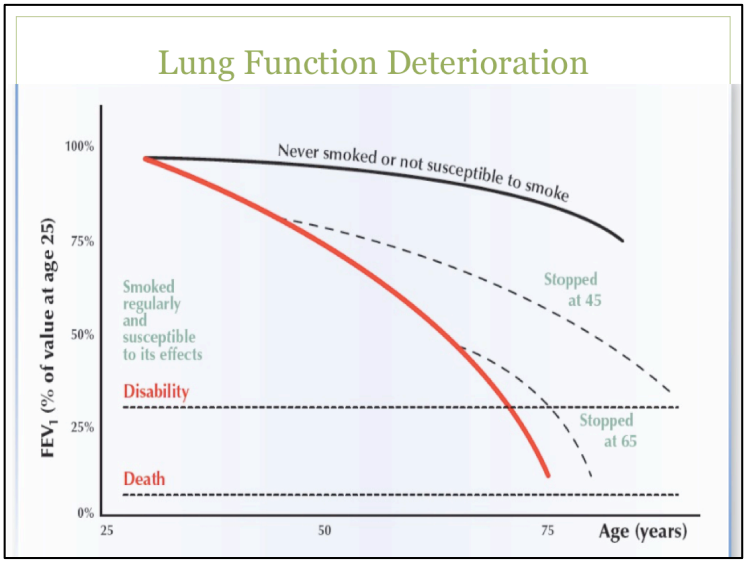
Image obtained from the Canadian Lung Association.

There are more then 4000 chemicals contained within a cigarette, many of which are known to be cancer causing agents.

Some of the chemicals found in cigarettes include:
"• Carbon Monoxide (found in car exhaust)
- Arsenic (rat poison)
- Ammonia (found in window cleaner)
- Acetone (found in nail polish remover)
- Hydrogen Cyanide (gas chamber poison)
- Napthalene (found in mothballs)
- Sulphur Compounds (found in matches)
- Lead
- Volatile Alcohol
- Formaldehyde (used as embalming fluid)
- Butane (lighter fluid)"

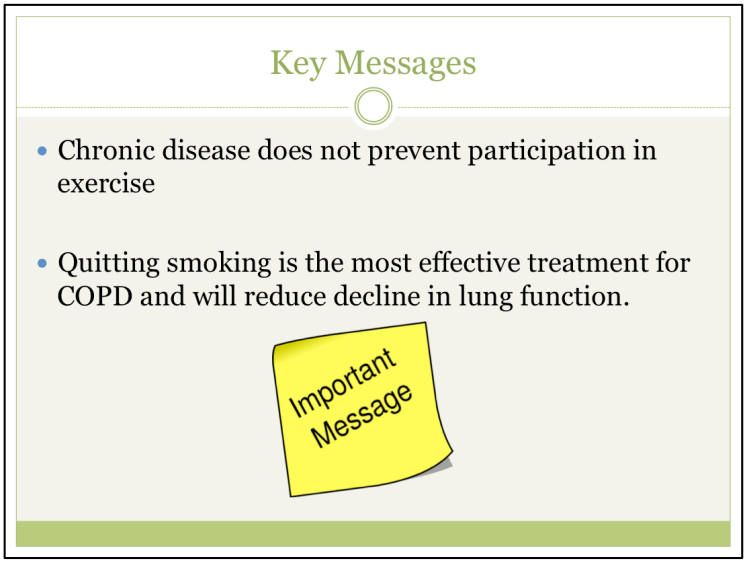
(Canadian Lung Association, 2017)

Lung Function Deterioration



Key Messages

- Education + Exercise = Pulmonary Rehabilitation
- Pulmonary Rehabilitation improves overall quality of life.
- Taking medications will not cure lung disease but will relieve symptoms.



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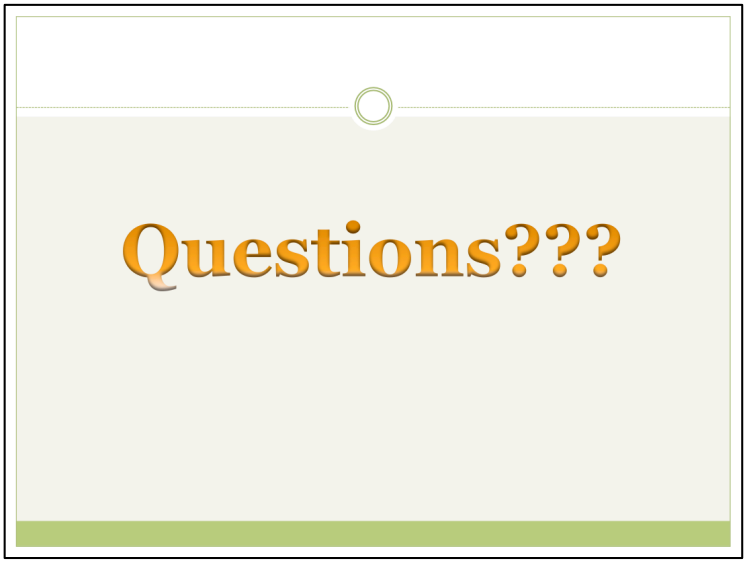

Questions???

Handout retrieved from: http://www.albertahealthservices.ca/assets/info/nutrition/if-nfs-setting-smart-goals.pdf

Setting SMART Goals

Goal setting can help you change your lifestyle to improve your health. If you set a specific (or detailed) goal, you are more likely to achieve your goal. Specific goals are often called "SMART" goals

What is a SMART goal?

Specific – Clearly state what you are going to do. Your goal should answer the questions how, what, when, and where.

Measurable – Your goal should answer questions like how much and how many. This will help you measure your progress toward your goal.

Attainable – Choose a goal you can achieve. Start with small changes. You can always change your goal later to make it harder.

Rewarding – The goal should make you feel good when you achieve it. If you think your goal is worthwhile then you will be more likely to succeed. Your goals should be set by you and not by someone else.

Timely – Give yourself a time frame to reach your goals. You may set a short-term goal (for example, 1 week) and a long-term goal (for example, 1 month).

Tips for setting goals

- Write your goals on paper. People who write down their goals are more likely to achieve them.
- Change is hard. Start with one or two goals to increase your chances of success.

Example of a SMART goal: I will eat 7 servings of vegetables and fruit a day.	
Specific How will I do it? (What, when, where, and how?)	• Eat 1 piece (1 serving) of fruit at breakfast, ½ cup (1 serving) of canned fruit at 10:00 a.m. and 1 piece (1 serving) of fruit at 4:00 p.m. • Eat 1 cup (2 servings) of vegetables at lunch and 1 cup (2 servings) at supper.
Measurable How will I measure it? (How much, how many?)	• Write down how many vegetables and fruit I eat each day in a journal. • Use a measuring cup to measure 1 cup (2 servings) of vegetables.
Attainable Is this something I can do?	• Yes, I will plan to buy enough vegetables and fruits when I do the grocery shopping every week.
Rewarding Is this something I want to do?	• When I eat more vegetables and fruits each day, I will feel like I have really done something to improve my health.
Timely How often or when will I do this?	• Starting Monday I am going to eat more fruit and eat more vegetables every day.

Use this worksheet to set one or two goals for yourself using the SMART guidelines.

My goal is:	
Specific How will I do it? (What, when, where, and how?)	
Measurable How will I measure it? (How much, how many?)	
Attainable Is this something I can do?	
Rewarding Is this something I want to do?	
Timely How often or when will I do this?	

Staying on track

Write down the names of people you can ask to support the changes you are making.

Write down things that could make it hard for you to achieve your goal.

Write down some ideas for how you can manage these difficulties.

Write down why you are making a healthy lifestyle change. Read this when you feel like giving up on your goal.

Module 2: The "Healthy" Lung and Understanding Lung Disease

Module Description

This module will begin by providing an overview of the pulmoary or respiratory system, describing both the anatomy and fuction. This will provide an understanding of the "normal or healthy" lung prior to learning the abnormal associated with chronic lung disease. Following, a description of chronic lung disease and the associated impact on both individuals and the health care system will be discussed. Common symptoms of chronic lung disease will be identified.

Learning Objectives

By the end of a group education session participants will:

7. Simply explain the anatomy and function of the "healthy or normal" lung.
8. Describe chronic lung disease and identify their current diagnosis.
9. Share their personal impact of chronic lung disease.

Teaching Aids/Activities

It is intended that the materials presented within this module be utilized during a one hour group education session. Various aids have been provided within the module to assist with ease of education delivery.

- Potential questions for facilitated group discussion
- Visual Aids: PowerPoint presentation with various pictures/graph; whiteboard and markers; lung models
- Video: "The Respiratory System" avaliable at https://www.youtube.com/watch?v=hc1YtXc_84A

Module Content

The Pulmonary or Respiratory System

To survive, our bodies need oxygen, which we get from the air that we breathe throughout the day. For individuals with "healthy lungs", breathing is often a passive process and something that we don't actively think about as we go about our day-to-day activities. It is important for us to have an understanding of the anatomy and function of the respiratory system.

- There are two functions of the pulmonary or respiratory system: ventilation and respiration (Urden, Stacy, & Lough, 2010). During ventilation, air moves into and out of the lungs through inspiration and expiration. Ventilation is controlled by the

central nervous system. During respiration, gas exchange takes place and oxygen is moved from the air around us into the bloodstream and carbon dioxide is moved from the bloodstream into the air.

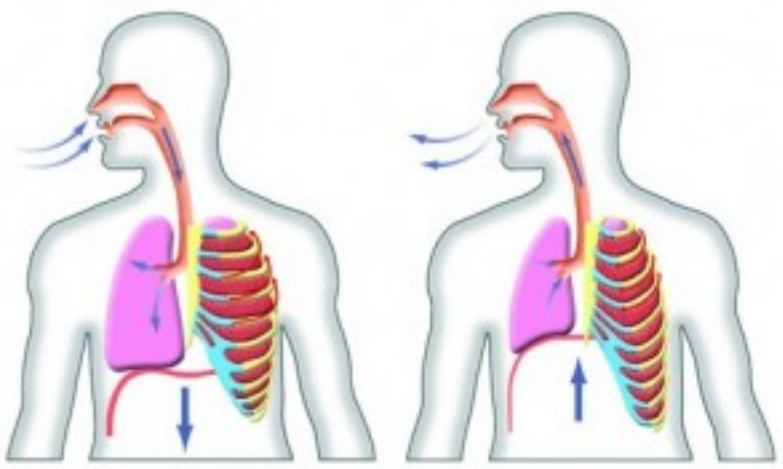


Image obtained from www.clipartpanda.com

- We breathe approximately 22 000 times each day, averaging 12 to 20 times per minute for an adult (Canadian Lung Association, 2017).

- During inspiration, the diaphragm (the main muscle of breathing) contracts, the lungs expand, and air is drawn into the body (Urden et al., 2010). Accessory muscles, such as those that expand the rib cage or those within our abdomen, may also assist with inspiration. Respiration is a passive process. The diaphragm relaxes and air is expelled.

- The lungs are located within the chest and protected by the rib cage (Urden et al., 2010). The normal pulmonary system is comprised of a left and right lung. Each lung is divided into segments called lobes. The right lung has three lobes and the left lung has two lobes.

- The pulmonary system consists of the following (Urden et al., 2010):

1. Thorax: thoracic cage, lungs, pleura, and muscles of ventilation
2. Conducting airways: upper airways, trachea, and bronchial tree
3. Respiratory airways: bronchioles and alveoli
4. Pulmonary blood and lymph supply

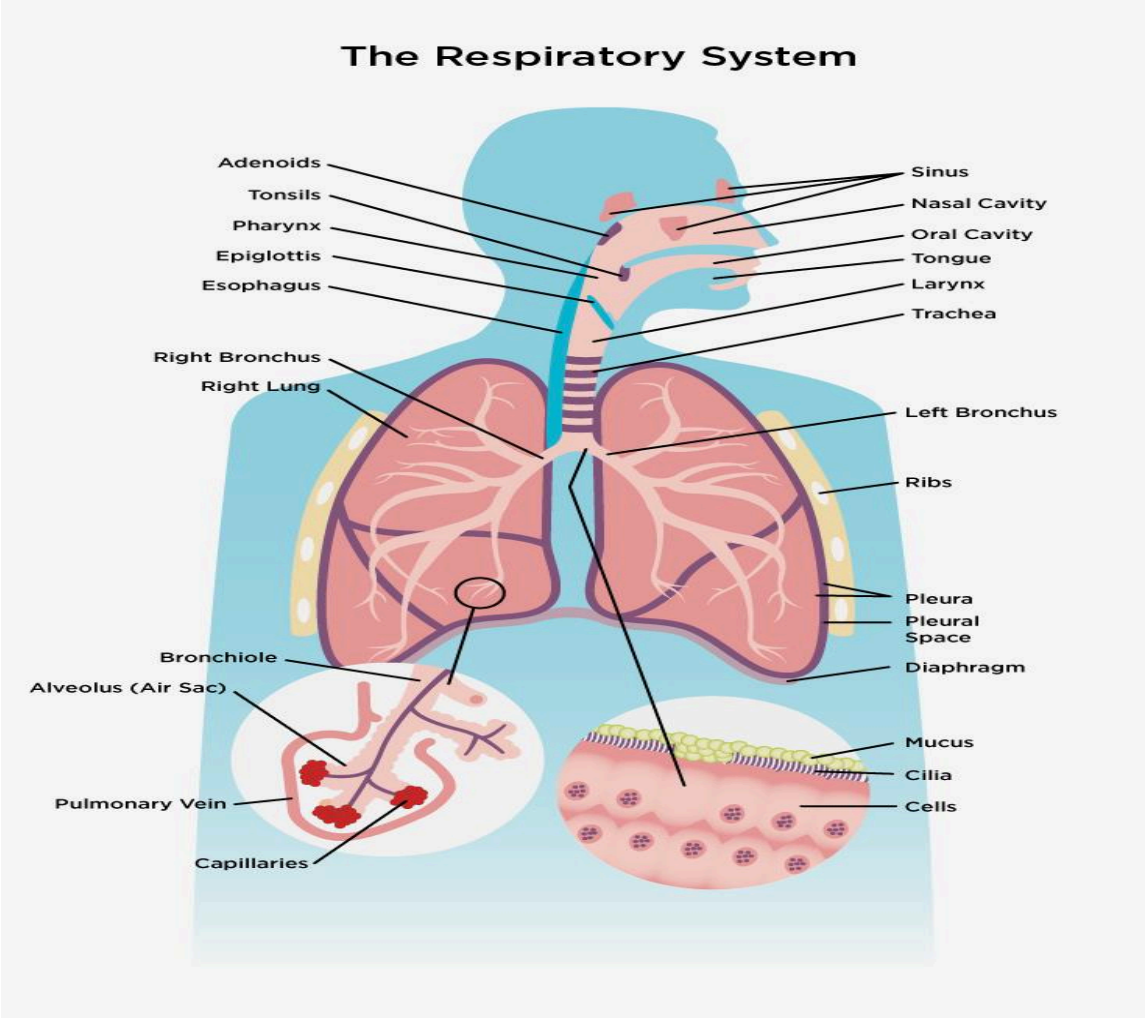


Image obtained from www.lung.ca

- Air that we breathe enters the body through the nose or mouth (Urden et al., 2010). It then travels through the pharynx and larynx into the trachea. The trachea divides into tubes called bronci. The right main and left main bronchus each supply a lung. The bronchi further divide and eventually form into bronchioles which are final division of the conducting airways. Each bronchiole connects to several alveoli which is the site of gas exchange (Urden).

- The pulmonary system has various built in protective mechanisms (Urden et al., 2010; Australia Lung Foundation, 2016). The nose and mouth both filter and warm the air we breathe. The nose is more effective at this and serves as a better filter, making the nose the preferred breathing route. The mouth on the other hand allows for larger amounts of air to enter the body. This is useful during episodes of shortness of breath or during exercise. Both sputum and tiny hair-like structures called cilia line the airways. Both prevent irritants and particles from entering the

lungs. The cilia move in a sweeping motion and help move particles and sputum from the airways to the mouth where they can be cleared.

The following video, "The Respiratory System", provides a review of the information previously covered: https://www.youtube.com/watch?v=hc1YtXc_84A

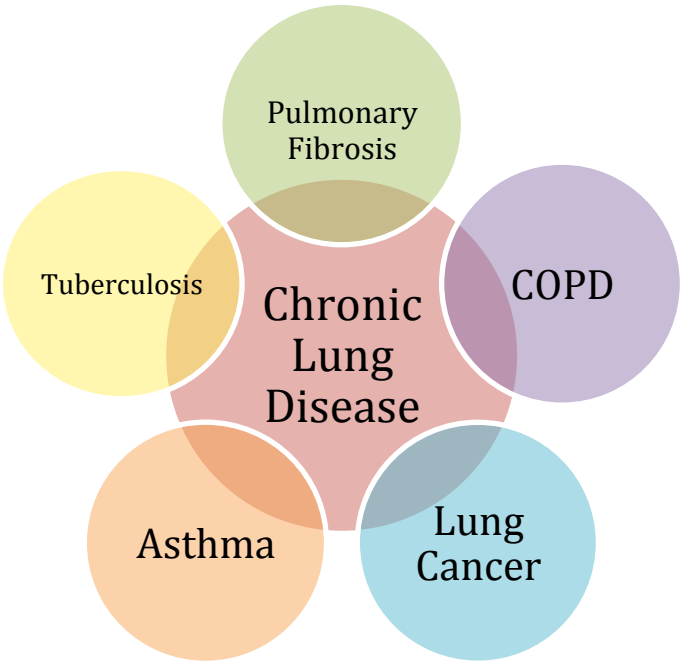
Now that we understand the normal lung, in the next module we will be discussing the impact of various chronic lung conditions on the lung.

What is Chronic Lung Disease?

The term Chronic Lung Disease refers to respiratory conditions that are long term or incurable. They are typically associated with permanent or irreversible damage to the lungs. Symptoms of these diseases are usually progressive in nature. During the last presentation we talked about various factors of keeping a health lifestyle. Many of these will help control symptoms of chronic lung disease and slow disease progression.

- The term chronic lung disease refers to respiratory conditions such as, chronic obstructive pulmonary disease (COPD), which also encompasses chronic bronchitis and emphysema, pulmonary fibrosis, asthma, lung cancer, and tuberculosis (Public Health Agency of Canada, 2012).

Chronic (long term) Obstructive (partially blocked) Pulmonary (lung) Disease



- Chronic lung disease has been documented as far back as the 1600's. Physician documentations from several centuries ago have clearly documented alterations in

lung size, inflammation to the mucous membranes, breakdown of lung tissue, and air trapping (Ebner, 2015; Heffner, 2013).

- The reality of living with chronic lung disease is burdensome and causes debilitation to both individuals living with the conditions and the health care system. (World Health Organization, 2007).
    - Common symptoms include (Living Well with COPD, 2017):
        - Shortness of breath
        - Cough/mucous production
        - Chest tightness
        - Wheezing
        - Fatigue
        - Anxiety

Pulmonary rehabilitation demonstrates a secondary prevention intervention aimed at improving the quality of life of those living with chronic lung disease (AACVPR, 2011).

- The World Health Organization (2007) estimates that chronic lung disease will become the third leading cause of death by 2030.

Discussion Questions:

1. What is the name of your chronic lung disease?
2. What symptoms do you experience with your chronic lung disease?

Chronic Lung Disease in Canada

- There are over three million individuals currently living with chronic lung disease in Canada (Public Health Agency of Canada, 2012).

- COPD is the only chronic condition that is still associated with an increasing mortality rate in Canada (Canadian Thoracic Society, 2010).

- Chronic lung disease has a significant economic impact on the Canadian health care system, costing approximately 12 billion dollars annually (Public Health Agency of Canada).

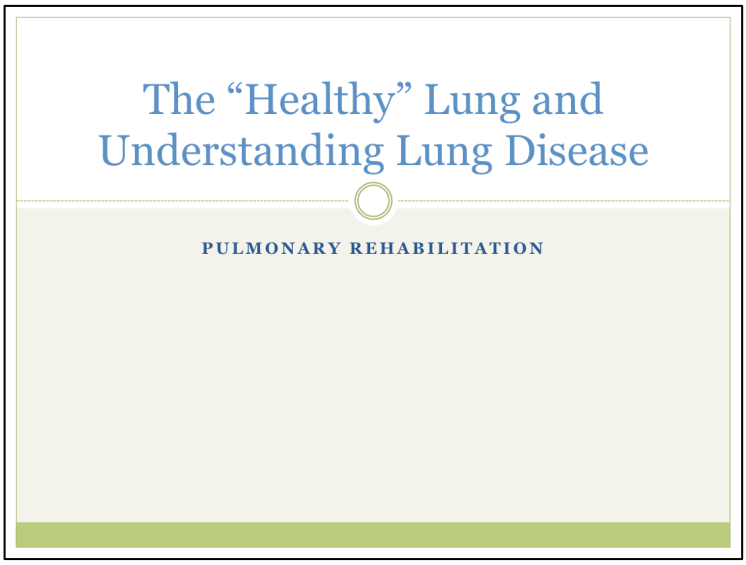
Discussion Questions:

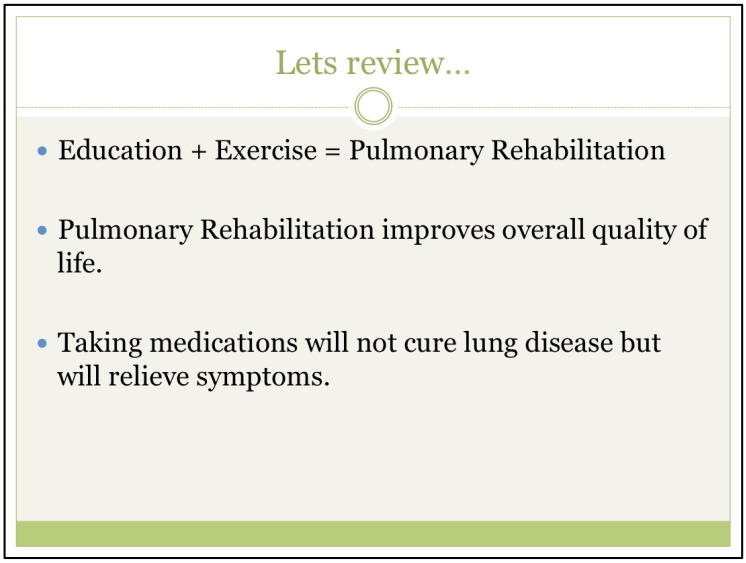
1. How does your chronic lung disease impact your day-to-day life?
2. How has your life changed since being diagnosed with a chronic lung disease?
3. What is the financial impact of your chronic lung disease?

Module Key Messages for Participants

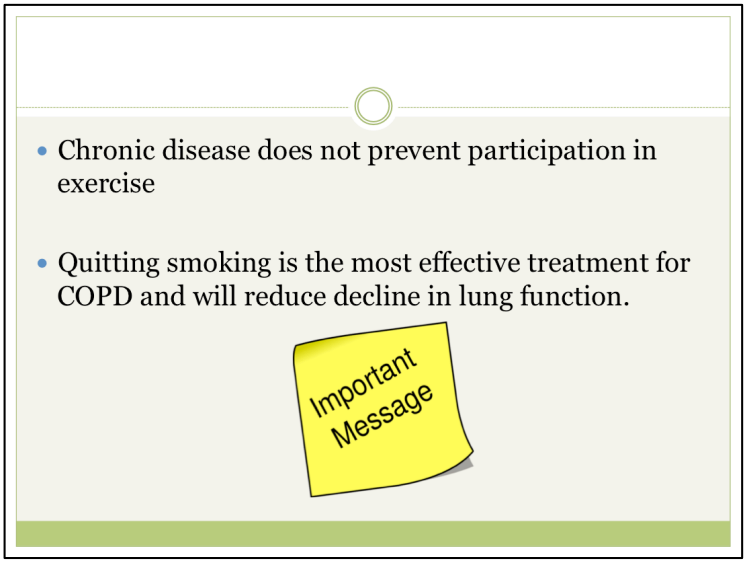
- The pulmonary system has two functions: ventilation and respiration.
- Chronic lung disease:
  - Long term or incurable
  - Associated with permanent or irreversible damage to the lungs
  - Symptoms are usually progressive.
- Pulmonary rehabilitation = secondary prevention intervention aimed at improving quality of life
- Chronic lung disease has an impact on the individual living with the disease and the health care system.

The following powerpoint presentation may be utilized with the above module during group education session.





Review Key Messages from previous module.



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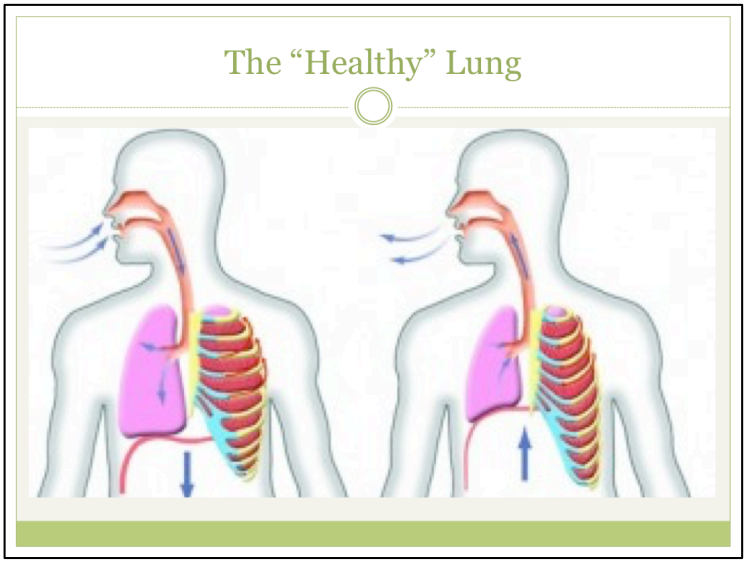


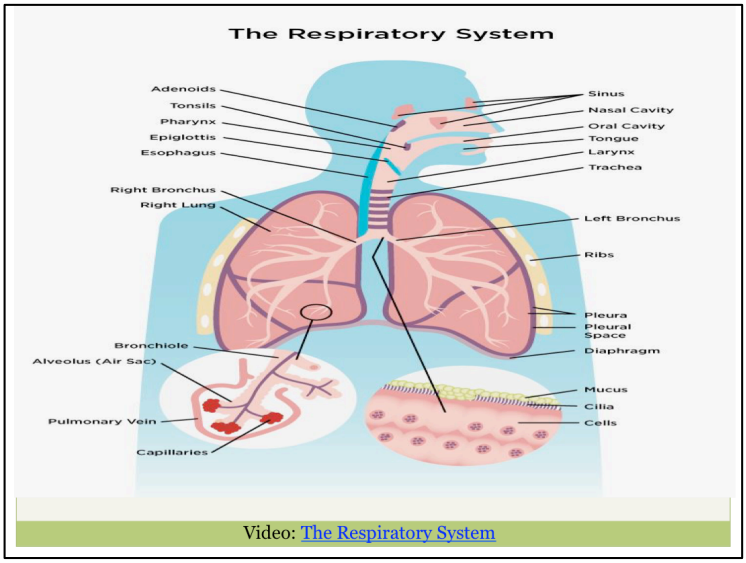
Image obtained from www.clipartpanda.com

Before we can learn about abnormal conditions, we need to first understand the anatomy and function of the “healthy or normal” lung.

When we discuss breathing or our lungs we are referring to the pulmonary or respiratory system. The two are used interchangeably.

There are two functions of the pulmonary system: ventilation and respiration (Urden, Stacy, & Lough, 2010). During ventilation, air moves into and out of the lungs through inspiration and expiration. Ventilation is controlled by the central nervous system. During respiration, gas exchange takes place and oxygen is moved from the air around us into the bloodstream and carbon dioxide is moved from the bloodstream into the air.

During inspiration, the diaphragm (the main muscle of breathing) contracts, the lungs expand, and air is drawn into the body (Urden et al., 2010). Accessory muscles, such as those that expand the rib cage or those within our abdomen, may also assist with inspiration. Respiration is a passive process. The diaphragm relaxes and air is expelled.

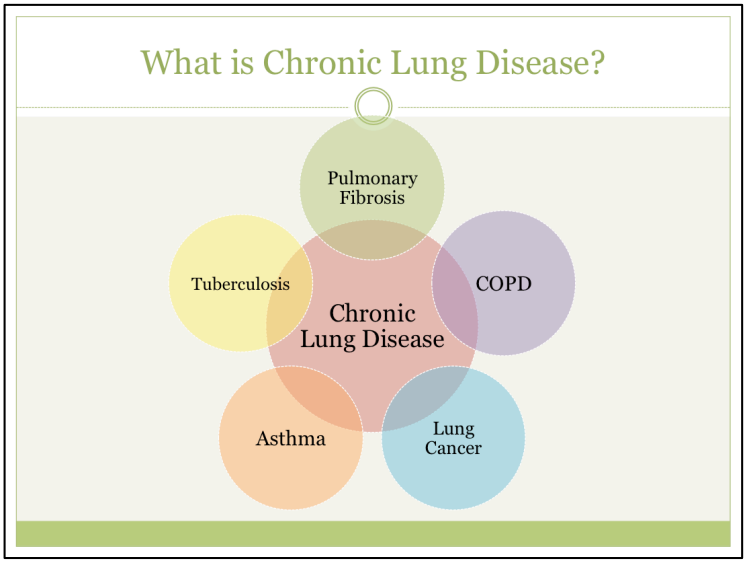


Video: The Respiratory System

The lungs are located within the chest and protected by the rib cage (Urden). The normal pulmonary system is comprised of a left and right lung. Each lung is divided into segments called lobes. The right lung has three lobes and the left lung has two lobes.

Air that we breathe enters the body through the nose or mouth (Urden). It then travels through the pharynx and larynx into the trachea. The trachea divides into tubes called bronchi. The right right and left main bronchus each supply a lung. The bronchi further divide and eventually form into bronchioles which are final division of the conducting airways. Each bronchiole connects to several alveoli which is the site of gas exchange (Urden).

The pulmonary system has various built in protective mechanisms (Urden; Australia Lung Foundation, 2016). The nose and mouth both filter and warm the air we breathe. The nose is more effective at this and serves as a better filter, making the nose the preferred breathing route. The mouth on the other hand allows for larger amounts of air to enter the body. This is useful during episodes of shortness of breath or during exercise. Both sputum and tiny hair-like structures called cilia line the airways. Both trap irritants and particles from entering the lungs. The cilia move in a sweeping motion and help move from the airways to the mouth where it can be cleared.



These are examples of diseases or conditions that fall under the term chronic lung disease.

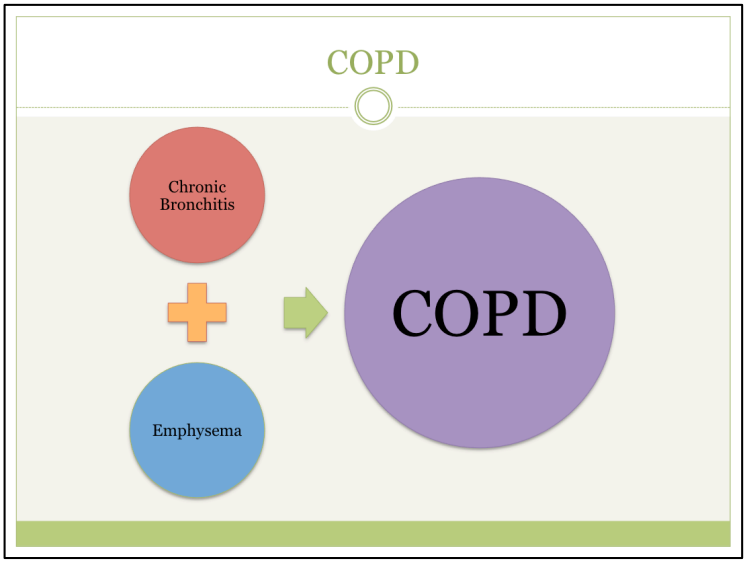
The term Chronic Lung Disease refers to conditions that are long term or incurable. They are typically associated with permanent or irreversible damage to the lungs. Symptoms of these diseases are usually progressive in nature. During the last presentation we talked about various factors of keeping a health lifestyle. Many of these will help control symptoms of chronic lung disease and slow down disease progression.

The World Health Organization (2007) estimates that chronic lung disease will become the third leading cause of death by 2030.

Pulmonary rehabilitation demonstrates a secondary prevention intervention aimed at improving the quality of life of those living with chronic lung disease (AACVPR, 2011).

Individuals are most commonly referred to pulmonary rehabilitation with a diagnosis of COPD or Pulmonary Fibrosis.

Discussion Question: What is the name of your chronic lung disease?

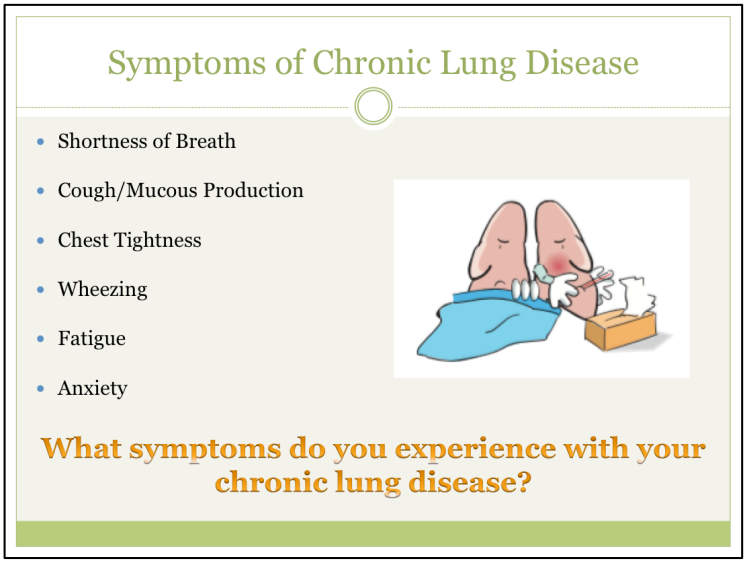


Chronic (long term) Obstructive (partially blocked) Pulmonary (lung) Disease

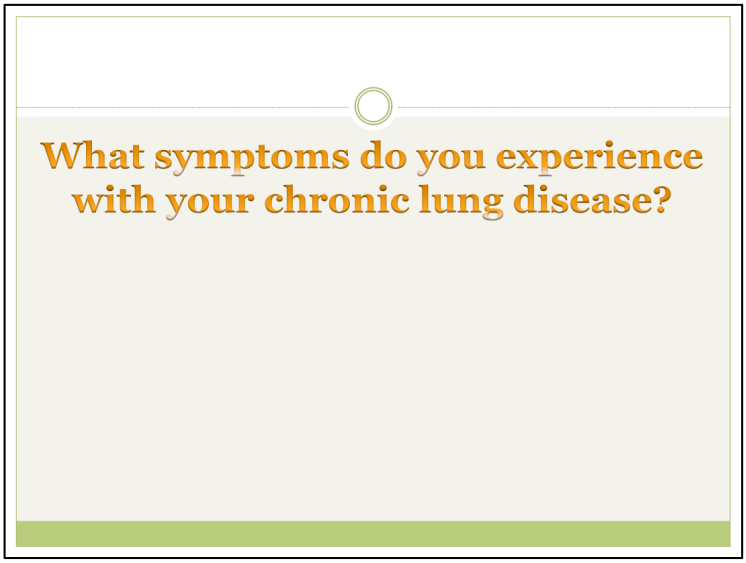
Next class we will be discussing the Anatomy and Physiology of various chronic lung diseases.

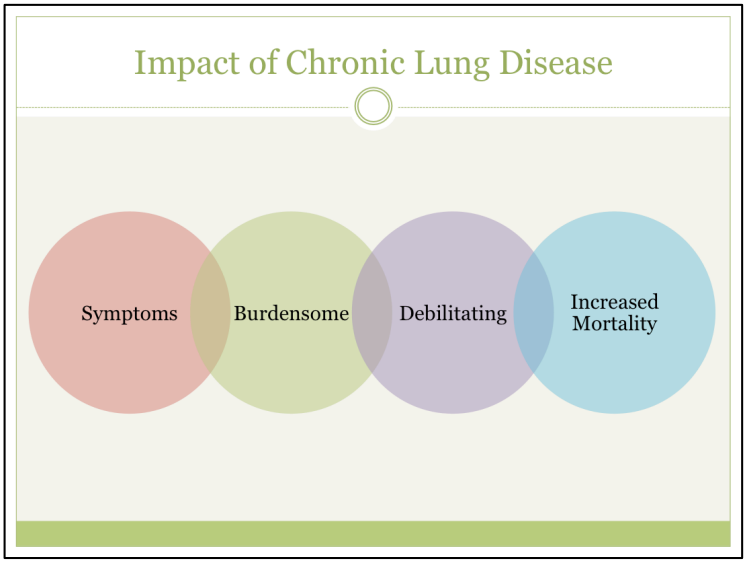
Chronic Lung Disease in Canada

- Over three million Canadians are living with chronic lung disease.
- Chronic lung disease costs the health care system 12 billions dollars each year.
- COPD is the only chronic disease with an increasing mortality rate in Canada.



Discussion: What symptoms do you experience with your chronic lung disease?


What symptoms do you experience with your chronic lung disease?



Discussion Questions:

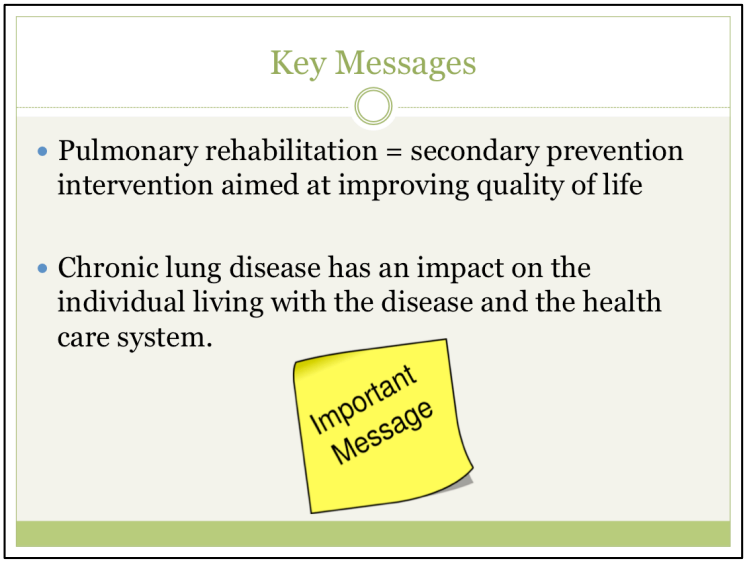
How does your chronic lung disease impact your day to day life?

How has your life changed since being diagnosed with a chronic lung disease?

What is the financial impact of your chronic lung disease?

Key Messages

- The pulmonary system has two functions: ventilation and respiration.
- Chronic lung disease:
  - Long term or incurable
  - Associated with permanent or irreversible damage to the lungs
  - Symptoms are usually progressive.



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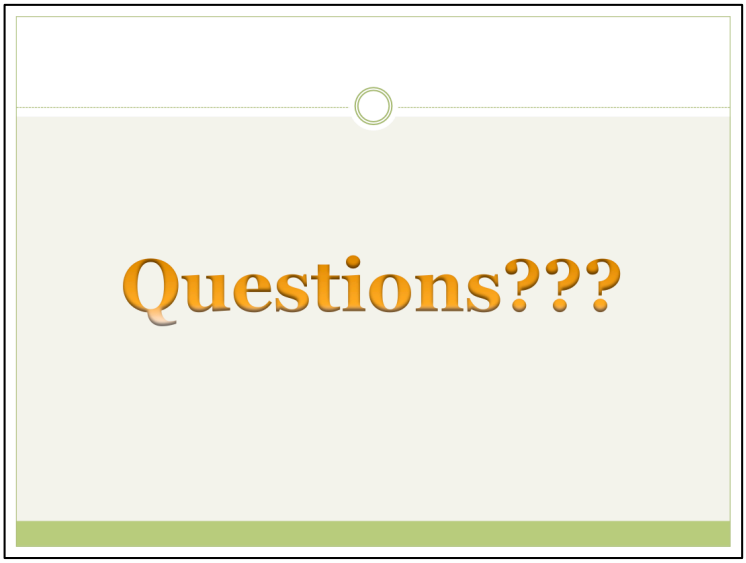

Questions???

Module 3: Lung Disease Anatomy and Physiology

Module Description

This module will provide a description of the disease process of various chronic lung conditions including: chronic obstructive pulmonary disease, pulmonary fibrosis, asthma, pulmonary hypertension, cystic fibrosis, and tracheomalacia. The module will also identify symptoms specific to each disease.

Learning Objectives:

By the end of a group education session participants will:

1. Be able to explain a basic description of their diagnosed chronic lung disease.
2. State two common symptoms of their diagnosed chronic lung disease.

Teaching Aids/Activities

It is intended that the materials presented within this module be utilized during a one hour group education session. Various aids have been provided within the module to assist with ease of education delivery.

- Visual Aids: PowerPoint presentation with various pictures/graph; whiteboard and markers; lung models
- Video: Understanding COPD avaliable at: https://www.youtube.com/watch?v=T1G9Rl65M-Q
- Video: Understanding Pulmonary Fibrosis avaliable at: https://www.youtube.com/watch?v=qjDNp54o_bI
- Handouts: COPD retrieved from www.livingwellwithCOPD.com; Pulmonary Fibrosis retrieved from www.livingwellwithPulmonaryFibrosis.com

Module Content

In the last module we discussed the pulmonary system and the "normal lung". This module will discuss the impact of various chronic lung diseases on the lungs. The most common diagnoses for patients attending pulmonary rehabilitation are Chronic Obstructive Pulmonary Disease and Pulmonary Fibrosis.

Note: *For the other conditions discussed, if there is not a participant attending with the associated diagnosis the related section could be omitted.*

Chronic Obstructive Pulmonary Disease (COPD):

Chronic (long term) Obstructive (partially blocked) Pulmonary (lung) Disease

- COPD is a chronic disease characterized by obstruction of airflow in the lungs. The **two** most common symptoms of COPD are shortness of breath and cough. COPD is a progressive disease and symptoms typically worsen over time (Australia Lung Foundation, 2016).

- COPD is not curable, but COPD is treatable. Appropriate diagnosis and treatment improve overall quality of life and slows disease progression (Canadian Lung Association, 2017).

- COPD is best diagnosed with spirometry (Living well with COPD, 2017)

Note: *In a later module we will discuss spirometry and other tests and interventions in detail.*

- The term COPD encompasses two conditions: obstructive chronic bronchitis and emphysema (Canadian Lung Association; Living well with COPD, 2017; Australia Lung Foundation). Individuals may have one or both of these conditions when diagnosed with COPD.

    1. **Obstructive Chronic Bronchitis** results in inflammation and swelling of the lung's airways, specifically the bronchi and bronchioles. This inflammation further causes increased and excessive sputum production within the airways. Both inflammation and sputum lead to airway obstruction. This obstruction makes it difficult to move air in and out of the lungs leading to symptoms such as shortness of breath.
    Symptoms: increased sputum production, frequent coughing, wheezing, and shortness of breath
    (Canadian Lung Association; Living well with COPD; Australia Lung Foundation)

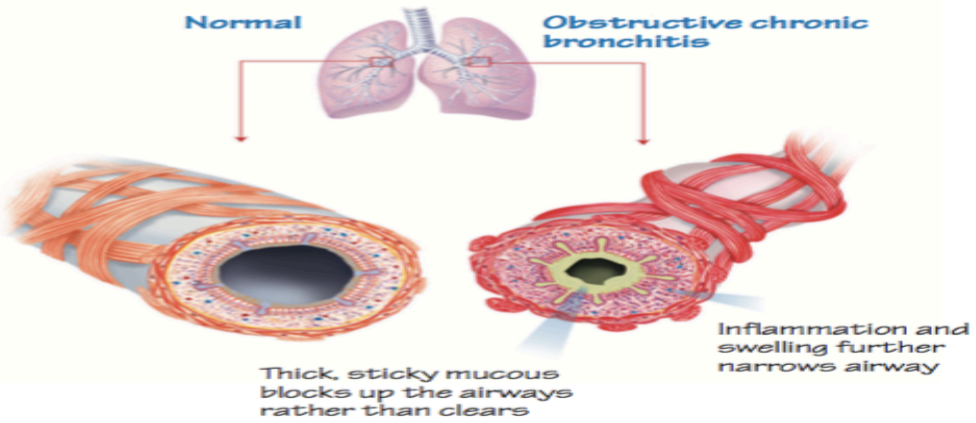


Image retrieved from www.livingwellwithcopd.com

2. **Emphysema** results in damage/destruction and stiffening to the alveoli. The alveoli are the time air sacs, connected to the bronchioles, where gas exchange is conducted. In the normal lung these sacs stretch as we breathe in and out. The stiffening of the alveoli leads to air trapping, in which your lungs do not completely empty. This makes it difficult to move air in and out and prevents the exchange of oxygen and carbon dioxide.
   Symptoms: shortness of breath and fatigue

   (Canadian Lung Association; Living well with COPD; Australia Lung Foundation)

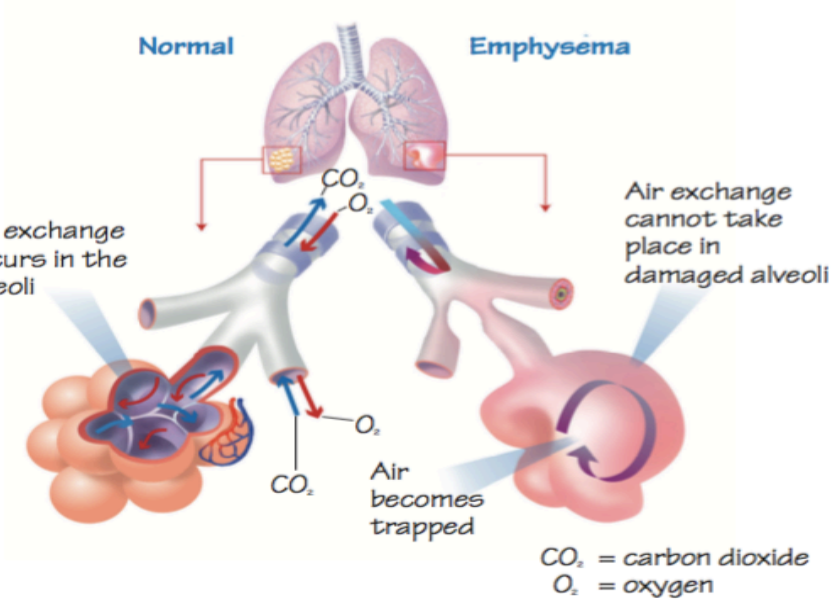


Image retrieved from www.livingwellwithcopd.com

- There are various causes or contributing factors that lead to COPD. The main cause of COPD, in 80 to 90 percent of diagnoses, is smoking. Other causes include: Alpha-1 antitrypsin deficiency, air pollution such as dust or chemicals, second-hand smoke, and repeated lung infections particularly as a child (Canadian Lung Association).

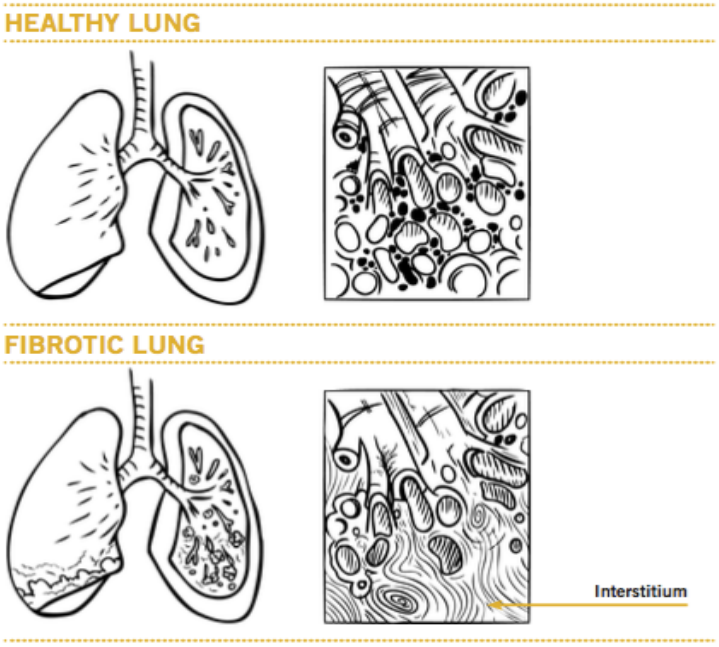
- Alpha-1 antitrypsin deficiency is a rare genetic disorder. Alpha-1 antitrypsin, found within our blood, protects our lungs from damage. Individuals with a deficiency are at risk of developing COPD due to exposure to inhaled pollutants, smoke, or dust etc. from everyday living (Australia Lung Association).

Patients often express guilt or shame associated with smoking and a diagnosis of COPD. They may feel that they brought this condition on themselves or healthcare professionals blame them for their current condition. As healthcare professionals we recognize that, in relation to chronic lung disease, quitting smoking is the most significant action one can do for their health. We must also recognize that smoking is an addiction. Centers for Disease Control and Prevention (2017) indicate that nicotine, a drug found in the tobacco of cigarettes, is as addictive as heroin, cocaine, or alcohol. It is also significant to acknowledge that awareness related to the impacts of smoking and smoking cessation were not always as common as they are today. There was a time in our history when smoking was the norm. Within the Pulmonary Rehabilitation setting both the RN and RT are trained in smoking cessation and serve as a resource for participants who may be interested in quitting smoking!

Pulmonary Fibrosis:

- **Pulmonary fibrosis** is sometimes referred to as interstitial lung disease and characterized by progressive scarring of the lungs (Living well with Pulmonary Fibrosis, 2017). In order for gas exchange to happen within the lungs, air must pass through the interstitium of the lung to reach the pulmonary circulation. Scarring of the lungs causes the interstitium to become thick and stiff, making this difficult. **Symptoms**: shortness of breath, fatigue, non-productive cough, clubbing of the fingernails, and crackles heard on auscultation of the lungs

(Living Well with Pulmonary Fibrosis, 2017)



Images from the program "Living Well with Pulmonary Fibrosis", J. Morisset, D. Nault, A. Savard, M. Sedeno, 1st edition (2016) www.livingwellwithpulmonaryfibrosis.com

- Pulmonary fibrosis is referred to as **idiopathic** (IPF) when the cause of the disease is unknown. There are various risk factors for IPF including: age > 50 yrs, smoking, family history, and acid reflux (Living well with Pulmonary Fibrosis). There are other known causes of pulmonary fibrosis. Individuals may also be diagnosed with pulmonary fibrosis related to hypersensitivity pneumonitis or an immune reaction to an inhaled agent, or related to a connective-tissue disease such as rheumatoid arthritis.

- There is no cure for pulmonary fibrosis. Appropriate diagnosis and treatment may slow disease progression.

Although the anatomy and physiology of pulmonary fibrosis differs from that of COPD, the impact on quality of life and symptoms are similar!

Asthma:

- Asthma is a condition characterized by constriction and swelling of the airways, muscle tightening surrounding the airways, and increased sputum production. These process lead to airways obstruction, similarly to COPD.
  Symptoms: wheezing, chest tightness, shortness of breath, and cough
  (Canadian Lung Association; Australia Lung Foundation)

- Asthma is a chronic disease and not curable.

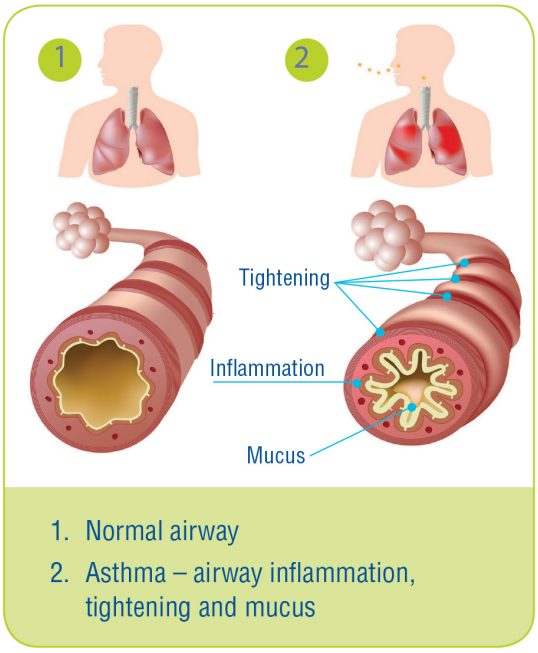


Image obtained from www.lung.ca

Pulmonary Hypertension:

- Pulmonary hypertension is a condition characterized by increased blood pressure within the vessels of the lungs. This increased pressure leads to narrowing of the lungs arteries, decreasing blood flow and oxygen concentration. If left untreated, pulmonary hypertension can lead to heart failure or mortality.
  Symptoms: shortness of breath, chest pain, dizziness, fainting, cough, edema, and decreased energy
- Genetics and obstructive sleep apnea are risk factors for pulmonary hypertension.
- Pulmonary hypertension is not curable but treatable.

(Canadian Lung Association; Pulmonary Hypertension Association, 2017)

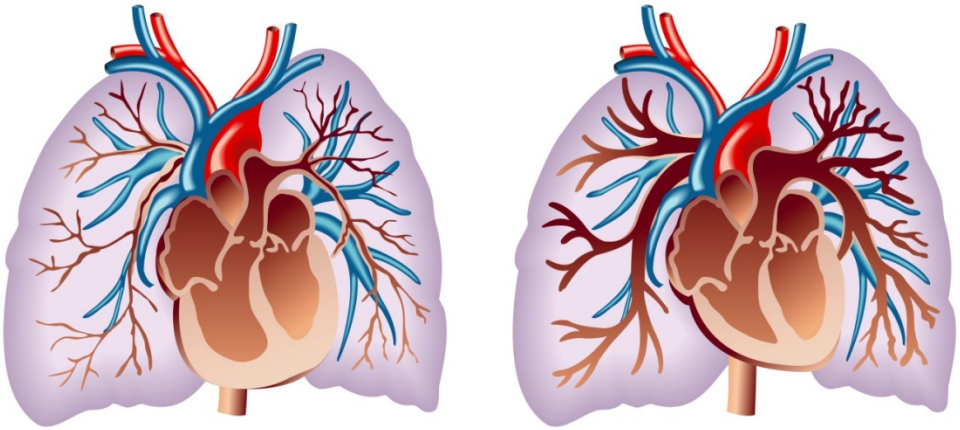


Image obtained from
https://www.cdc.gov/dhdsp/data_statistics/fact_sheets/fs_pulmonary_hypertension.htm

The following lung conditions are not commonly seen in the pulmonary rehabilitation setting. A brief description has been provided for each disease in the event that a participant attending has been diagnosed. If not applicable they can be omitted from group education.

Cystic Fibrosis:

- Cystic Fibrosis (CF) is a genetic condition affecting both the lungs and digestive system. CF typically leads to frequent lung infections, destruction of lung tissue, and ultimately loss of lung function.
  Symptoms: cough, increased sputum production, shortness of breath, wheezing, weight loss and difficulties gaining weight, salty tasting sweat, and infertility
- It is estimated that individuals will CF spend the equivalent of four months of full-time work undergoing treatment for CF yearly.
- CF is diagnosed with a sweat test or genetic testing.

(Cystic Fibrosis Canada, 2017)

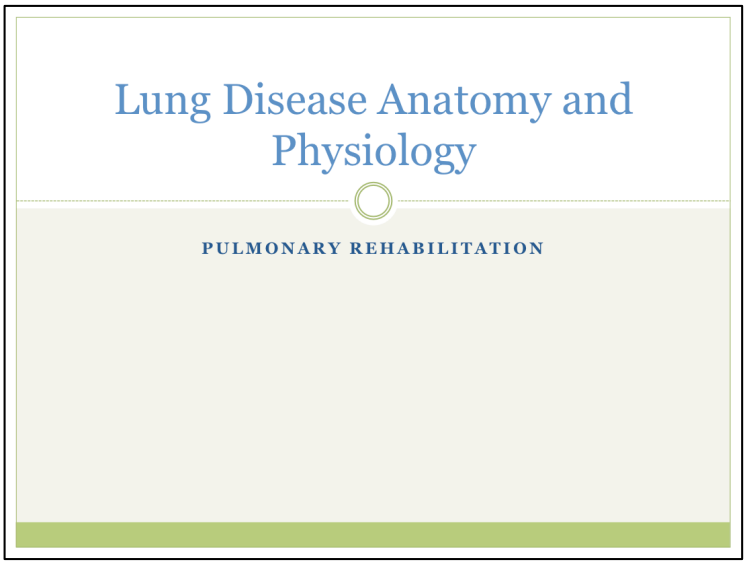
Tracheomalacia:

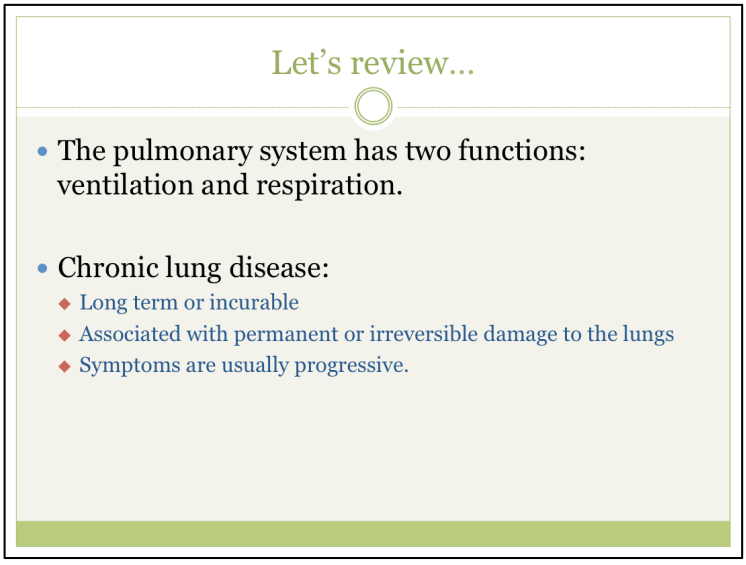
- Tracheomalacia is a condition in which the cartilage that supports the trachea is not fully developed or misshaped. This may lead to a narrowing or collapse of the airways during exhalation.
  Symptoms: stridor, high-pitched breathing, cough, frequent infections, and exercise intolerance

Key Messages

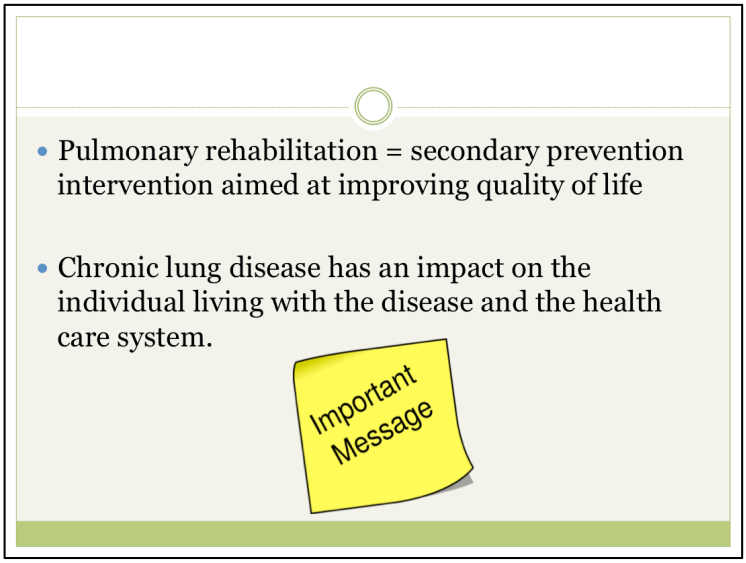
- COPD = Chronic (long term) Obstructive (partially blocked) Pulmonary (lung) Disease
- COPD, Pulmonary Fibrosis, Asthma, and Pulmonary Hypertension are not curable but are treatable.
- Appropriate treatment improves overall quality of life and slows disease progression.

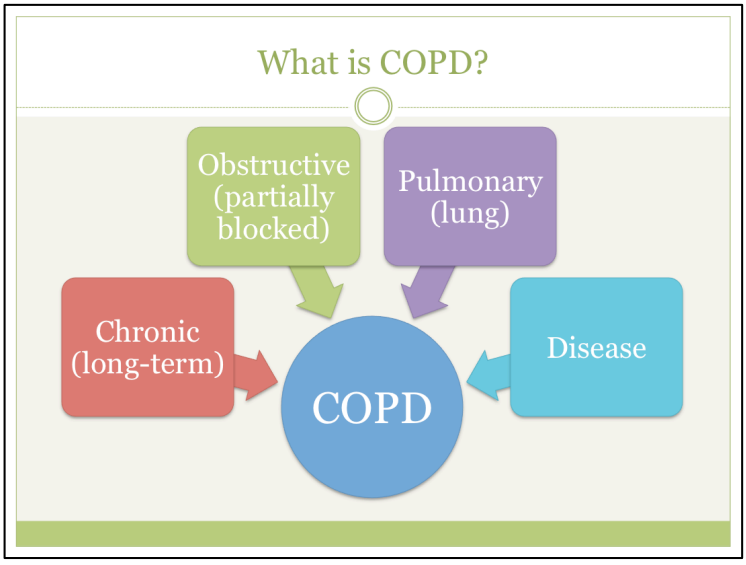
The following powerpoint presentation may be utilized with the above module during group education session.

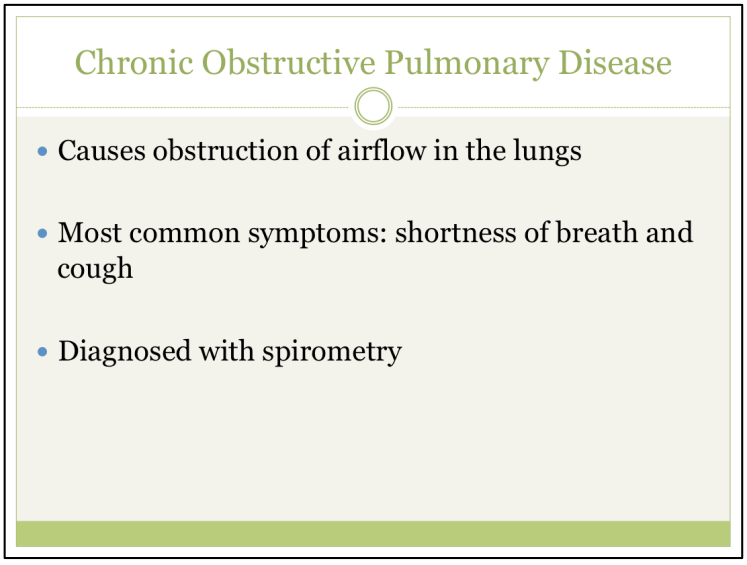




Review Key Messages from previous module.


Pulmonary rehabilitation = secondary prevention intervention aimed at improving quality of life
Chronic lung disease has an impact on the individual living with the disease and the health care system.
Important Message


What is COPD?
Obstructive (partially blocked)
Pulmonary (lung)
Chronic (long-term)
COPD
Disease



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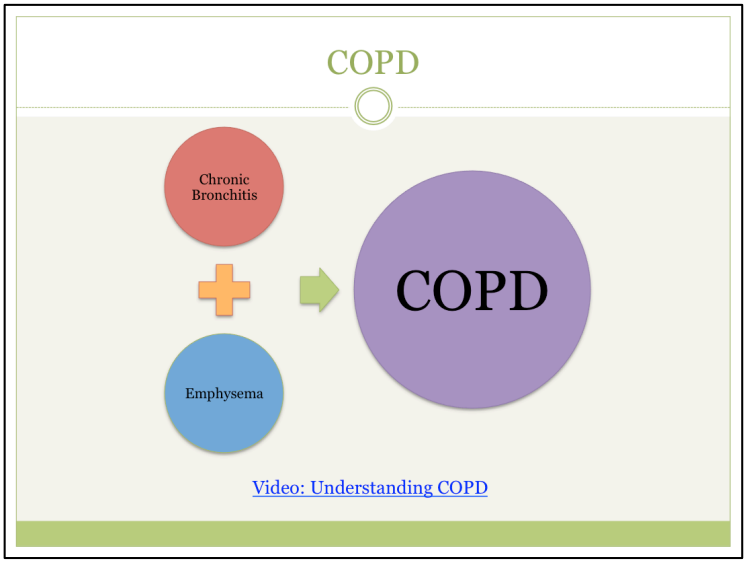
COPD is not curable, but COPD is treatable. Appropriate diagnosis and treatment improve overall quality of life and slow disease progression (Canadian Lung Association, 2017).

There are various causes or contributing factors that lead to COPD. The main cause of COPD, in 80 to 90 percent of cases, is smoking. Other causes include: Alpha-1 antitrypsin deficiency, air pollution such as dust or chemicals, second-hand smoke, and repeated lung infections particularly as a child (Canadian Lung Association).



The term COPD encompasses two conditions: obstructive chronic bronchitis and emphysema (Canadian Lung Association; Living well with COPD; Australia Lung Foundation). Individuals may have one or both of these conditions when diagnosed with COPD.

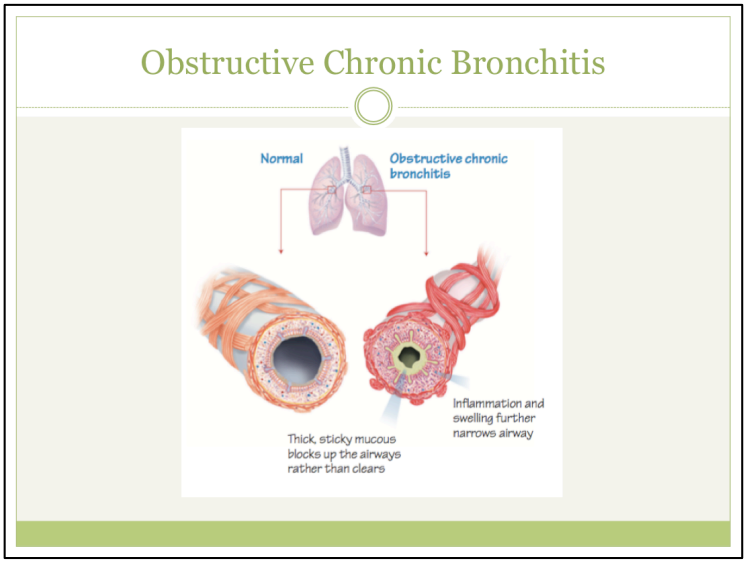


Image retrieved from www.livingwellwithcopd.com

Obstructive Chronic Bronchitis results in inflammation and swelling of the lung's airways, specifically the bronchi and bronchioles. This inflammation further causes increased and excessive sputum production within the airways. Both inflammation and sputum lead to airway obstruction. This obstruction makes it difficult to move air in and out of the lungs leading to symptoms such as shortness of breath.

Symptoms: increased sputum production, frequent coughing, wheezing, and shortness of breath (Canadian Lung Association; Living well with COPD; Australia Lung Foundation)

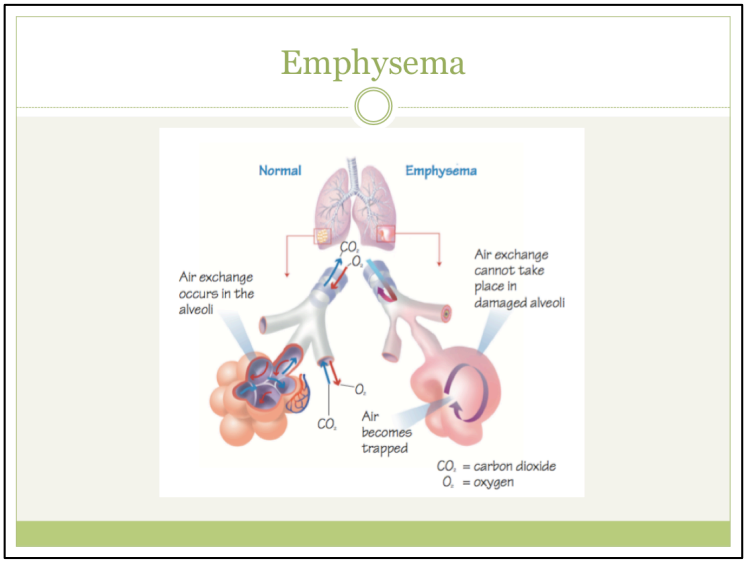
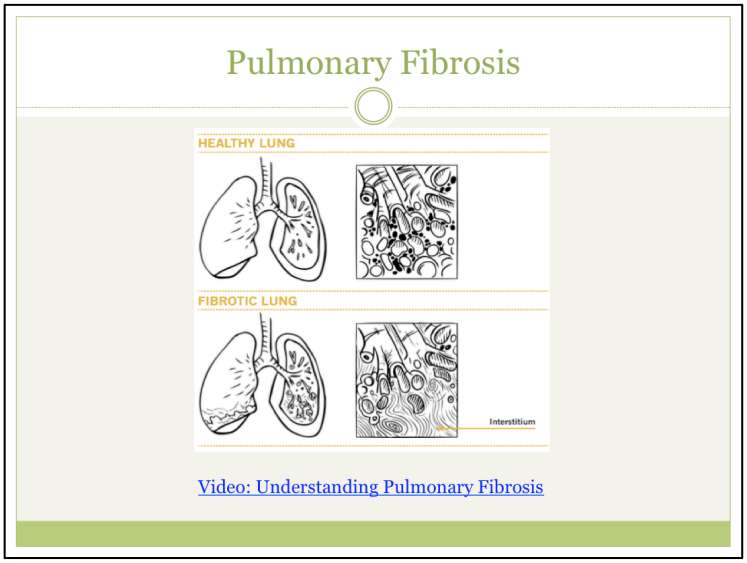


Image retrieved from www.livingwellwithcopd.com

Emphysema results in damage/destruction and stiffening to the alveoli. The alveoli are the time air sacs, connected to the bronchioles, where gas exchanges is conducted. In the normal lung these sacs stretch as we breathe in and out. The stiffening of the alveoli leads to air trapping, in which your lungs do not completed empty. This makes it difficult to move air in and out and prevents the exchange of oxygen and carbon dioxide.

Symptoms: shortness of breath and fatigue (Canadian Lung Association; Living well with COPD; Australia Lung Foundation)



Images from the program "Living Well with Pulmonary Fibrosis", J. Morisset, D. Nault, A. Savard, M. Sedeno, 1st edition (2016) www.livingwellwithpulmonaryfibrosis.com

Pulmonary fibrosis, sometimes referred to as interstitial lung disease, is characterized by progressive scarring of the lungs (Living well with Pulmonary Fibrosis, 2017). In order for gas exchange to happen within the lung the lungs, air must pass through the interstitium of the lung to reach the pulmonary circulation. Scarring of the lungs causes the interstitium to become thick and stiff, making this difficult.

Symptoms: shortness of breath, fatigue, non-productive cough, clubbing of the fingernails, and crackles heard on auscultation of the lungs (Living Well with Pulmonary Fibrosis, 2017)

Pulmonary fibrosis is referred to as **idiopathic** (IPF) when the cause of the disease is unknown. There are various risk factors for IPF including: age > 50 yrs, smoking, family history, and acid reflux (Living well with Pulmonary Fibrosis). There are other known causes of pulmonary fibrosis. Individuals may also be diagnosed with pulmonary fibrosis related to hypersensitivity pneumonitis or an immune reaction to an inhaled agent, or related to a connective-tissue disease such as rheumatoid arthritis.

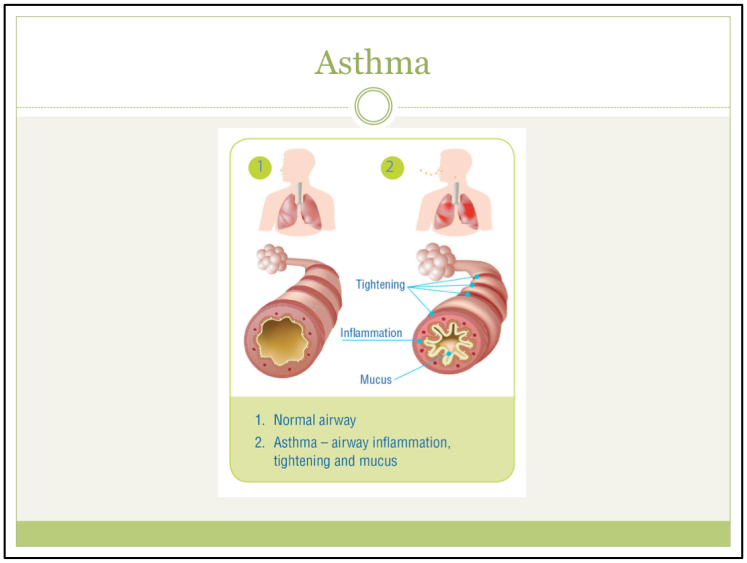


Image obtained from www.lung.ca

Asthma is a condition characterized by constriction and swelling of the airways, muscle tightening surrounding the airways, and increased sputum production. These process lead to airways obstruction, similarly to COPD.
Symptoms: wheezing, chest tightness, shortness of breath, and cough
(Canadian Lung Association; Australia Lung Foundation)

Asthma is a chronic disease and not curable.

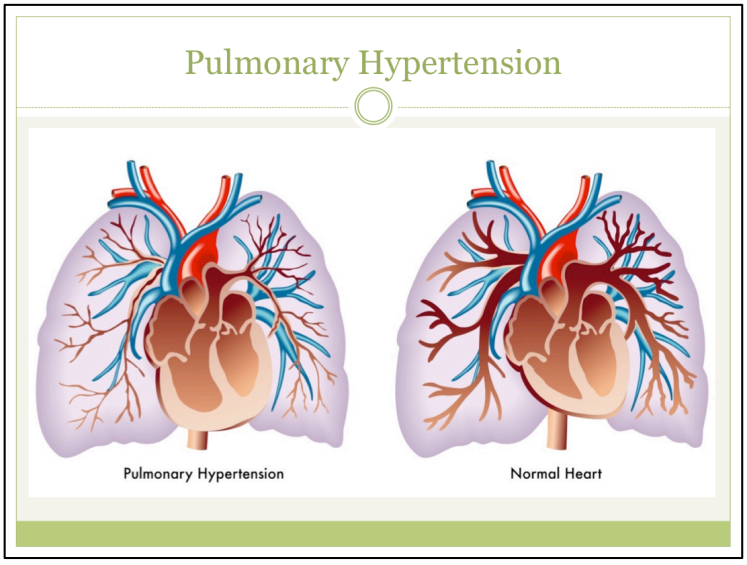


Image obtained from https://www.cdc.gov/dhdsp/data_statistics/fact_sheets/fs_pulmonary_hypertension.htm

Pulmonary hypertension is a condition characterized by increased blood pressure within the vessels of the lungs. This increased pressure leads to narrowing of the lungs arteries, decreasing blood flow and oxygen concentration. If left untreated, pulmonary hypertension can lead to heart failure or mortality.

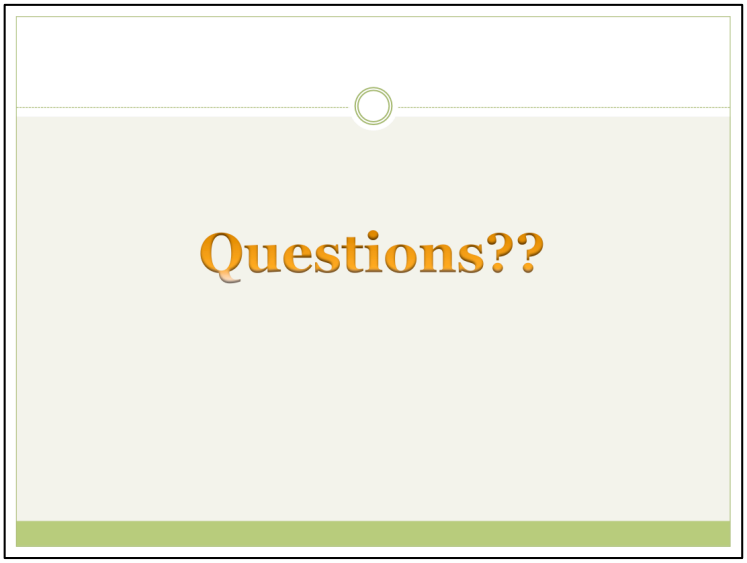
Symptoms: shortness of breath, chest pain, dizziness, fainting, cough, edema, and decreased energy
Genetics and obstructive sleep apnea are risk factors for pulmonary hypertension.

Pulmonary hypertension is not curable but treatable.

(Canadian Lung Association; Pulmonary Hypertension Association, 2017)

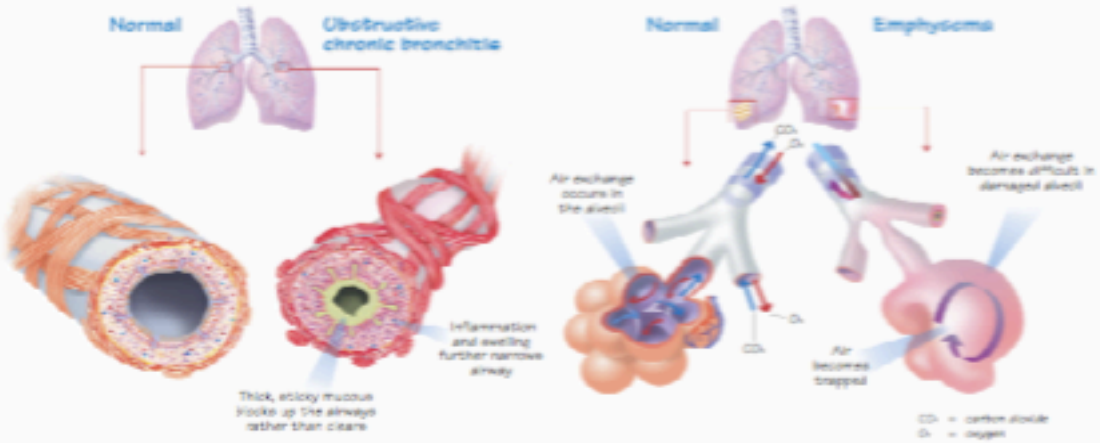
Key Messages

- COPD = Chronic (long term) Obstructive (partially blocked) Pulmonary (lung) Disease
- COPD, Pulmonary Fibrosis, Asthma, and Pulmonary Hypertension are **not curable** but are **treatable**.
- Appropriate treatment improves overall quality of life and slows disease progression.


Questions??

COPD:

OBSTRUCTIVE CHRONIC BRONCHITIS AND/OR EMPHYSEMA



Obstructive Chronic Bronchitis

Definition:

- When your airways are constantly attacked by pollutants, such as those found in cigarette smoke, they become inflamed and swollen.
- Your bronchi become filled with thick, sticky mucous. You cough and produce mucous or sputum every day.
- Later, your bronchi may become obstructed (limited airflow). Because of an airway obstruction, your lungs do not fully empty and air is trapped.
- You have obstructive chronic bronchitis.

Signs and symptoms:

- Sputum every day
- Frequent coughing
- Wheezing
- Shortness of breath when exercising or during daily activities
- Your spirometry test confirms that you have an airflow obstruction

Emphysema

Definition:

- Your bronchial tubes branch into smaller and smaller tubes, which end in millions of tiny air sacs called alveoli.
- The exchange of oxygen and carbon dioxide takes place in the alveoli.
- When your alveoli are damaged:
  - there is a loss of lung elasticity, your lungs do not fully empty and air is trapped.
  - exchange of oxygen (O_2) and carbon dioxide (CO_2) becomes more difficult, less oxygen gets into your body.
- You have emphysema.

Signs and symptoms:

- Shortness of breath when exercising or during daily activities
- Your spirometry test confirms that you have an airflow obstruction

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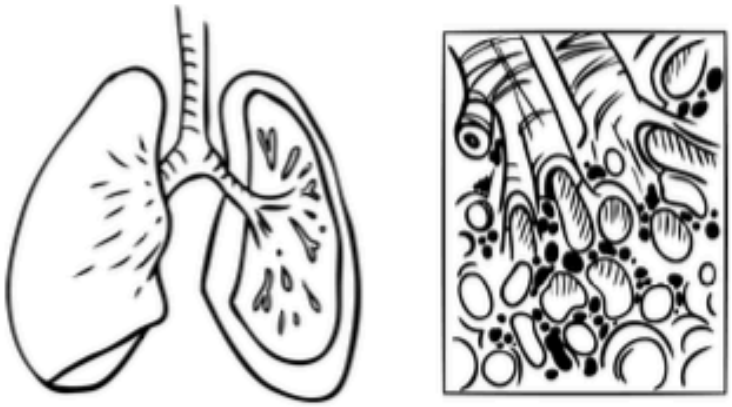
Living Well with COPD™

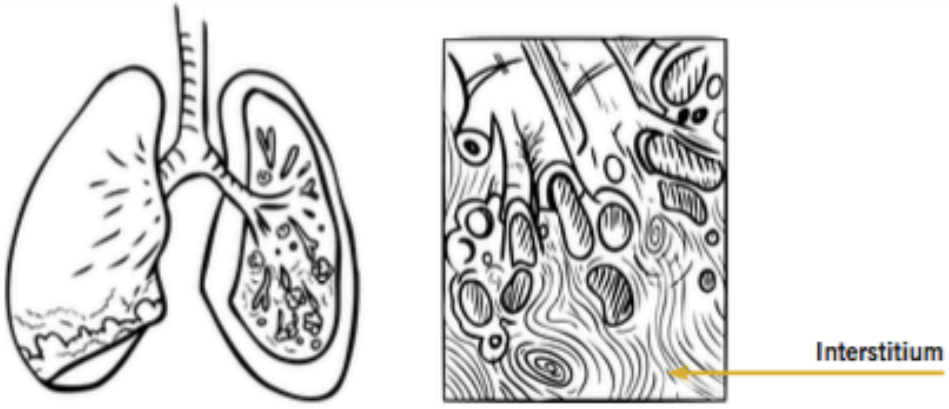
PULMONARY FIBROSIS

Pulmonary fibrosis is a disease characterized by progressive scaring in the lungs. Scar formation causes the lung interstitium (part of the lung where gas exchange occurs) to become thicker and stiffer. After you breathe in, oxygen needs to diffuse through the interstitium to reach the blood circulation. In pulmonary fibrosis, the ***thickened interstitium*** makes it harder for the oxygen to reach the blood circulation.

HEALTHY LUNG



FIBROTIC LUNG



Content and images from the program "Living Well with Pulmonary Fibrosis", J. Morisset, D. Nault, A. Savard, M. Sedeno, 1st edition (2016) www.livingwellwithpulmonaryfibrosis.com

Module 4: Managing Breathing, Energy Conservation, & Environmental Factors

Module Description

This module will identify why shortness of breath occurs in chronic lung disease, specifically related to COPD and pulmonary fibrosis. It also provides a review of chronic lung disease anatomy and physiology. Strategies to manage breathing, as well as common environmental factors that lead to acute onset of shortness of breath or exacerbation will be identified in the content.

Learning Objectives

By the end of a group education session participants will:

1. Describe how their current diagnosis causes shortness of breath.
2. Demonstrate pursed-lip breathing.
3. Demonstrate controlled coughing and huffing.
4. Share one environmental factor that aggravates their disease.

Teaching Aids/Activities

It is intended that the materials presented within this module be utilized during a one hour group education session. Various aids have been provided within the module to assist with ease of education delivery.

- Visual Aids: PowerPoint presentation containing various pictures/graph; whiteboard and markers
- Patient Activity and Handout: Lets practice! ; How to Avoid Factors that Worsen COPD
- Model: Lung models
- Potential questions for facilitated group discussion

Module Content

Chronic Lung Disease Anatomy and Physiology Review

Shortness of breath is a common symptom of many chronic lung diseases including both COPD and pulmonary fibrosis. These are the two most common diagnoses of participants enrolled in pulmonary rehabilitation.

Let's review… How does chronic lung disease cause shortness of breath? Utilization of the provided lung models may be helpful during this review.

- **Obstructive Chronic Bronchitis** results in inflammation and swelling of the lung's airways, specifically the bronchi and bronchioles. This inflammation further causes increased and excessive sputum production within the airways. Both inflammation and sputum lead to airway obstruction. This obstruction makes it difficult to move air in and out of the lungs leading to symptoms such as shortness of breath (Canadian Lung Association, 2017; Living well with COPD, 2017; Australia Lung Foundation, 2016).

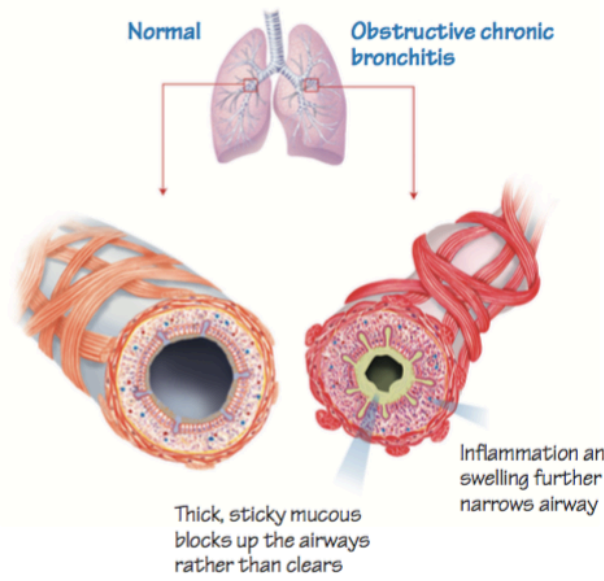


Image retrieved from www.livingwellwithcopd.com

- **Emphysema** results in damage/destruction and stiffening to the alveoli. The alveoli are the time air sacs, connected to the bronchioles, where gas exchange is conducted. In the normal lung these sacs stretch as we breathe in and out. The stiffening of the alveoli leads to air trapping, in which your lungs do not completely empty. This makes it difficult to move air in and out and prevents the exchange of oxygen and carbon dioxide leading to shortness of breath (Canadian Lung Association, 2017; Living well with COPD, 2017; Australia Lung Foundation, 2016).

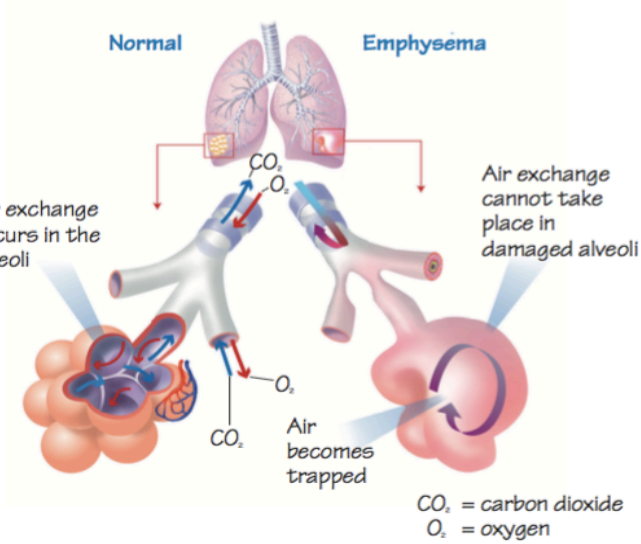
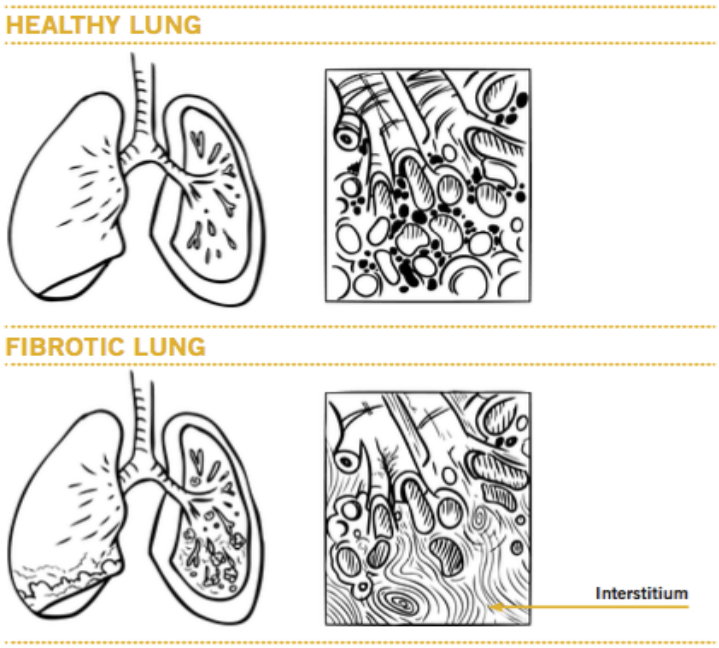


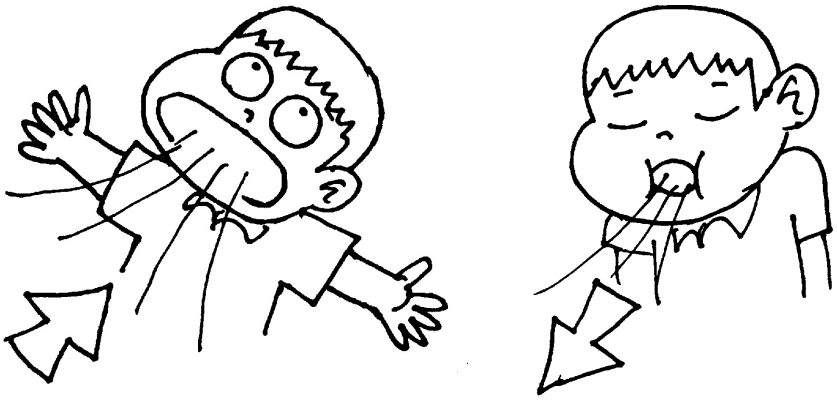
Image retrieved from www.livingwellwithcopd.com

- **Pulmonary fibrosis,** sometimes referred to as interstitial lung disease, is characterized by progressive scarring of the lungs (Living well with Pulmonary Fibrosis, 2017). In order for gas exchange to happen within the lungs, air must pass through the interstitium of the lung to reach the pulmonary circulation. Scarring of the lungs causes the interstitium to become thick and stiff, making this difficult. This leads to shortness of breath (Living Well with Pulmonary Fibrosis, 2017).



Images from the program "Living Well with Pulmonary Fibrosis", J. Morisset, D. Nault, A. Savard, M. Sedeno, 1st edition (2016) www.livingwellwithpulmonaryfibrosis.com

- Normal breathing involves two phases, **inspiration** and **expiration**. Inspiration involves the movement of air into the lungs, while expiration involves the movement of air out of the lungs (Urden et al., 2010). As we have already reviewed, chronic lung disease can have a great impact on both of these phases, leading to shortness of breath.



Images obtained from: www.clipartpanda.com

- Shortness of breath can lead to anxiety, fear, and exhaustion (COPD Foundation, 2017; Living Well with COPD, 2017). There are techniques and strategies that can be utilized to manage shortness of breath such as:
    - Pursed-lip breathing
    - Body positioning and posture
    - Coughing techniques

Before discussing materials related to the above techniques and strategies, facilitate a group discussion to answer the following question.

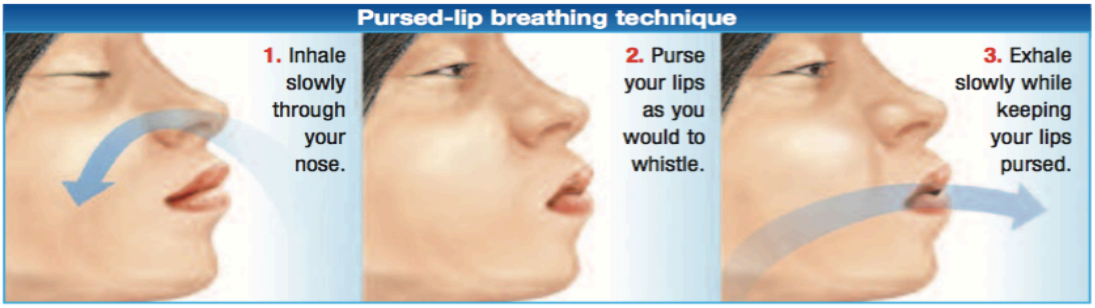
Discussion question: What techniques or strategies do you currently use to manage your shortness of breath?

- A common and effective strategy used to decrease and manage shortness of breath is **pursed-lip breathing** (Living Well with COPD, 2017; COPD Foundation, 2017). Pursed-lip breathing enables individuals to have better control over their breathing and is helpful in decreasing both respiratory rate and the workload associated with breathing. Exhalation should last twice as long as inhalation while pursed-lip breathing.

Inhale 1...2...
Exhale 1...2...3...4

- Pursed-lip breathing may be helpful during times of exertion such as while performing activities of daily living or while exercising (Living Well with COPD, 2017; COPD Foundation). During exertion, individuals should exhale with effort. For example while climbing stairs inhale while at rest or while standing still and exhale during effort or while climbing up a step.

The following image, obtained from www.livingwellwithCOPD.com, depicts the steps of pursed-lip breathing. Review steps and demonstrate pursed-lip breathing for participants.



Steps

1. Inhale slowly through your nose until you feel that your lungs are filled with air.
2. Purse your lips as you would if you were whistling or about to kiss someone.
3. Exhale slowly while keeping your lips pursed. Make sure to take longer to breathe out than you would to breathe in. Remember to keep your lips pursed.
4. **Do not force your lungs to empty.**

(Living Well with COPD, 2005, p. 11)

Patient Activity: Lets practice pursed-lip breathing!

- Changes to **body position and posture** can provide relief to or reduce oxygen demands of various accessory muscles and improve function of the diaphragm while breathing (Living Well with COPD, 2017; Canadian Lung Association, 2017).

Sitting

Sitting position A

- Place both feet on the ground
- Lean your chest forward slightly
- Rest your elbows on your knees
- Rest your chin on your hands

Sitting position B

- Place both feet on the ground
- Lean your chest forward slightly
- Rest your arms on a table
- Rest your head on a pillow

Standing

Standing position A

- Lean your chest forward slightly
- Rest your hands on your thighs

Standing position B

- Rest your elbows on a piece of furniture
- Rest your head on your forearms
- Relax your neck and shoulders

Standing position C

- Rest your hands on a piece of furniture
- Avoid "grabbing the table" while using these positions. This can overwork some of your accessory breathing muscles, and cause breathlessness if you hold the position too long.

(Living Well with COPD, 2005, p. 16)

- **Coughing techniques,** for example, controlled coughing and the huffing, can be helpful in reducing shortness of breath and also assist in removing sputum from

your lung (Cystic Fibrosis Foundation, 2017; Living Well with COPD, 2017; Australia Lung Foundation, 2016). Increased sputum production is commonly associated with chronic lung disease. It is also a risk factor for infection and exacerbation.

The following images, obtained from www.livingwellwithCOPD.com, depicts the steps of controlled coughing and huffing. Review steps and demonstrate each technique for participants.

Controlled cough technique

Goal:

- To remove sputum from your lungs while using less effort.

Benefits:

1. Prevents infections caused by increased sputum in your lungs.
2. Reduces shortness of breath caused by the sputum blocking your airways.

Points to remember:

- Avoid coughing in small fits.
- It is important to save energy.

Steps

1. Seat yourself in a comfortable position.
2. Lean your head slightly forward.
3. Place both feet firmly on the ground.
4. Inhale deeply through your nose.
5. Cough twice while keeping your mouth slightly open. The first cough will loosen your sputum. The second cough will move the sputum up into your throat. Spit the sputum out into a white tissue. Check the colour of your sputum. If there is a change in your sputum colour, follow your doctor's recommendations. If there is blood in your sputum, talk to your doctor.
6. Take a break and repeat once or twice if there are no immediate results.

(Living Well with COPD, 2005, p. 16)

"Huffing" technique

Goals:

- To remove sputum from the lungs while using less effort.
- To save energy.
- To prevent infections caused by an increase of sputum in your lungs.

Benefits:

1. Conserves your energy by helping remove sputum with an efficient technique.
2. Prevents infections caused by an increase of sputum in your lungs.

Steps

1. Seat yourself in a comfortable position.
2. Lean your head slightly forward.
3. Place both feet firmly on the ground.
4. Inhale deeply through your nose.
5. Exhale in short, non-forceful bursts while keeping your mouth open, as if you were trying to make mist on a window.
6. Repeat once or twice.

(Living Well with COPD, 2005, p. 23)

Patient Activity: Lets practice coughing techniques!

Environmental Factors

Image obtained from livingwellwithCOPD.com

Everyday we encounter various factors in the environment that may have an effect on our breathing. For individuals who do not have chronic lung disease this is something that we often do not even think about or even notice. For individuals living with chronic lung disease these factors may aggravate symptoms and lead to an acute exacerbation of their disease.

Common Environmental Factors include (Living Well with COPD, 2017):

- Indoor and outdoor pollutant such as cigarette smoke, smog, or dust etc. These factors can be avoided to prevent exacerbation.

- Changes in temperature. Unfortunately we cannot avoid changes in temperature associated with weather. We can dress appropriately in layers and stay in air-conditioned environments when possible.

- Respiratory infections. Frequent handing washing and receiving a yearly flu shot is very important for individuals living with chronic lung disease.
  - ❖ Hand washing removes microorganisms from the hands and is the most effective way to prevent the spread of disease and infection (Infection Prevention and Control Canada, 2017). You should wash your hands after being in contact with another individual (e.g. shaking hands), each time you are in contacting with secretions or other body fluids (ex. after covering your mouth while coughing or blowing your nose), and after performing personal functions (e.g. going to the bathroom). Effective hand washing can be done utilizing soap and water or an alcohol-based hand rub. If your hands are visibly soiled you should use soap and water (Infection Prevention and Control Canada)!

- Emotions. Breathing techniques can help manage shortness of breath associated with anxiety or stress.

Discussion Question: What environmental factors aggravate your lung disease?

Patient Activity: Distribute the handout "How to Avoid Factors that Worsen COPD" to participants and facilitate group discussion. (Obtained from www.livingwellwithCOPD.com)

In a previous module we discussed the overall impact of smoking and smoking cessation. Let's review…

Smoking

- Smoking is the leading cause of chronic lung disease with approximately 50% of smokers developing COPD. Smoking is further estimated to account for ten percent of deaths worldwide (Laniado-Laborin, 2009). Of importance, smoking is a preventable risk factor for chronic lung disease (CDC, 2017).

- Smoking, as well as exposure to second-hand smoke, has been found to have a negative impact on overall health and wellness. Both lead to the development of chronic lung disease and lung cancer, while also increasing risk of cardiovascular disease (CDC, 2017).

- One in five Canadians smoke (Public Health Agency of Canada, 2012).

- Quitting smoking is the most effective and economical treatment for COPD (Laniado-Laborin, 2009). Attempts to quit smoking, even if not successful, can preserve lung function.

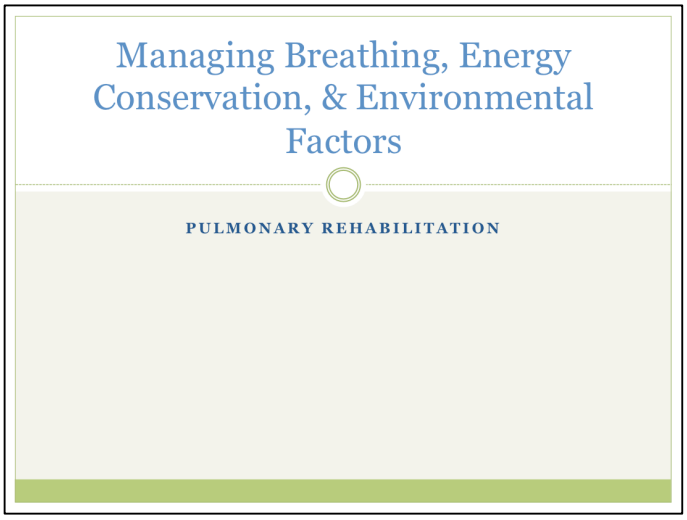
- Quitting smoking is very difficult and often requires multiple attempts and nicotine replacement therapy. Only about 2% of smokers succeed in quitting smoking without the help of NRT with approximately two-thirds relapsing in the first 48 hours (Laniado-Laborin, 2009).

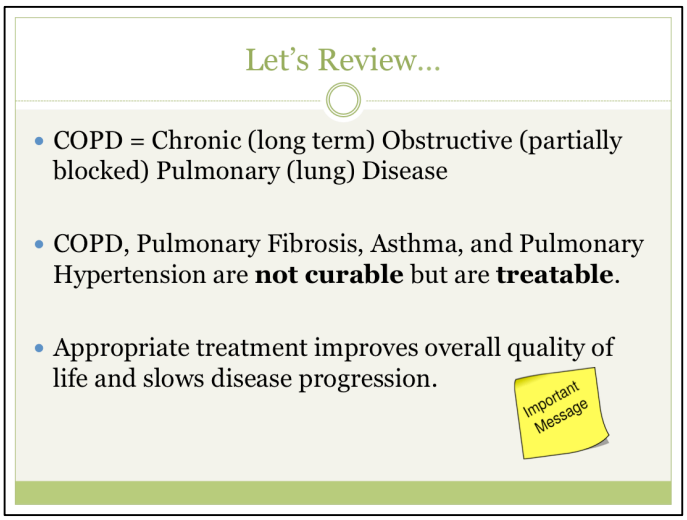
❖ *Both the RN and RT working with the program are trained in smoking cessation and can assist any participant interested in quitting smoking!*

Key Messages

❖ Shortness of breath is a common symptom of many chronic lung diseases
❖ Normal breathing involves two phases, **inspiration** and **expiration**.
❖ Shortness of breath can lead to anxiety, fear, and exhaustion. Techniques and strategies such as pursed-lip breathing, body positioning and posture, and coughing techniques can be utilized to manage shortness of breath.
❖ Various environmental factors have an impact on breathing.
❖ Smoking, as well as exposure to second-hand smoke, has been found to have a negative impact on overall health and wellness.

The following powerpoint presentation may be utilized with the above module during group education session.





Review Key Messages from previous module.

Image obtained from www.clipartpanda.com

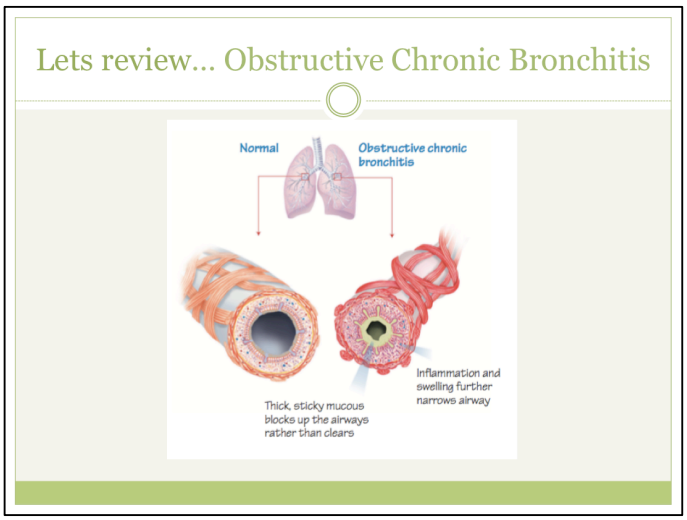
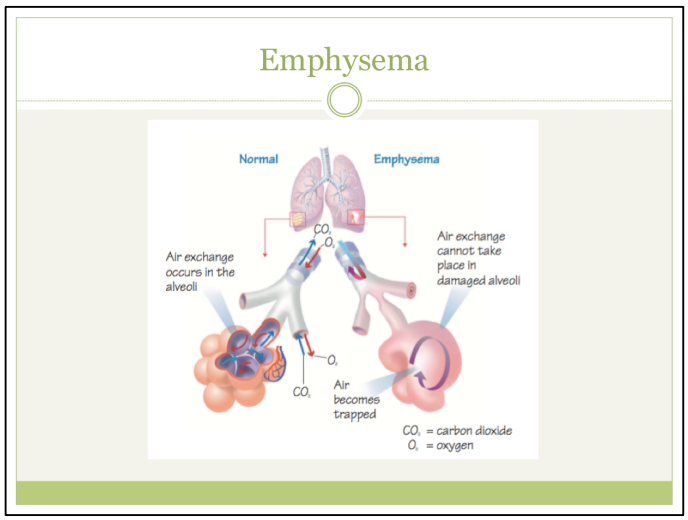


Image obtained from: www.livingwellwithCOPD.com

Obstructive Chronic Bronchitis results in inflammation and swelling of the lung's airways, specifically the bronchi and bronchioles. This inflammation further causes increased and excessive sputum production within the airways. Both inflammation and sputum lead to airway obstruction. This obstruction makes it difficult to move air in and out of the lungs leading to symptoms such as shortness of breath (Canadian Lung Association, 2017; Living well with COPD, 2017; Australia Lung Foundation, 2016).



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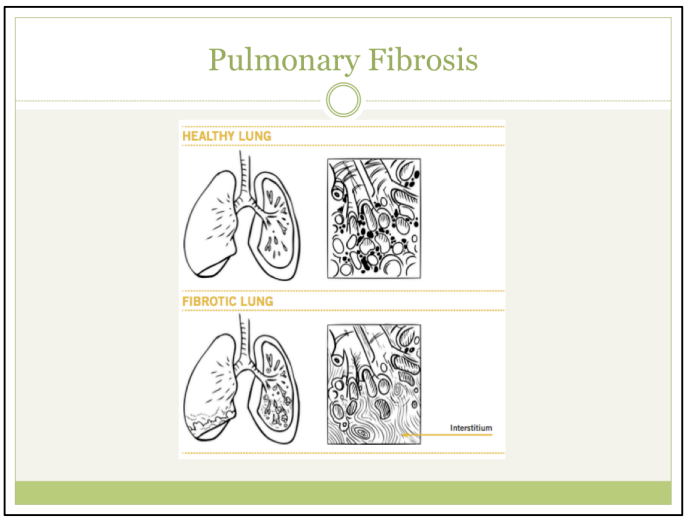

Images from the program "Living Well with Pulmonary Fibrosis", J. Morisset, D. Nault, A. Savard, M. Sedeno, 1st edition (2016) www.livingwellwithpulmonaryfibrosis.com

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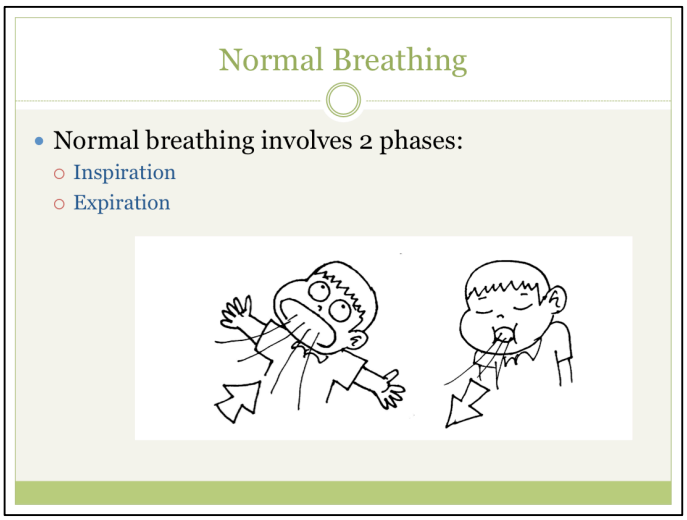

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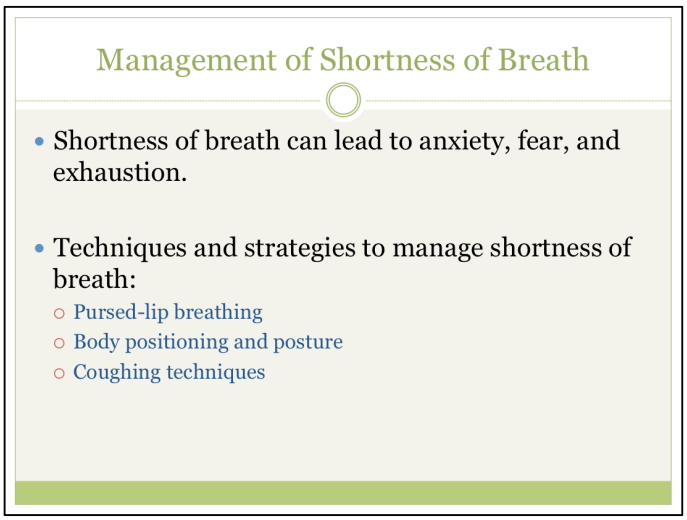
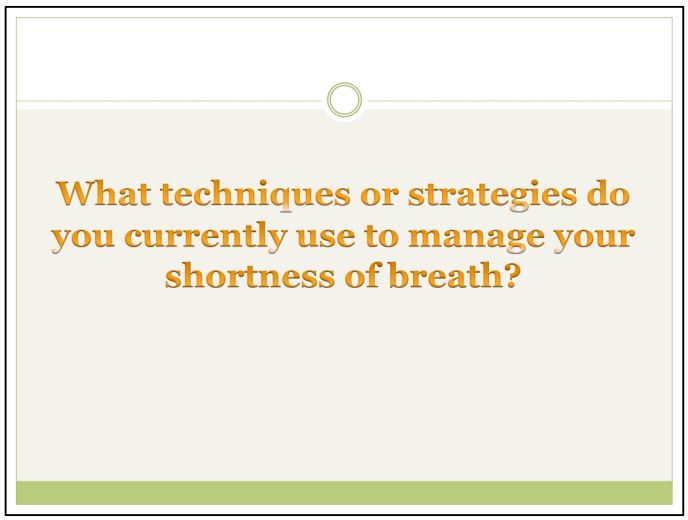
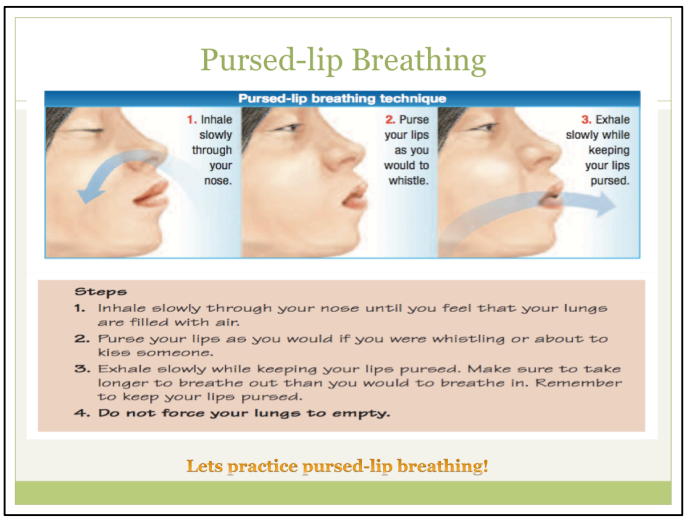


Reference: (COPD Foundation, 2017; Living Well with COPD, 2017)


What techniques or strategies do you currently use to manage your shortness of breath?



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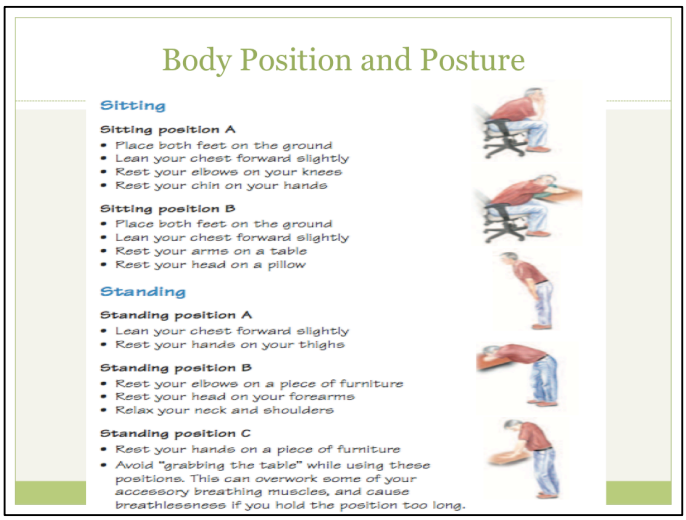
A common and effective strategy used to decrease and manage shortness of breath is **pursed-lip breathing** (Living Well with COPD, 2017; COPD Foundation, 2017). Pursed-lip breathing enables individuals to have better control over their breathing and is helpful in decreasing both respiratory rate and the workload associated with breathing. Exhalation should last twice as long as inhalation while pursed-lip breathing.

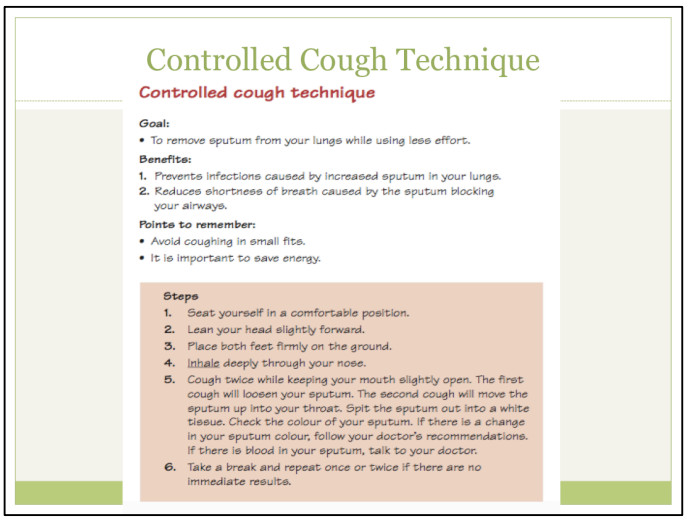
Inhale 1…2...
Exhale 1...2...3...4...

Pursed-lip breathing may be helpful during times of exertion such as while performing activities of daily living or while exercising (Living Well with COPD; COPD Foundation). During exertion, individuals should exhale with effort. For example while climbing stairs inhale while at rest or while standing still and exhale during effort or while climbing up a step.



Reference: (Living Well with COPD, 2005, p. 16)

Changes to **body position and posture** can provide relief to or reduce oxygen demands of various accessory muscles and improve function of the diaphragm while breathing (Living Well with COPD; Canadian Lung Association, 2017).



Reference: (Living Well with COPD, 2005, p. 16)

Coughing techniques, for example, controlled coughing and the huffing, can be helpful in reducing shortness of breath and also assist in removing sputum from your lung (Living Well with COPD; Australia Lung Foundation, 2016). Increased sputum production is commonly associated with chronic lung disease. It is also a risk factor for infection and exacerbation.

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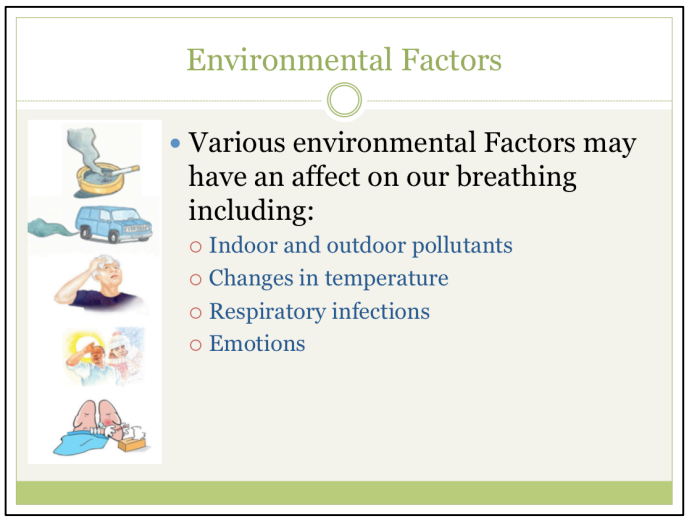


Image obtained from www.livingwellwithCOPD.com

Everyday we encounter various factors in the environment that may have an affect on our breathing. For individuals who do not have chronic lung disease this is something that we often do not even think about. For individuals living with chronic lung disease these factors may aggravate symptoms and lead to an acute exacerbation of their disease.

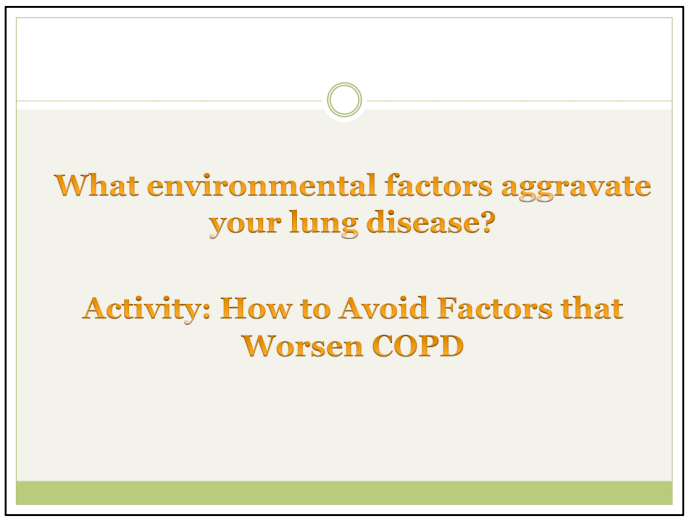
Common Environmental Factors include (Living Well with COPD):

- Indoor and outdoor pollutant such as cigarette smoke, smog, or dust etc. These factors can be avoided to prevent exacerbation.

Both the RN and RT working with the program are trained in smoking cessation and can assist any participant interested in quitting smoking!

- Changes in temperature. Unfortunately we cannot avoid changes in temperature associated with weather. We can dress appropriately in layers and stay in air-conditioned environments when possible.

- Respiratory infections. Frequent handing washing and receiving a yearly flu shot is very important for individuals living with chronic lung disease.


What environmental factors aggravate your lung disease?
Activity: How to Avoid Factors that Worsen COPD

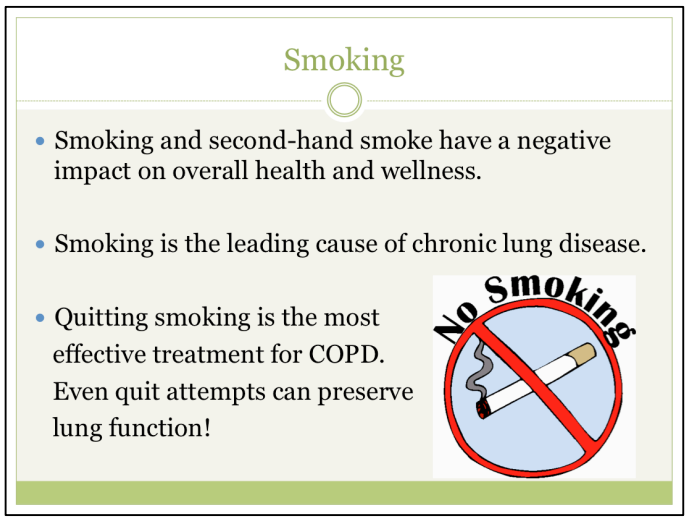


Image obtained from www.clipartpanda.com

Smoking is the leading cause of chronic lung disease with approximately 50 percent of smokers developing COPD. Smoking is further estimated to account for ten percent of deaths worldwide (Laniado-Laborin, 2009). Of importance, smoking is a preventable risk factor for chronic lung disease (CDC, 2017).

Smoking, as well as exposure to second-hand smoke, has been found to have a negative impact on overall health and wellness. Both lead to the development of chronic lung disease and lung cancer, while also increasing risk of cardiovascular disease (CDC, 2017).

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Quitting smoking is the most effective and economical treatment for COPD (Laniado-Laborin, 2009). Attempts to quit smoking, even if not successful, can preserve lung function.

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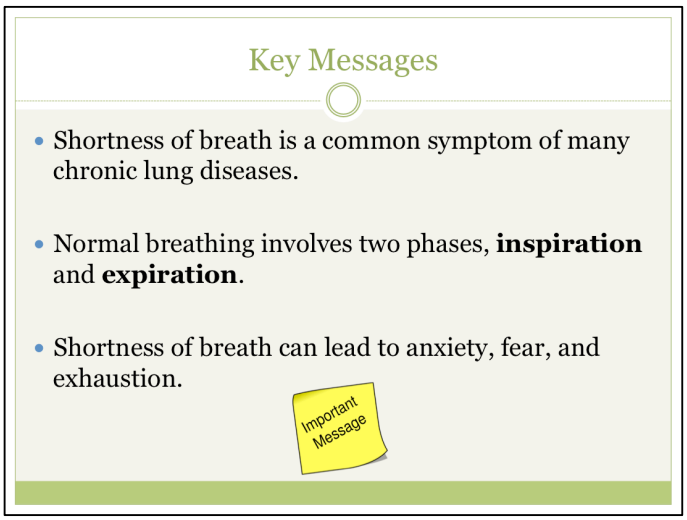
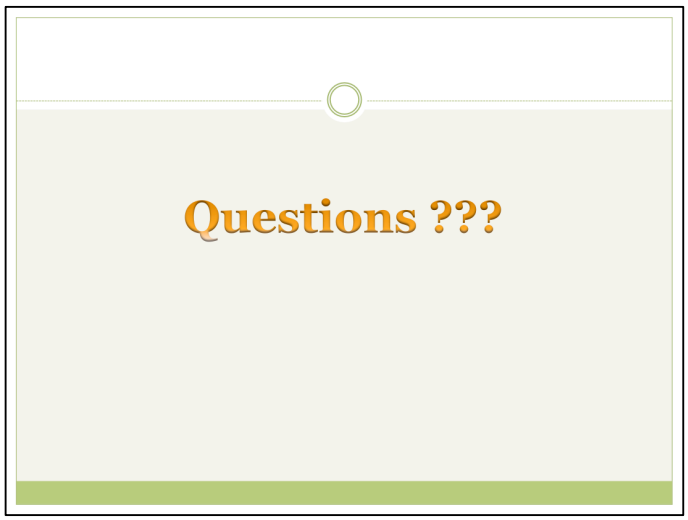


Image obtained from www.clipartpanda.com

- Pursed-lip breathing, body positioning and posture, and coughing techniques can be utilized to manage shortness of breath.
- Various environmental factors have an impact on breathing.
- Smoking, as well as exposure to second-hand smoke, has been found to have a negative impact on overall health and wellness.


Questions ???

How to avoid factors that worsen COPD symptoms

Now let us look at some of the actions you can take to reduce or avoid your exposure to those factors that make your respiratory symptoms worse

Factors that may make your respiratory symptoms worse	What you can do to reduce or avoid exposure to these factors
Indoor pollutants	
Cigarette smoke (including second-hand smoke)	
Household cleaning products	
Strong odours	
Dust	
Outdoor pollutants	
Exhaust fumes	
Gas fumes	
Smog	
Emotions	
Anger	
Anxiety	
Stress	
Changes in temperature	
Extreme heat	
Extreme cold	
Wind	
Humidity	
Respiratory infections	
Cold	
Flu	
Bronchitis	
Pneumonia	
Other factors	

Handout obtained from www.livingwellwithCOPD.com

Module 5: Puffer and Device Use

Module Description/Objectives

The module will focus on providing a description of the various types and classifications of puffers utilized in the treatment and management of chronic lung disease for individuals. A demonstration of how to administer each puffer type correctly and a brief discussion on the spacer device will be provided within the content.

Learing Objectives

By the end of a group education session participants will:

10. Demonstrate the correct administration for each of their prescribed puffers.
11. Identify the class of each of their prescribed puffers.
12. Describe two side effects of each of their prescribed puffers.

Module Teaching Aids/Activities

It is intended that the materials presented within this module be utilized during a one hour group education session. Various aids have been provided within the module to assist with ease of education delivery.

- Visual Aids: PowerPoint presentation with various pictures; whiteboard and markers
- Patient Activity and Handout: COPD and Asthma Medications handouts
- Models: placebo teaching demonstration puffers
- Videos: Eight Puffer Instructional Videos and Spacer Instructional Video (links avalible throughout module)

Image obtained from: www.livingwellwithCOPD.com

Note… this module contains a large amount of information that is essential to the treatment and management of chronic lung disease. All participants could attend the same education session for this module rather then being broken into two groups. This will allow for additional time if required to cover materials. The physical activity session for the day would subsequently be slightly shorter in duration. The Respiratory Therapist will review this information during an education session covering action plans.

Puffers

- Puffers are commonly utilized in the treatment of both COPD and asthma. Incorrect usage leads to a decrease in medication delivery, poor disease control, and increased incidence of exacerbation and hospitalization. Only about 10% of patients take their puffers correctly (National Asthma Counsel, 2016).

Note… Participants diagnosed with pulmonary fibrosis will most likely not be prescribed puffers and may choose not to attend this group education session.

Patient Activity: *Many patients may not know the name or type of puffers they are prescribed by their physician. Despite this, patients can typically identify their puffers by their appearance description of current puffers available in Canada for the treatment of both COPD and asthma.*

Instructions: To begin the group education session on Puffers and Device Use, distribute the following handouts and have patients circle the puffers they are currently prescribed. The handout may then be helpful to participants during the group education session, since they will be able to identify their specific puffer through the discussion.

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COPD MEDICATIONS

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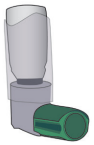
www.lung.ca

Short-Acting Bronchodilators

SAMA
(Short-Acting Muscarinic Antagonist)

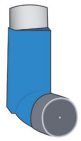
USE REGULARLY or PRN



Atrovent® MDI
(ipratropium bromide)
20 mcg/dose
Duration: 4-6h
Company: BI
*nebules also available

SABA
(Short-Acting Beta2-Agonist)

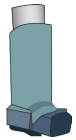
USE REGULARLY or PRN
*RESCUE MEDICATION



Airomir™ MDI
(salbutamol sulphate)
100 mcg/dose
Duration: 4-6h
Company: Valeant

Bricanyl® Turbuhaler®
(terbutaline sulphate)
0.5 mg/dose
Duration: 4-6h
Company: AZ

Ventolin® Diskus®
(salbutamol sulphate)
200 mcg/dose
Duration: 4-6h
Company: GSK



Ventolin® MDI
(salbutamol sulphate)
100 mcg/dose
Duration: 4-6h
Company: GSK
*nebules and generic brands available

Company Key:
AZ - AstraZeneca Canada Inc
BI - Boehringer Ingelheim (Canada) Ltd
GSK - GlaxoSmithKline Inc
Novartis - Novartis Pharmaceuticals Canada Inc
Takeda - Takeda Canada Inc.
Valeant - Valeant Canada

Dose = one inhalation
MDI = Metered Dose Inhaler

* Maximize drug delivery & decrease side effects by using a spacer (chamber) with metered-dose inhalers
* Video instructions found at: www.sk.lung.ca/devices
* Product information found at: www.sk.lung.ca/drugs
* Detailed information on the drugs can be found on the Canada Product Database at: http://webprod5.hc-sc.gc.ca/dpd-bdpp/index-eng.jsp
* Additional RESPTREC™ resources and most current electronic versions available at: www.sk.lung.ca/resptrec-resources
* Note: may not be a complete list of COPD medications

Long-Acting Bronchodilators

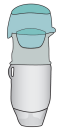
LAMA
(Long-Acting Muscarinic Antagonist)

USE REGULARLY

Incruse™ Ellipta®
(umeclidinium bromide)
62.5 mcg/dose
Duration: 24h
Company: GSK

Seebri® Breezhaler®
(glycopyrronium bromide)
50 mcg/dose
Duration: 24h
Company: Novartis

Spiriva® Handihaler®
(tiotropium bromide monohydrate)
18 mcg/dose
Duration: 24h
Company: BI

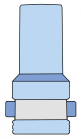


Spiriva® Respimat®
(tiotropium bromide monohydrate)
2.5 mcg/dose
Duration: 24h
Company: BI

Tudorza® Genuair®
(aclidinium bromide)
400 mcg/dose
Duration: 12h
Company: AZ

LABA
(Long-Acting Beta2-Agonist)

USE REGULARLY



Foradil® Aerolizer®
(formoterol fumarate)
12 mcg/dose
Duration: 12h
Company: Novartis

Onbrez® Breezhaler®
(indacaterol maleate)
75 mcg/dose
Duration: 24h
Company: Novartis

Serevent® Diskus®
(salmeterol xinafoate)
50 mcg/dose
Duration: 12h
Company: GSK

Striverdi® Respimat®
(olodaterol hydrochloride)
2.5 mcg/dose
Duration: 24h
Company: BI
*Approved by Health Canada but may not be available yet

Combination Inhalers

Corticosteroid and LABA

USE REGULARLY
**Gargle and spit after each use

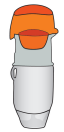
Advair® Diskus®
(fluticasone propionate/salmeterol xinafoate)
100/50; 250/50; 500/50 mcg doses
Duration: 12h
Company: GSK
*only the Advair® Diskus® has been approved for COPD use.

Breo™ Ellipta®
(fluticasone furoate/vilanterol trifenatate)
100/25 mcg/dose
Duration: 24h
Company: GSK

Symbicort® Turbuhaler®
(budesonide/formoterol fumarate)
100/6; 200/6 mcg doses
Duration: 12h
Company: AZ

SAMA and SABA

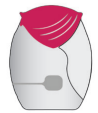
USE REGULARLY



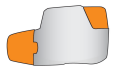
Combivent® Respimat®
(ipratropium bromide/salbutamol sulphate)
20/100 mcg/dose
Duration: 4-6h
Company: BI
*nebules also available

LAMA and LABA

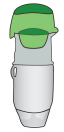
USE REGULARLY



Anoro™ Ellipta®
(umeclidinium bromide/vilanterol trifenatate)
62.5/25 mcg/dose
Duration: 24h
Company: GSK



Duaklir® Genuair®
(aclidinium bromide/formoterol fumarate dehydrate)
400/12 mcg/dose
Duration: 12h
Company: AZ



Inspiolto® Respimat®
(tiotropium bromide monohydrate/olodaterol hydrochloride)
2.5/2.5 mcg dose
Duration: 24h
Company: BI

Ultibro® Breezhaler®
(glycopyrronium bromide/ indacaterol maleate)
50/110 mcg/dose
Duration: 24h
Company: Novartis

Additional Medications

Oral Corticosteroid (OCS):
Prednisone (Apotex, Teva, Jaapharm, Pro Doc Ltée)

Methylxanthines:
(e.g. theophylline, oxtriphylline, etc.)

Phosphodiesterase-4 inhibitor:
Daxas® (roflumilast) (Takeda)

BREATHE
the lung association

RESPTREC®
RESPIRATORY TRAINING
& EDUCATOR COURSE

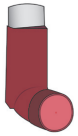
ASTHMA MEDICATIONS

www.resptrec.org
www.lung.ca

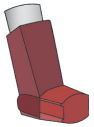
Corticosteroids

Corticosteroid

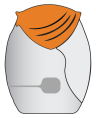
USE REGULARLY
**Gargle and spit after each use



Alvesco® MDI
(ciclesonide)
100; 200 mcg doses
Duration: 24h
Company: Takeda



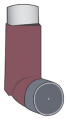
Flovent® MDI
(fluticasone propionate)
50; 125; 250 mcg doses
Duration: 12h
Company: GSK



Arnuity™ Ellipta®
(fluticasone furoate)
100; 200 mcg doses
Duration: 24h
Company: GSK

Pulmicort® Turbuhaler®
(budesonide)
100; 200; 400 mcg doses
Duration: 12h
Company: AZ
*neb also available

Asmanex™ Twisthaler™
(mometasone furoate)
100; 200; 400 mcg doses
Duration: 24h
Company: Merck



Qvar™ MDI
(beclomethasone dipropionate)
50; 100 mcg doses
Duration: 12h
Company: Valeant

Flovent® Diskus®
(fluticasone propionate)
50; 100; 250, 500 mcg doses
Duration: 12h
Company: GSK

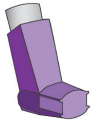
Dose = one inhalation
MDI = Metered Dose Inhaler

* Maximize drug delivery & decrease side effects by using a spacer (chamber) with metered-dose inhalers
* Refer to Product Monograph for recommended dose, which may vary by age.
* Video instructions found at: www.sk.lung.ca/devices
* Product information found at: www.sk.lung.ca/drugs
* Detailed information on the drugs can be found on the Canada Product Database at: http://webprod5.hc-sc.gc.ca/dpd-bdpp/index-eng.jsp
* Additional RESPTREC™ resources and most current electronic versions available at: www.sk.lung.ca/resptrec-resources
* Note: may not be a complete list of asthma medications

Combination Inhalers

Corticosteroid and LABA
Corticosteroid and Long-Acting Beta2-Agonist

USE REGULARLY
**Gargle and spit after each use



Advair® MDI
(fluticasone propionate/salmeterol xinafoate)
125/25; 250/25 mcg doses
Duration: 12h
Company: GSK

Breo™ Ellipta®
(fluticasone furoate/vilanterol trifenatate)
100/25; 200/25 mcg doses
Duration: 24h
Company: GSK

Advair® Diskus®
(fluticasone propionate/salmeterol xinafoate)
100/50; 250/50; 500/50 mcg doses
Duration: 12h
Company: GSK

Symbicort® Turbuhaler®
(budesonide/*formoterol fumarate)
100/6; 200/6 mcg doses
Onset: <5m
Duration: 12h
Company: AZ
*this may also be used as a reliever with regular therapy

Zenhale™ MDI
(mometasone furoate/formoterol fumarate)
50/5; 100/5; 200/5 mcg doses
Duration: 12h
Company: Merck

Additional Medications

Oral Corticosteroid (OCS):
Prednisone (Apotex, Teva, Jaapharm, Pro Doc Ltée)

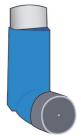
Leukotriene Receptor Antagonists (LTRA):
Accolate®
Singulair®

Anti-IgE:
Xolair®

Bronchodilators

SABA
(Short-Acting Beta2-Agonist)

PRN
*RESCUE MEDICATION
Onset within 5 min



Airomir™ MDI
(salbutamol sulphate)
100 mcg/dose
Duration: 4-6h
Company: Valeant

Bricanyl® Turbuhaler®
(terbutaline sulphate)
0.5 mg/dose
Duration: 4-6h
Company: AZ

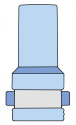
Ventolin® Diskus®
(salbutamol sulphate)
200 mcg/dose
Duration: 4-6h
Company: GSK

Ventolin® MDI
(salbutamol sulphate)
100 mcg/dose
Duration: 4-6h
Company: GSK

Company Key:
AZ – AstraZeneca Canada Inc
GSK – GlaxoSmithKline Inc
Merck – Merck Canada Inc
Novartis Pharmaceuticals Canada Inc
Takeda – Takeda Canada Inc
Valeant – Valeant Canada

LABA
(Long-acting Beta2-Agonist)

USE REGULARLY
**Never used on its own for asthma without an inhaled corticosteroid



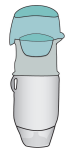
Foradil® Aerolizer®
(formoterol fumarate)
12 mcg/dose
Duration: 12h
Company: Novartis

Oxeze® Turbuhaler®
(formoterol fumarate)
6; 12 mcg doses
Duration: 12h
Company: AZ

Serevent® Diskus®
(salmeterol xinafoate)
50 mcg/dose
Duration: 12h
Company: GSK

LAMA
(Long-acting Muscarinic Antagonist

USE REGULARLY
**Never used on its own for asthma without an inhaled corticosteroid



Spiriva® Respimat®
(tiotropium bromide monohydrate)
2.5 mcg/dose
Duration: 24h
Company: BI

BREATHE
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Puffer Classifications:

Various classifications of puffers are currently available and utilized in the treatment and management of chronic lung disease including:

1. Bronchodilators

Bronchodilators dilate the bronchi and bronchioles of the lungs and relax surrounding muscles (Living Well with COPD, 2017; Australia Lung Foundation, 2016). This allows for decreased resistance within the airways and ultimately improves ventilation. Bronchodilators reduce or relieve symptoms such as shortness of breath, wheezing, or tightness in the chest. Bronchodilators can be utilized to open the airways in order to improve delivery of other inhaled medications.

Types of Bronchodilators:

- Short-Acting: can provide almost immediate symptom relief and are often used as a rescue medication.
    - SAMA (Short-Acting Muscarinic Antagonist)
    - SABA (Short-Acting Beta2-Agonist): used regularly or PRN
- Long Acting: take approximately 20 minutes to take effect and are often used as a maintenance medication.
    - LAMA (Long-Acting Muscarinic Antagonist)
    - LABA (Long-Acting Beta2-Agonist)

(Living Well with COPD, 2017; Australia Lung Foundation, 2016)

Side Effects: increased heart rate, tremors, headache, nervousness, and flushing

(Living Well with COPD, 2017)

2. Corticosteroids

Corticosteroids reduce inflammation and swelling of the bronchi and bronchioles (Living Well with COPD). They are typically used for symptom management in combination with bronchodilators.

Side Effects: thrush, sore throat, hoarse voice, bruising, and osteoporosis.

(Living Well with COPD, 2017)

Advise participants to gargle with water and spit after using corticosteroids to decrease risk of side effects such as thrush, sore throat, and hoarse voice.

3. Combination Inhalers

Various combination inhalers are available and prescribed for the treatment and management of chronic lung disease. There are combination short-acting bronchodilator puffers and combination long-acting bronchodilator and corticosteroid puffers.

Puffer Types:

- Various types of puffers are currently available and prescribed in Canada including:

  - Metered-Dose Inhaler (MDI)
  - Breezhaler
  - Diskus
  - Ellipta
  - HandiHaler
  - Genuair
  - Respimat
  - Turbuhaler

- Each puffer is administered differently. Patients require ongoing education related to puffer administration, incorporating various education methods including verbal, visual, and demonstration. This is essential in order to receive the maximum benefit of prescribed inhaled medications (Yawn, Colice, & Hodder, 2012).

- Various barriers exist that lead to both puffer misuse and non-compliance including:

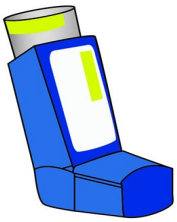
  - Lack of patient knowledge related to correct administration and low health literacy
  - Patient physical and cognitive capabilities
  - Comorbidities leading to physical limitations such as tremors, arthritis, or poor vision
  - Language barriers
  - Lack of healthcare provider knowledge related to puffer administration leading to lack of patient education
  - Cost associated with obtaining prescribed puffers

(Yawn et al., 2012)

Detailed instructions, obtained from www.livingwellwithCOPD.com, describing the utilization and care of each type of puffer will be provided below to review with participants. Link to an instructional video for each puffer type, obtained from www.sk.lung.ca, has also been provided in order to assist with ease of demonstration during the group education session.
Note: *The placebo teaching demonstration puffers could also be utilized to further demonstrate correct puffer use.*

Pictures of each puffer type below retrieved from www.sk.lung.ca.

Metered-Dose Inhaler:



TECHNIQUE

1. Remove the caps.
2. Shake the inhaler 3-4 times keeping it upright.
3. Connect the inhaler to the spacing device.
4. Tilt your head slightly back and breathe out normally.
5. Place the spacing device mouthpiece carefully between your teeth and seal your lips around it.
6. Press down canister once.
7. Breathe in slowly and deeply through your mouth.
8. **a. Single breath technique:** Try to hold your breath for 5-10 seconds or as long as is comfortable. Then breathe out normally.

   b. Tidal volume technique: If you find it difficult to take one deep breath or to hold your breath for long, breathe slowly in and out of the spacing device, 3-4 times in a row.
9. If you need more than one dose, wait 1 minute between puffs and repeat steps 2-8. Replace the protective caps.

Step 2 **Step 3** **Step 5-8**

Maintenance and Cleaning

- Clean the spacer device prior to the first use and once a week thereafter, as per the manufacturer's instructions, to avoid build up of medication residue or propulsion agent on the walls.
- Keep the spacer device in a secure place to ensure that no foreign objects will fall into the chamber.

(Living Well with COPD, 2016, p. 28)

Instructional Video: https://sk.lung.ca/lung-diseases/inhalers/videos/metered-dose-inhaler-mdi

Breezhaler:

TECHNIQUE

1. Pull off the cap.
2. **Open inhalation device:** Hold the base of the inhaler firmly and tilt the mouthpiece to open the inhalation device.
3. **Prepare capsule.**
4. **Insert capsule:** Place the capsule into the capsule chamber.
5. **Close the inhalation device.** You should hear a 'click'.
6. **Pierce the capsule.** Do not press the piercing buttons more than once.
7. Release the buttons fully.
8. **Breathe out.** Never blow into the mouthpiece.
9. Place the mouthpiece in your mouth and close your lips firmly around the mouthpiece. **Breathe in rapidly but steadily, as deeply as you can.**
10. **Note:** As you breathe in through the inhalation device, the capsule spins around in the chamber and you should hear a whirring noise.
11. **Hold your breath** for at least 5-10 seconds or as long as comfortably possible while removing the inhaler from your mouth. Then breathe out.
12. **Remove capsule:** Open the mouthpiece again, remove the empty capsule by tipping it out, and discard it. Close the inhalation device and replace the cap.
13. **Mark daily dose tracker:** Put a mark in today's box if it helps to remind you of when your next dose is due.

(Living Well with COPD, 2016, p. 29)

TECHNIQUE - continued

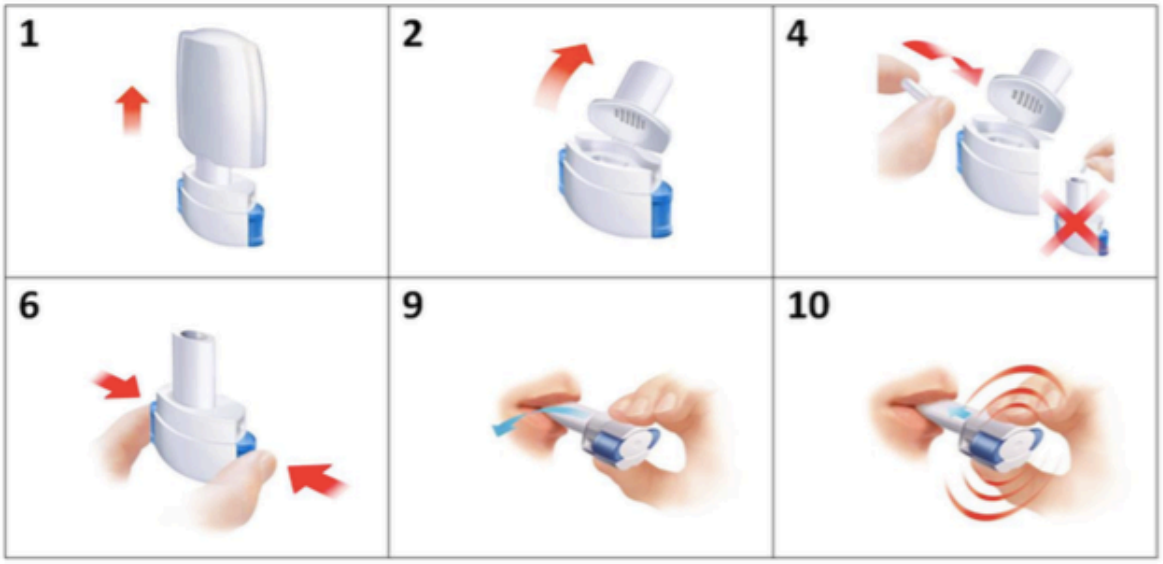


Image obtained from www.livingwellwithCOPD.com

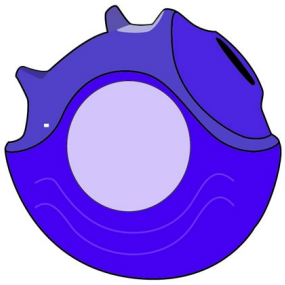
Maintenance and Cleaning

- Never wash the inhaler with water. Always keep the inhaler and capsules in a dry place.
- Always use the new inhaler that comes with your new medication pack (use a new inhaler each month).
- Do not store the capsules in the inhaler. Capsules must only be removed from the blister immediately before use.

(Living Well with COPD, 2016, p. 30)

Instructional Video: https://sk.lung.ca/lung-diseases/inhalers/videos/breezhaler

Diskus:

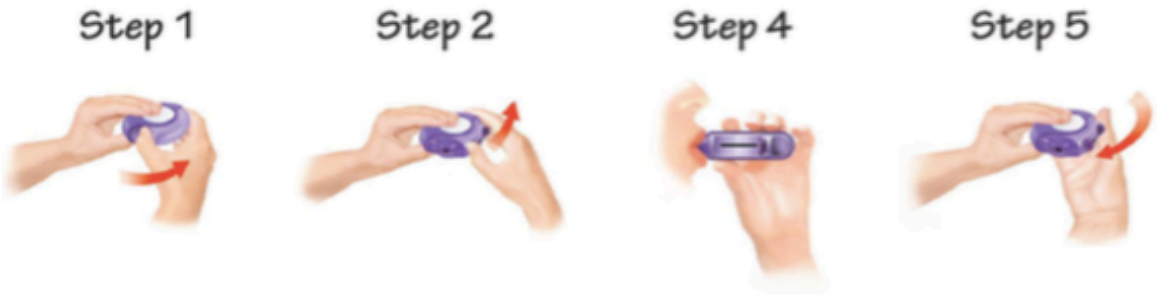


TECHNIQUE

1. **Open:** To open your inhaler hold the outer case in one hand and put the thumb of your other hand on the thumb grip. Push the thumb grip away from you, until you hear it click into place.
2. **Slide:** Hold your inhaler with the mouthpiece towards you. Slide the lever away until you hear another click. Your inhaler is now ready to use.
3. **Exhale:** Hold the inhaler away from your mouth. Breathe out as far as is comfortable. Remember – never exhale into your inhaler.
4. **Inhale:** Before you start to inhale the dose, read through this section carefully. Once you have fully exhaled, place the mouthpiece to your mouth and close your lips around it. Breathe in steadily and deeply through your mouth until a full breath is taken. Remove the inhaler from your mouth. Hold your breath for 5-10 seconds or as long as is comfortable. **Breathe out slowly.**
5. **Close:** To close your inhaler, place your thumb in the thumb grip, and slide it back until you hear a click. The lever is now automatically reset for your next use. The counter on the inhaler indicates how many doses are remaining.

(Living Well with COPD, 2016, p. 31)

TECHNIQUE - continued



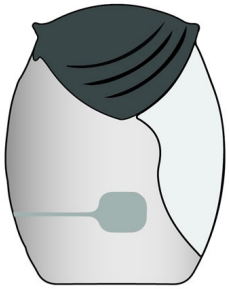
Maintenance and Cleaning

- The device has a dose counter which tells you the number of doses remaining. To show when the last five doses have been reached the numbers appear in red.
- Each dose is accurately measured and hygienically protected. The Diskus requires no maintenance, and no refilling.

(Living Well with COPD, 2016, p. 32)

Instructional Video: https://sk.lung.ca/lung-diseases/inhalers/videos/diskus

Ellipta:



TECHNIQUE

1. **Prepare:**
   a. When you take your inhaler out of its box it will be in the closed position.
   b. Keep the cover closed until you are ready to inhale a dose.
   c. When you are ready, slide the cover to the side until you hear one **'click'.**
   d. The dose counter will now count down by one number. You are now ready to inhale a dose.

2. **Inhale:**
   a. While holding the inhaler away from your mouth, breathe out as far as it is comfortable. **Remember – never exhale into your inhaler.**
   b. Put the mouthpiece between your lips, and close your lips firmly around it. Don't block the air vent with your fingers.
   c. Take one long, steady, deep breath in. Hold your breath for 5-10 seconds or as long as is comfortable.
   d. Remove the inhaler from your mouth. **Breathe out slowly.**

3. **Close:**
   a. Slide the cover upwards as far as it will go to cover the mouthpiece.

(Living Well with COPD, 2016, p. 33)

TECHNIQUE - continued

Step 1c

Step 2b

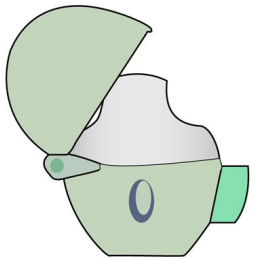
Maintenance and Cleaning

- A new inhaler shows exactly 30 doses. It counts down by 1 each time you open the cover. If you open and close the cover of your inhaler without inhaling the medicine, you will lose the dose.
- When fewer than 10 doses are left, half of the dose counter shows red, to remind you to refill your prescription. When the counter shows a full solid red background, the inhaler is empty.

(Living Well with COPD, 2016, p. 34)

Instructional Video: https://sk.lung.ca/lung-diseases/inhalers/videos/ellipta

HandiHaler:

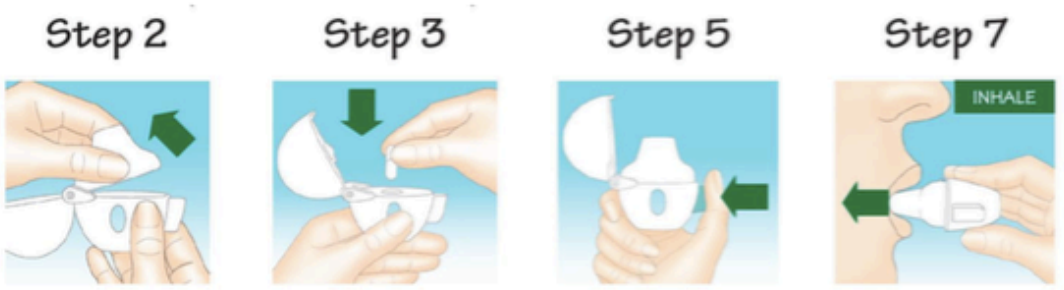


TECHNIQUE

1. To release the dust cap, press the green piercing button completely in and let go.
2. Open the dust cap completely by pulling it upwards, then open the mouthpiece by pulling it upwards.
3. **Immediately** before use, peel the aluminum back foil until one capsule if fully visible. Remove **one** capsule from the blister (do not expose more than one capsule).
4. Place the capsule in the centre chamber.
5. Close the mouthpiece **firmly until you hear a click**, leaving the dust cap open.
6. **Hold the inhaler with the mouthpiece upwards and press the green button completely in only once, and release.**
7. Breathe out completely. **Do not breathe into the mouthpiece at any time.**
8. Hold the inhaler by the grey base. **Do not block the air intake vents.** Raise the inhaler to your mouth and close your lips tightly around the mouthpiece. Keep your head in an upright position and breathe in slowly and deeply but at a rate **sufficient to hear or feel the capsule vibrate.** Breathe in until your lungs are full; then hold your breath for 5-10 seconds or as long as is comfortable and at the same time take the inhaler out of your mouth. Resume normal breathing.
9. **To ensure complete inhalation of capsule contents, you must repeat steps 7 and 8 once again.**
10. Open the mouthpiece again. Tip out the used capsule and dispose. Do not touch the used capsules. If the dry powder gets in your hands, make sure you wash your hands thoroughly.
11. Close the mouthpiece and dust cap for storage of your device.

(Living Well with COPD, 2016, p. 37)

TECHNIQUE - continued



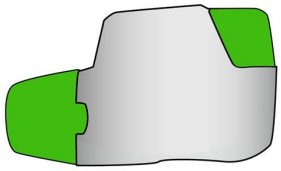
Maintenance and Cleaning

- It is important to clean the inhaler once a month, as follows: Open the dust cap and mouthpiece; open the base by lifting the piercing button; rinse the complete inhaler with warm water to remove any powder; dry the inhaler thoroughly (it takes 24 hours to air dry).
- For additional information, please consult the Consumer Information page (part III of the Product Monograph).

(Living Well with COPD, 2016, p. 38)

Instructional Video: https://sk.lung.ca/lung-diseases/inhalers/videos/handihaler

Genuair:

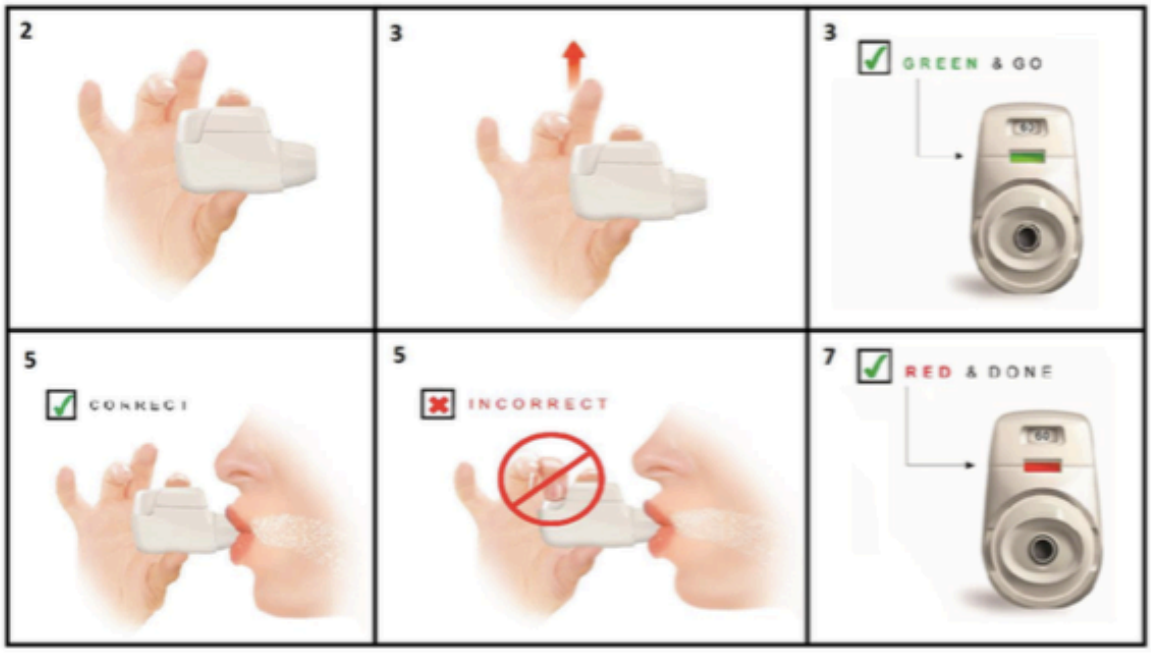


TECHNIQUE

1. Remove the protective cap by **lightly squeezing the arrows** marked on each side and pulling outwards.
2. Hold the inhaler **horizontally** with the mouthpiece towards you and the colored button facing **straight up**.
3. **Press** the colored button all the way down and **release** it. The **green** control window confirms that your medicine is ready for inhalation.
4. Breathe out away from the inhaler.
5. Place your lips tightly around the mouthpiece and inhale **strongly** and **deeply** through your mouth. The inhaler signals that you inhaled correctly by emitting a "**click**" sound. Keep breathing in even after you have heard the "**click**" to be sure you get the full dose.
6. Remove the inhaler from your mouth and hold your breath for 5-10 seconds or as long as is comfortable, then breathe out slowly.
7. Make sure the control window has turned to **red**. This confirms that you have inhaled your full dose correctly. If the colored control window is still green, repeat inhaling strongly and deeply through the mouthpiece. If the window does not change to **red**, you may have forgotten to release the green button before inhaling, or may have not inhaled correctly. If that happens, try again.
8. Replace the protective cap by pressing it back onto the mouthpiece.

(Living Well with COPD, 2016, p. 35)

TECHNIQUE – continued



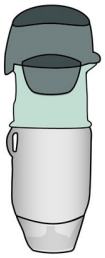
Maintenance and Cleaning

- When a **red striped band** appears in the dose indicator this means you are nearing your last dose and you should obtain a new inhaler.
- When 0 (zero) appears in the middle of the dose indicator, you should continue using any doses remaining in the inhaler.
- When the last dose has been prepared for inhalation, the green button will not return to its full upper position, but will be locked in a middle position. Even though the green button is locked, your last dose may still be inhaled. After that, the inhaler cannot be used again and you should start using a new inhaler.
- You do not need to clean your inhaler. Never use water to clean the inhaler, as this may damage your medicine.

(Living Well with COPD, 2016, p. 36)

Instructional Video: https://sk.lung.ca/lung-diseases/inhalers/videos/genuair

Respimat:



TECHNIQUE

1. Hold your inhaler upright with the cap closed.
2. **Turn** the clear base until it clicks.
3. **Open** the plastic cap until it snaps fully open.
4. Breathe out slowly and holding the inhaler level, place the mouthpiece carefully between your teeth. Seal your lips around the mouthpiece without covering the air vents.
5. While taking in a slow, deep breath, **press** the dose release button and continue to breathe in slowly.
6. Remove the inhaler from your mouth and hold your breath for about 5-10 seconds or as long as is comfortable.
7. Replace the plastic cap.

(Living Well with COPD, 2016, p. 40)

Maintenance and Cleaning

- Important: Before taking the first dose, Respimat needs to be properly assembled and prepared. Ask your pharmacist for help or follow the instructions included with the inhaler package.
- To prepare the inhaler for first-time use, hold your inhaler upright with the cap closed. Turn the clear base - in the direction of the arrows of the label - until it clicks. Open the plastic cap until it snaps fully open. Point the inhaler towards the ground, press the dose release button and close the cap. Repeat these steps until a cloud is visible and then three more times to ensure the inhaler is prepared for first use.
- If the inhaler has not been used for more than 7 days, release one puff towards the ground. Discard the inhaler 3 months after the first use even if there is still medication left.
- When the pointer enters the red area of the scale, there is medication for 7 days left. This is when you need to get a new inhaler prescription. Once the dose indicator has reached the end of the red scale the inhaler is empty and locks automatically.

(Living Well with COPD, 2016, p. 41)

Instructional Video: https://sk.lung.ca/lung-diseases/inhalers/videos/respimat

Turbuhaler:

TECHNIQUE

1. Unscrew and lift off the cover. You may hear a rattling sound. This is normal; it is the sound of the drying agent, not the medication.
2. Holding the inhaler upright, **turn the colored grip** as far as it will go in one direction (clockwise or counterclockwise, it does not matter which way you turn it first); then you must turn it back again as far as it will go in the opposite direction. Do not hold the mouthpiece when turning the grip. **The click you hear is part of the loading process.** The inhaler is now ready to use.
3. **Breathe out**, with your mouth away from the mouthpiece. Then, place the mouthpiece gently between your teeth.
4. Now close your lips over the mouthpiece. **Inhale as deeply and strongly as you can.** Remove the inhaler from your mouth and hold your breath for 5-10 seconds or as long as is comfortable. **Repeat this process from step 1 if more than one dose has been prescribed.** When you have taken the prescribed amount of maintenance doses, rinse yo

Step 3
Step 2

Step 5
Step 4

Maintenance and Cleaning

- Clean the outside of the mouthpiece once a week with a dry tissue. Never use water or any other fluid when cleaning the mouthpiece. If fluid enters the inhaler it may not work properly.
- Always replace the cover properly after use.

(Living Well with COPD, 2016, p. 39)

Instructional Video: https://sk.lung.ca/lung-diseases/inhalers/videos/turbuhaler

Spacer Device:

Spacers improve medication delivery of MDI's. Utilizing a spacer assists inhaled medications to reach your lungs rather then ending up in mouth or throat.

Metered-dose inhaler with a spacing device

TECHNIQUE

1. Remove the caps.
2. Shake the inhaler 3-4 times keeping it upright.
3. Connect the inhaler to the spacing device.
4. Tilt your head slightly back and breathe out normally.
5. Place the spacing device mouthpiece carefully between your teeth and seal your lips around it.
6. Press down canister once.
7. Breathe in slowly and deeply through your mouth.
8. a. **Single breath technique:** Try to hold your breath for 5-10 seconds or as long as is comfortable. Then breathe out normally.

   b. **Tidal volume technique:** If you find it difficult to take one deep breath or to hold your breath for long, breathe slowly in and out of the spacing device, 3-4 times in a row.
9. If you need more than one dose, wait 1 minute between puffs and repeat steps 2-8. Replace the protective caps.

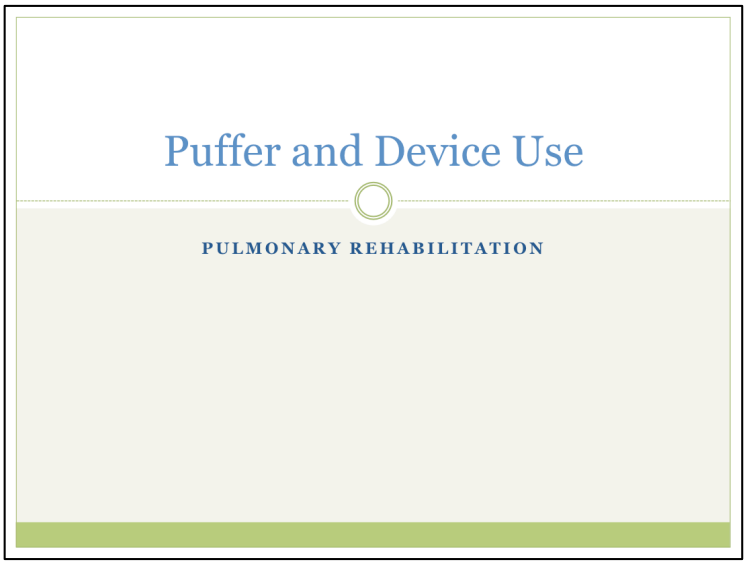
Maintenance and Cleaning

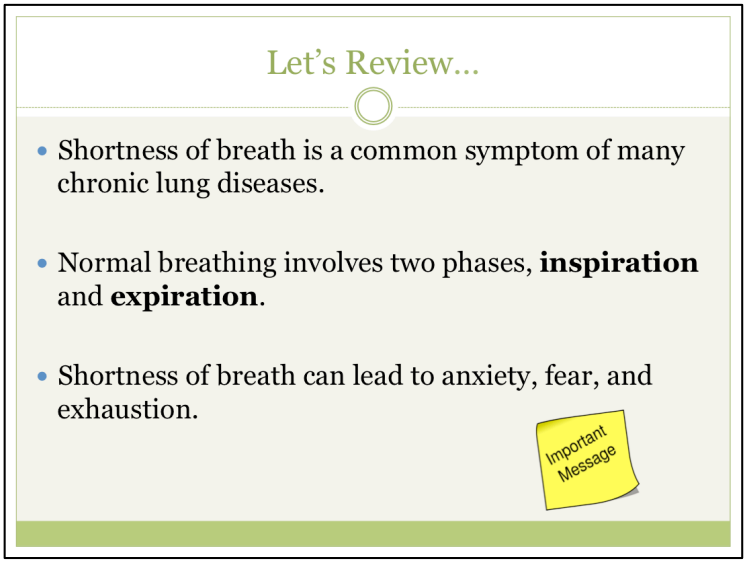
- Clean the spacer device prior to the first use and once a week thereafter, as per the manufacturer's instructions, to avoid build up of medication residue or propulsion agent on the walls.
- Keep the spacer device in a secure place to ensure that no foreign objects will fall into the chamber.

(Living Well with COPD, 2016, p. 28)

Instructional Video: https://sk.lung.ca/lung-diseases/inhalers/videos/mdi-spacer

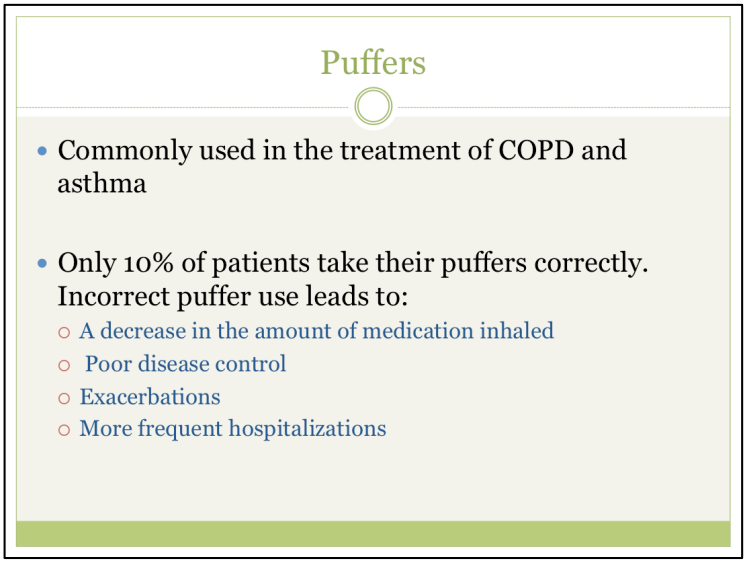
The following PowerPoint presentation may be utilized with the above module during group education session.



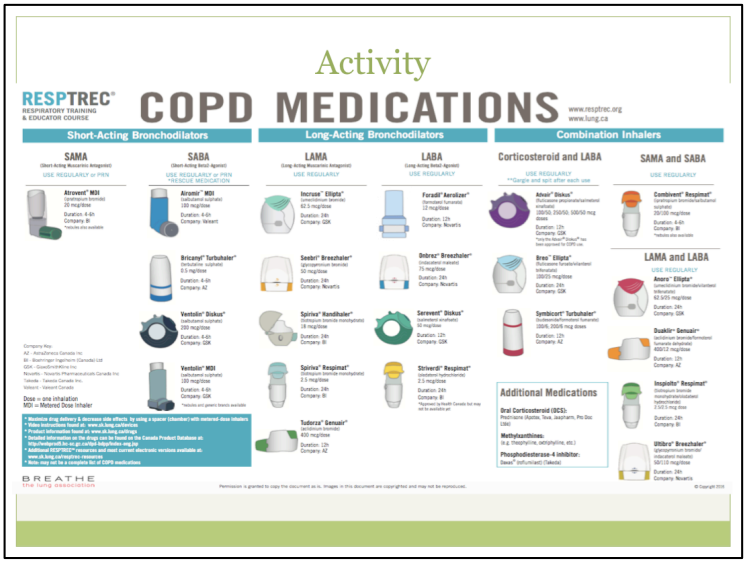


Review Key Messages from previous module.

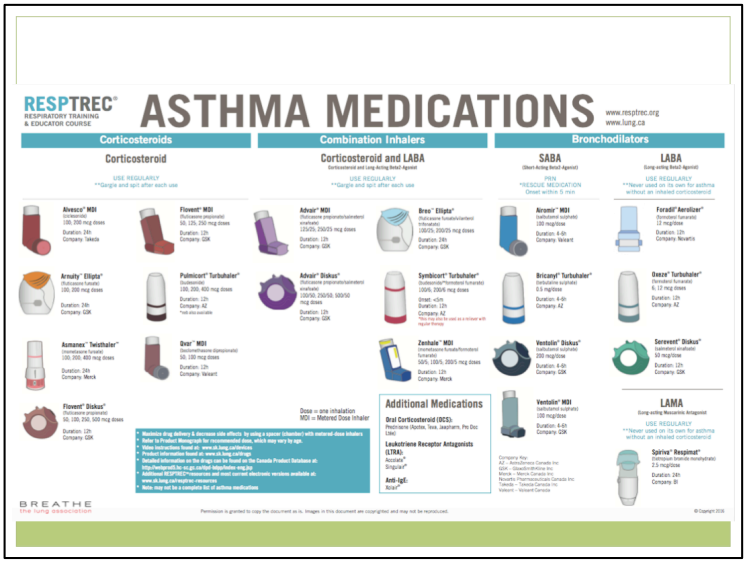
- Pursed-lip breathing, body positioning and posture, and coughing techniques can be utilized to manage shortness of breath.
- Various environmental factors have an impact on breathing.
- Smoking, as well as exposure to second-hand smoke, has been found to have a negative impact on overall health and wellness.



Reference: (National Asthma Counsel, 2016)



Patient Activity: *Many patients may not know the name or type of puffers they are prescribed. Despite this, patients can typically identify their puffers by how they look. The following two handouts, obtained from www.sk.lung.ca, provide a visual description of current puffers available in Canada for the treatment of both COPD and asthma. To begin the group education session on Puffers and Device Use, distribute the following handouts and have patients circle the puffers they are currently prescribed. The handout may then be helpful to participants during the group education session as they will be able to identify their specific puffer as they are discussed.*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Corticosteroids
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Pulmicort™ Turbuhaler®
Asmanex™ Twisthaler™
Qvar™ MDI
Flovent® Diskus®
Combination Inhalers
Corticosteroid and LABA
USE REGULARLY
**Gargle and spit after each use
Advair® MDI
Breo™ Ellipta®
Advair® Diskus®
Symbicort™ Turbuhaler®
Zenhale™ MDI
Dose = one inhalation
MDI = Metered Dose Inhaler
Additional Medications
Oral Corticosteroid (OCS):
Leukotriene Receptor Antagonists (LTRA):
Anti-IgE:
Bronchodilators
SABA
PRN
*RESCUE MEDICATION
Onset within 5 min
Airomir™ MDI
Bricanyl™ Turbuhaler®
Ventolin® Diskus®
Ventolin® MDI
LABA
USE REGULARLY
**Never used on its own for asthma without an inhaled corticosteroid
Foradil® Aerolizer®
Oxeze™ Turbuhaler®
Serevent® Diskus®
LAMA
USE REGULARLY
**Never used on its own for asthma without an inhaled corticosteroid
Spiriva® Respimat®
BREATHE
the lung association

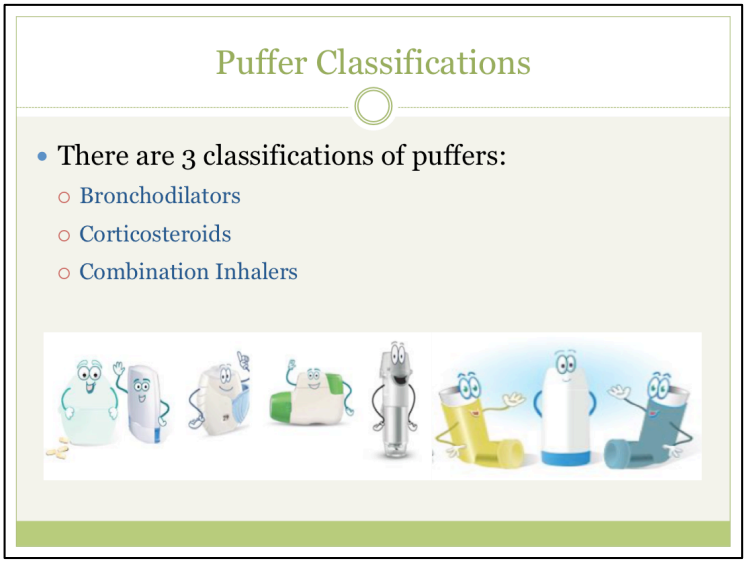


Image obtained from www.livingwellwithCOPD.com

Bronchodilators

Bronchodilators dilate the bronchi and bronchioles of the lungs and relax surrounding muscles (Living Well with COPD, 2017; Australia Lung Foundation, 2016). This allows for decreased resistance within the airways and ultimately improves ventilation. Bronchodilators reduce or relieve symptoms such as shortness of breath, wheezing, or tightness in the chest. Bronchodilators can be utilized to open the airways in order to improve delivery of other inhaled medications.

Types of Bronchodilators:
Short-Acting: can provide almost immediate symptom relief and are often used as a rescue medication.

- SAMA (Short-Acting Muscarinic Antagonist)
- SABA (Short-Acting Beta2-Agonist): used regularly or PRN

Long Acting: take approximately 20 minutes to take effect and are often used as a maintenance medication.

- LAMA (Long-Acting Muscarinic Antagonist)
- LABA (Long-Acting Beta2-Agonist)

(Living Well with COPD; Australia Lung Foundation)

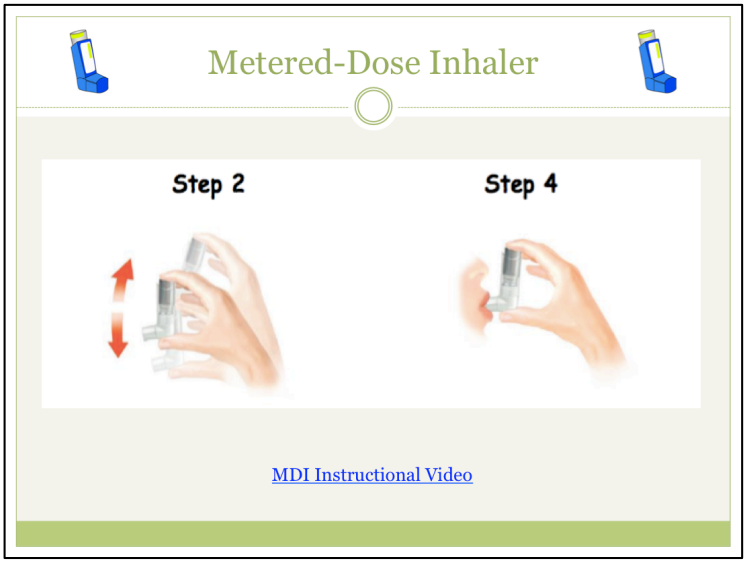


Image obtained from www.livingwellwithCOPD.com

TECHNIQUE

1. Remove the cap.
2. Shake the inhaler 3-4 times from top-down (to mix the contents well).
3. Tilt your head slightly back and exhale normally.
4. Place carefully the mouthpiece within your teeth and seal your lips around it.
5. Begin to breathe in slowly through your mouth. Press down once on the canister and continue breathing in slowly (only once to release one dose of medication).
6. Continue to breathe in slowly and deeply until your lungs are full.
7. Hold your breath for 5-10 seconds or as long as is comfortable, so the medication will have time to settle in your airways.
8. If another dose is required, wait one minute between puffs and repeat steps 2-7.
9. Replace the protective cap.

Maintenance and Cleaning

- Once a week, clean the cap and plastic container, without the canister, by soaking them in warm, soapy water, then rinsing and allowing to air-drying.
- The canister should be kept warm, away from heat sources and cold. In case of exposure to cold, roll the canister between the palms of your hands to warm it up.

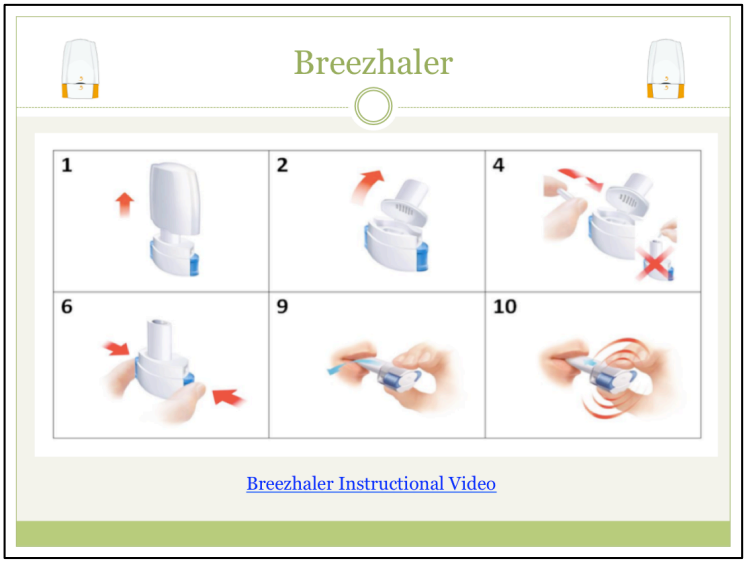


Image obtained from www.livingwellwithCOPD.com

TECHNIQUE

1. Pull off the cap.
2. Open inhalation device: Hold the base of the inhaler firmly and tilt the mouthpiece to open the inhalation device.
3. Prepare capsule.
4. Insert capsule: Place the capsule into the capsule chamber.
5. Close the inhalation device. You should hear a 'click'.
6. Pierce the capsule. Do not press the piercing buttons more than once.
7. Release the buttons fully.
8. Breathe out. Never blow into the mouthpiece.
9. Place the mouthpiece in your mouth and close your lips firmly around the mouthpiece. Breathe in rapidly but steadily, as deeply as you can.
10. Note: As you breathe in through the inhalation device, the capsule spins around in the chamber and you should hear a whirring noise.
11. Hold your breath for at least 5-10 seconds or as long as comfortably possible while removing the inhaler from your mouth. Then breathe out.
12. Remove capsule: Open the mouthpiece again, remove the empty capsule by tipping it out, and discard it. Close the inhalation device and replace the cap.
13. Mark daily dose tracker: Put a mark in today's box if it helps to remind you of

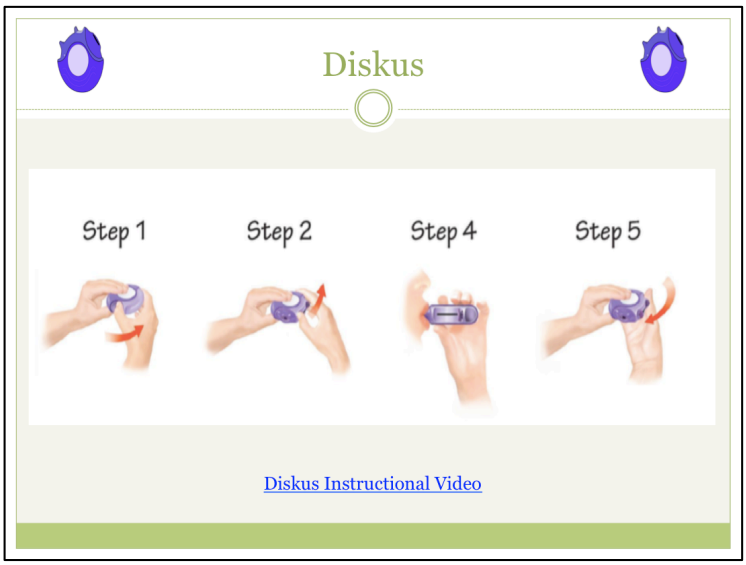


Image obtained from www.livingwellwithCOPD.com

TECHNIQUE

1. Open: To open your inhaler hold the outer case in one hand and put the thumb of your other hand on the thumb grip. Push the thumb grip away from you, until you hear it click into place.
2. Slide: Hold your inhaler with the mouthpiece towards you. Slide the lever away until you hear another click. Your inhaler is now ready to use.
3. Exhale: Hold the inhaler away from your mouth. Breathe out as far as is comfortable. Remember – never exhale into your inhaler.
4. Inhale: Before you start to inhale the dose, read through this section carefully. Once you have fully exhaled, place the mouthpiece to your mouth and close your lips around it. Breathe in steadily and deeply through your mouth until a full breath is taken. Remove the inhaler from your mouth. Hold your breath for 5-10 seconds or as long as is comfortable. Breathe out slowly.
5. Close: To close your inhaler, place your thumb in the thumb grip, and slide it back until you hear a click. The lever is now automatically reset for your next use. The counter on the inhaler indicates how many doses are remaining.

Maintenance and Cleaning

- The device has a dose counter which tells you the number of doses remaining. To

Image obtained from www.livingwellwithCOPD.com

TECHNIQUE
1. Prepare:
a. When you take your inhaler out of its box it will be in the closed position.
b. Keep the cover closed until you are ready to inhale a dose.
c. When you are ready, slide the cover to the side until you hear one 'click'.
d. The dose counter will now count down by one number. You are now ready to inhale a dose.

2. Inhale:
a. While holding the inhaler away from your mouth, breathe out as far as it is comfortable. Remember – never exhale into your inhaler.
b. Put the mouthpiece between your lips, and close your lips firmly around it. Don't block the air vent with your fingers.
c. Take one long, steady, deep breath in. Hold your breath for 5-10 seconds or as long as is comfortable. Remove the inhaler from your mouth. Breathe out slowly.

3. Close:
a. Slide the cover upwards as far as it will go to cover the mouthpiece.

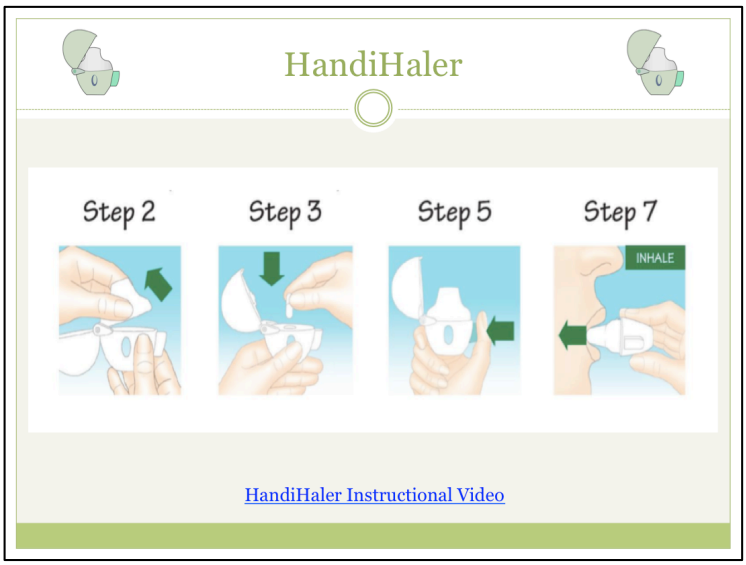


Image obtained from www.livingwellwithCOPD.com

TECHNIQUE

1. To release the dust cap, press the green piercing button completely in and let go.
2. Open the dust cap completely by pulling it upwards, then open the mouthpiece by pulling it upwards.
3. Immediately before use, peel the aluminum back foil until one capsule if fully visible. Remove one capsule from the blister (do not expose more than one capsule).
4. Place the capsule in the centre chamber.
5. Close the mouthpiece firmly until you hear a click, leaving the dust cap open.
6. Hold the inhaler with the mouthpiece upwards and press the green button completely in only once, and release.

[pick up images from BISO05 P012, High Res images please]

7. Breathe out completely. Do not breathe into the mouthpiece at any time.
8. Hold the inhaler by the grey base. Do not block the air intake vents. Raise the inhaler to your mouth and close your lips tightly around the mouthpiece. Keep your head in an upright position and breathe in slowly and deeply but at a rate sufficient to hear or feel the capsule vibrate. Breathe in until your lungs are full; then hold your breath for 5-10 seconds or as long as is comfortable and at the same time take the inhaler out of your mouth. Resume normal breathing.
9. To ensure complete inhalation of capsule contents, you must repeat steps 7 and 8

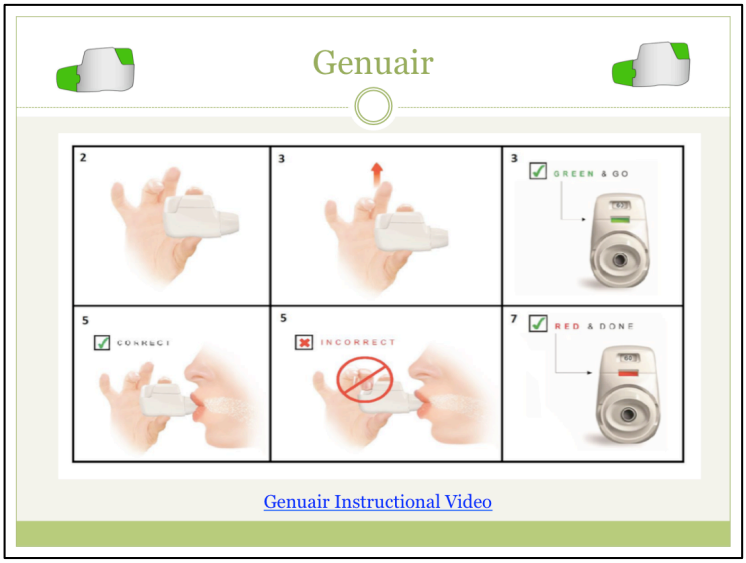


Image obtained from www.livingwellwithCOPD.com

TECHNIQUE

1. Remove the protective cap by lightly squeezing the arrows marked on each side and pulling outwards.
2. Hold the inhaler horizontally with the mouthpiece towards you and the colored button facing straight up.
3. Press the colored button all the way down and release it. The green control window confirms that your medicine is ready for inhalation.
4. Breathe out away from the inhaler.
5. Place your lips tightly around the mouthpiece and inhale strongly and deeply through your mouth. The inhaler signals that you inhaled correctly by emitting a "click" sound. Keep breathing in even after you have heard the "click" to be sure you get the full dose.
6. Remove the inhaler from your mouth and hold your breath for 5-10 seconds or as long as is comfortable, then breathe out slowly.
7. Make sure the control window has turned to red. This confirms that you have inhaled your full dose correctly. If the colored control window is still green, repeat inhaling strongly and deeply through the mouthpiece. If the window does not change to **red**, you may have forgotten to release the green button before inhaling, or may have not inhaled correctly. If that happens, try again.

Image obtained from www.livingwellwithCOPD.com

TECHNIQUE

1. Hold your inhaler upright with the cap closed.
2. Turn the clear base until it clicks.
3. Open the plastic cap until it snaps fully open.
4. Breathe out slowly and holding the inhaler level, place the mouthpiece carefully between your teeth. Seal your lips around the mouthpiece without covering the air vents.
5. While taking in a slow, deep breath, press the dose release button and continue to breathe in slowly.
6. Remove the inhaler from your mouth and hold your breath for about 5- 10 seconds or as long as is comfortable.
7. Replace the plastic cap.

Maintenance and Cleaning

- Important: Before taking the first dose, Respimat needs to be properly assembled and prepared. Ask your pharmacist for help or follow the instructions included with the inhaler package.
- To prepare the inhaler for first-time use, hold your inhaler upright with the cap closed. Turn the clear base - in the direction of the arrows of the label - until it

Image obtained from www.livingwellwithCOPD.com

TECHNIQUE

1. Unscrew and lift off the cover. You may hear a rattling sound. This is normal; it is the sound of the drying agent, not the medication.
2. Holding the inhaler upright, turn the colored grip as far as it will go in one direction (clockwise or counterclockwise, it does not matter which way you turn it first); then you must turn it back again as far as it will go in the opposite direction. Do not hold the mouthpiece when turning the grip. The click you hear is part of the loading process. The inhaler is now ready to use.
3. Breathe out, with your mouth away from the mouthpiece. Then, place the mouthpiece gently between your teeth.
4. Now close your lips over the mouthpiece. Inhale as deeply and strongly as you can. Remove the inhaler from your mouth and hold your breath for 5-10 seconds or as long as is comfortable. Repeat this process from step 1 if more than one dose has been prescribed. When you have taken the prescribed amount of maintenance doses, rinse your mouth with water, and do not swallow.

Maintenance and Cleaning

- Clean the outside of the mouthpiece once a week with a dry tissue. Never use water or any other fluid when cleaning the mouthpiece. If fluid enters the inhaler it

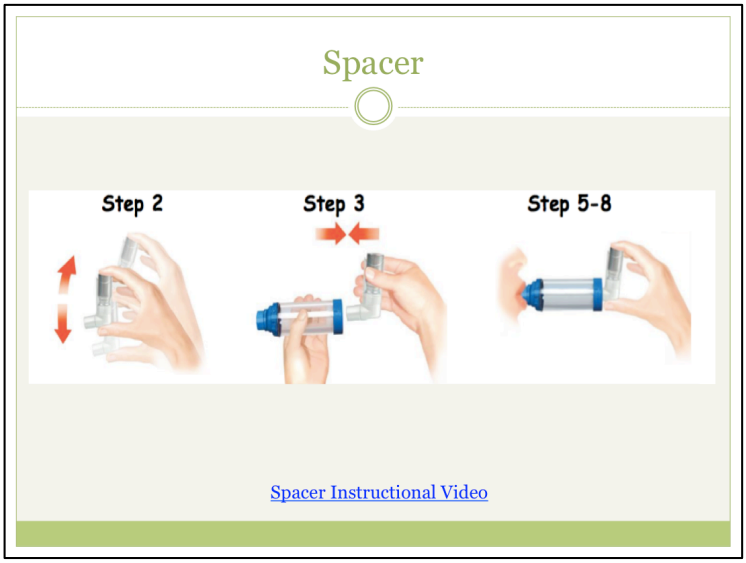


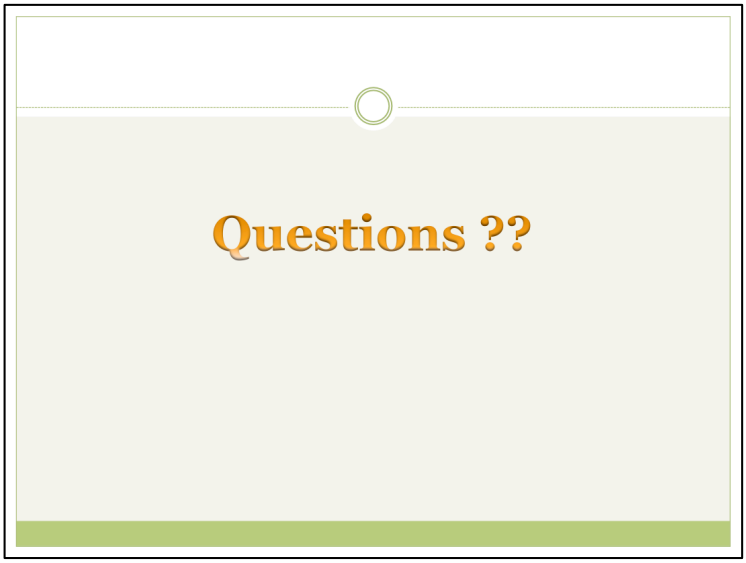
Image obtained from www.livingwellwithCOPD.com

Spacers improve medication delivery of MDI's. Utilizing a spacer assists inhaled medications to reach your lungs rather then ending up in mouth or throat.

TECHNIQUE

1. Remove the caps.
2. Shake the inhaler 3-4 times keeping it upright.
3. Connect the inhaler to the spacing device.
4. Tilt your head slightly back and breathe out normally.
5. Place the spacing device mouthpiece carefully between your teeth and seal your lips around it.
6. Press down canister once.
7. Breathe in slowly and deeply through your mouth.
8. a. Single breath technique: Try to hold your breath for 5-10 seconds or as long as is comfortable. Then breathe out normally.

   b. Tidal volume technique: If you find it difficult to take one deep breath or to hold your breath for long, breathe slowly in and out of the spacing device, 3-4 times in a row.
9. If you need more than one dose, wait 1 minute between puffs and repeat steps 2-8. Replace the protective caps.


Questions ??

Module 6: Pulmonary Medications

Module Description

This module will provide a description of various medications utilized in the treatment of chronic lung disease with the exception of puffers or device use. These medications were discussed in a previous module. It is intended that the materials presented within this module be utilized during a one-hour group education session. A PowerPoint presentation has been provided within this module to assist with ease of education delivery in the group setting.

Learning Objectives

By the end of a group education session participants will:

1. Identify one goal of medication therapy.
2. State two medications they take other than puffers that treat their chronic lung disease.
3. Identify one common side effect of each medication they take for the treatment of their chronic lung disease.
4. Differentiate between the brand name and generic name of a drug.

Teaching Aids/Activities

It is intended that the materials presented within this module be utilized during a one hour group education session. Various aids have been provided within the module to assist with ease of education delivery.

- Potential questions for facilitated group discussion
- Visual Aids: PowerPoint presentation containing various pictures/graph; whiteboard and markers
- Handout: Patient Medication List

Module Content

When we talk about pulmonary medications we commonly think of puffers but there are many other types of medications that have an effect on breathing and the pulmonary system. Puffers and device use were discussed in a previous module. Today we are going to discuss some of these other medications.

Goals of Medication Therapy Related to Chronic Lung Disease…

- Optimize lung function and slow disease progression
- Decrease symptoms such as shortness of breath
- Prevent exacerbations

All medications have a benefit or we would not take them; they also all have potential side effects!

Discussion Questions:

1. What medications, other then puffers, do you currently take to treat your chronic lung disease?
2. What medications do you take when you have an exacerbation of your condition?

Image obtained from www.livingwellwithCOPD.com

Brand Name Drugs versus Generic Drugs

What's in a name? The nomenclature of medications can be very confusing. Medications have a classification, generic name, and often one or more brand names.

Discussion Question: Who knows the name of every medication they take?

- When a drug or medication, prescription or over-the-counter, is created by a pharmaceutical company, that company gains a patent on the drug for a particular number of years to prevent other companies from producing and selling the same drug. When created, the drug is given two names: a generic name and a brand name. The generic name is the drugs scientific name whereas the brand name is a name that is intended to make the drug stand out for the purpose of marketing. For example Tylenol is a brand name and the drugs generic name is Acetaminophen. After a patent expires the company or another company can produce the same drug and sell it by its generic name. A generic drug is required to be bioequivalent (the same as) a brand name drug. A generic and brand drug have the same active ingredient, strength, dose, and route. The two may differ in appearance and cost. Generic drugs are typically 80 to 85% cheaper then brand name drugs. The company who created the brand name drug had additional costs associated with

development, research, clinical trials etc. (Food and Drug Administration, 2016; Depression and Bipolar Support Alliance, 2007)

- All drugs or medications also fall under one or more classifications. Classes contain various drugs that are similar and utilized for the same purpose. They are not identical. For example Tylenol or Acetaminophen falls under the classification of antipyretics and analgesics.

Did you know… *for any resident on Prince Edward Island (PEI), with a valid PEI Health Card, that does not have private drug insurance coverage and is under the age of 65, your medications may be covered under the Generic Drug Program. The program limits the cost of all eligible generic prescriptions to a maximum of $19.95.*
For more information or to apply: https://www.princeedwardisland.ca/en/service/apply-generic-drug-program

Types of Medications

Distribute Patient Medication List Handout.

Within this module, the follow medications/medication classes will be discussed:

- ❖ Oral anti-inflammatory
- ❖ Antibiotics
- ❖ Anti-anxiety medications
- ❖ Diuretics
- ❖ Opioids
- ❖ Proton Pump Inhibitors
- ❖ Daxas
- ❖ Esbriet and Ofev
- ❖ Vaccines

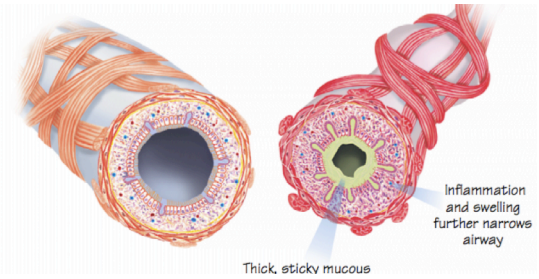


Image obtained from www.livingwellwithCOPD.com

Oral Anti-Inflammatory Medications

- Most common: Prednisone
- Some patients with COPD many be on a maintenance dose of an oral anti-inflammatory medication daily and also have an increased dose as part of their action plan during episode of exacerbation. Typically taken in increased dose for five to 14 days during exacerbation. Individuals with pulmonary fibrosis may take oral anti-inflammatory medications short term during exacerbation.
- Many chronic lung diseases are associated with inflammation of the airways. Oral anti-inflammatory medications prevent and reduce inflammation of the airways.

They are also used to: prevent exacerbations, decrease inflammation, and suppress the immune system.

- Used in the treatment of both COPD and pulmonary fibrosis.
- Common side effects include: headache, weight gain, thinning and bruising of the skin, hair growth, increased susceptibility to infections, and osteoporosis.
- Oral anti-inflammatory medications do not provide a quick response and are not used as rescue therapy.

(Australia Lung Foundation, 2016; Living Well with COPD, 2017)

Antibiotics:

- Used to treat **bacterial** respiratory infections, will have no effect on viral infections.
- Antibiotics are typically part of the COPD action plan. You should start your antibiotic if your sputum changes color. During exacerbation individuals with pulmonary fibrosis are often prescribed antibiotics as well.
- It is important to take your entire prescription even if you are feeling better. Stopping your antibiotic before the last dose can cause bacterial adapting and resistance to antibiotics.

(Australia Lung Foundation, 2016;Living Well with COPD, 2017; Living well with Pulmonary Fibrosis, 2017)

Image obtained from www.clipartpanda.com

Anti-Anxiety Medications:

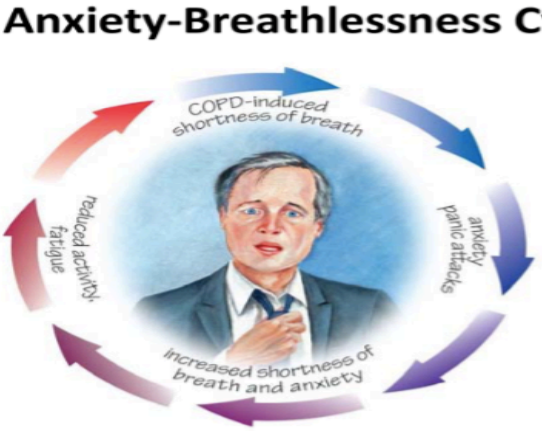


Image obtained from www.livingwellwithCOPD.com

- There is an association between chronic lung disease and anxiety. This can be visualized in the above Anxiety-Breathlessness Cycle. Chronic lung disease leads to shortness of breath, shortness of breath leads to anxiety and panic, anxiety and panic worsen shortness of breath, ultimately leading to breathlessness and fatigue as the cycle continues (Living Well with COPD, 2017).

- Most common: Benzodiazepines such as Ativan or Valium (generic name "pam")

- Benzodiazepines work by slowing down the nervous system and helping you relax. They can have a sedating effect. Older adults may be more sensitive to the sedating effects. The most commonly reported side effect is drowsiness. If taken regularly this can lead to physical dependence. Benzodiazepines are typically prescribed to individuals with chronic lung disease for the treatment of insomnia, anxiety/depression, and dyspnea. Current research links benzodiazepines to adverse physiological respiratory outcomes (Vozoris et al., 2013).

Diuretics:

- Most common: Lasix
- Used to treat heart failure, hypertension, renal failure, and pulmonary congestion.
- Not a treatment for COPD of pulmonary fibrosis but a treatment of complications of chronic lung disease. Used as a rescue treatment.

Opioids:

- Most common: Morphine
- Typically prescribed for pain. Sometimes prescribed for end stage lung disease in low does to reduce shortness of breath and anxiety.
- Chronic dyspnea and breathlessness experienced at rest or with minimal exertion, despite optimal treatment, can be safely reduced with low does opioids (Allcroft et al., 2013). The mechanism of action is not fully understood but it is thought that opioids diminish the response to elevated CO2 levels and hypoxia, decreasing shortness of breath, and to cause vasodilation.

Proton Pump Inhibitors (PPI):

- Most common: Pantoloc, Prevacid, Nexium
- Gastroesophageal reflux disease (GERD) causes acid from the stomach to back up into the throat. When we breathe some of this acid may enter the lungs causing damage. The mechanism of action is not fully understood but many individuals with pulmonary fibrosis also have GERD.
- PPI's reduce the production of acid in your stomach and subsequently protect your lungs.

(Living well with Pulmonary Fibrosis)

Esbriet and Ofer (anti-fibrotics):

- Used in the treatment of pulmonary fibrosis (a newer medication).
- Do not repair scar tissue that has already formed but may help slow the progression of future scarring.
- Common side effects: nausea, diarrhea, rash, and liver failure

(Canadian Pulmonary Fibrosis Foundation, 2017, Living well with Pulmonary Fibrosis)

Image obtained from www.www.livingwellwithCOPD.com

Daxas (phosphodiesterase 4 enzyme inhibitor):

- Used in the treatment of COPD (a newer medication)
- Used as an add on to a bronchodilator for the maintenance of severe COPD. Not used as a rescue medication during acute exacerbations
- Reduces exacerbations and improves lung function.
- Common side effects: nausea, diarrhea, weight loss, abdominal pain, and headache.

(Takeda Pharmaceuticals International, 2014)

Image obtained from www.clipartpanda.com

Vaccines:

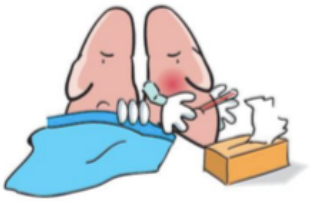
- Flu Vaccine
  - Recommended for individuals with chronic lung disease yearly
  - Approximately 10-20% of the population are infected with influenza annually
  - Influenza is a respiratory infection that is typically caused by influenza A or B virus occurring in the fall or winter months yearly
  - The flu shot does not cause the flu!!
  - Common symptoms: fever, muscle aches, cough, chills, throat irritation
  - A complication of influenza is worsening of underlying conditions such as chronic lung disease

(Health PEI, 2016; Government of Canada, 2015)

- Pneumonia Vaccine

    - Recommended for individuals with chronic lung disease
    - Prevents illness caused by pneumococcus bacteria
    - Frequency decided by your physician and provincial regulations; typically one dose at over 65 years of age

(Government of Canada, 2015)



Medication Compliance

Does everyone remember talking about medication compliance during Module 1? It was one of the components of Keeping a Healthy Lifestyle.

Approximately 50% of Canadians do not take their prescription medications as prescribed!! Medication non-compliance is the cause of 10% of all hospital admissions (Canadian Society of Hospital Pharmacists, 2017).

- Poor medication compliance increases incidence of hospitalizations and morbidity. Improved compliance to current medications therapies may in fact have a great impact on overall quality of life and well being than improvement in medical therapies (Brown & Bussell, 2011).

- Compliance to medications is not solely the responsibility of the patient. Healthcare professionals have a responsibly to provide adequate education and access. Patient education is essential for improvement in medication compliance (Brown & Bussell, 2011).

- Various factors influence medication compliance including:
    - Lack of understanding of disease process
    - Lack of involvement in decision making related to treatment options
    - Suboptimal health literacy
    - Previous experience
    - Lack of motivation
    - Low socioeconomic status
    - Ineffective communication between patients and healthcare practitioners
    - Inadequacies in recognizing financial burden to patient
    - Limitations surrounding access to care
    - Lack of health information technology

(Brown & Bussell, 2011)

What should I know about my medications?

It is important to be informed about the medications that you take. You should know:

- The name and dose of each medication you take
- What each medication does
- The time you should take each medication and how often
- The possible side effects of your medications
- What to do it you miss or forget to take a dose
- What as needed or PRN means
- If the medication should be taken with food
- How other medications may interfere

(US Food & Drug Administration, 2015; Living Well with COPD, 2017)

Discussion Question: Who knows all of these things about every medication they take?

Tips:

- *Keep a med list in your purse, wallet, or on your cell phone.*
- *Make an appointment with your community pharmacist to discuss your individual medications.*

Module Key Messages

- Taking medications as prescribed optimizes lung function and slow disease progression
- Medications can reduce symptoms of chronic lung disease
- Medications have a classification, generic name, and brand name
- Many medications, other then puffers, are used to treat chronic lung disease
- Know your medications – keep a list with you
- About 50% of Canadians do not take their medications as prescribed!

The following powerpoint presentation may be utilized with the above module during group education session.

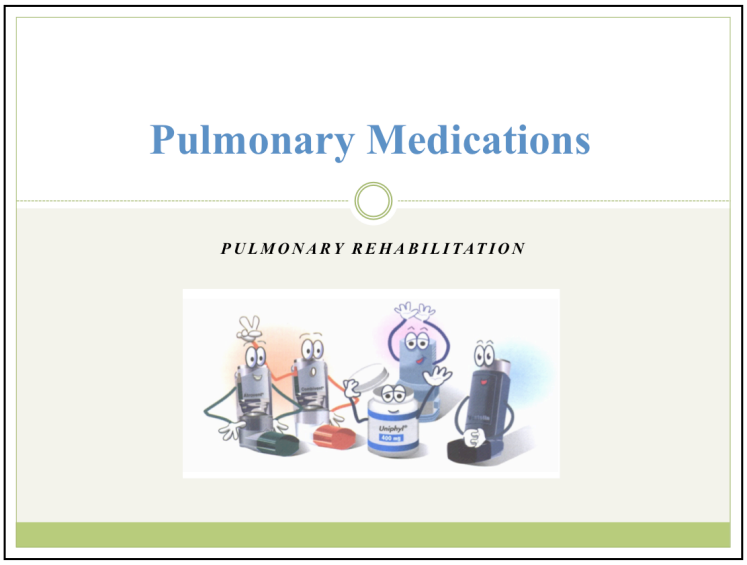


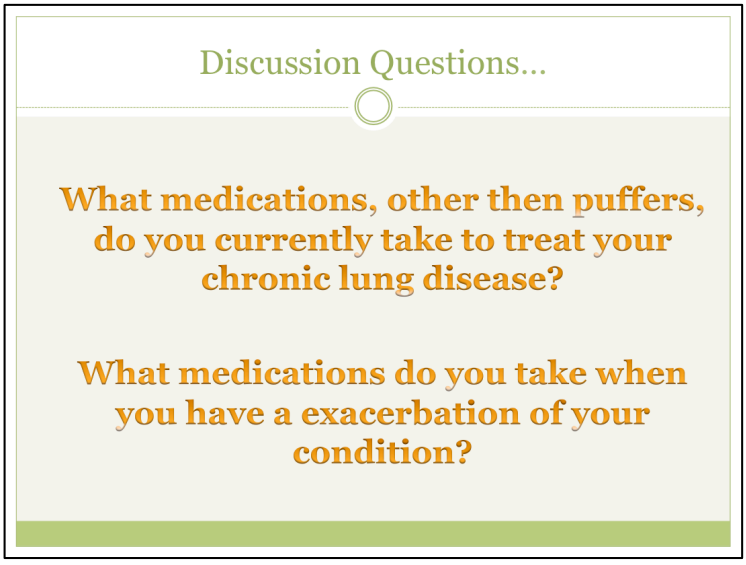
Image obtained from www.LivingWellwithCOPD.com

When we talk about pulmonary medications we commonly think of puffers but there are many other types of medications that have an effect on your breathing and respiratory system. You have already learned about puffers during a previous presentation. Today we are going to discuss some of these other medications that are utilized in the treatment of chronic lung disease.

Medication Therapy

- **Goals**:
  - Optimize lung function and slow disease progression
  - Decrease shortness of breath
  - Prevent exacerbations

Image obtained from www.clipartpanda.com


Discussion Questions…
What medications, other then puffers, do you currently take to treat your chronic lung disease?
What medications do you take when you have a exacerbation of your condition?

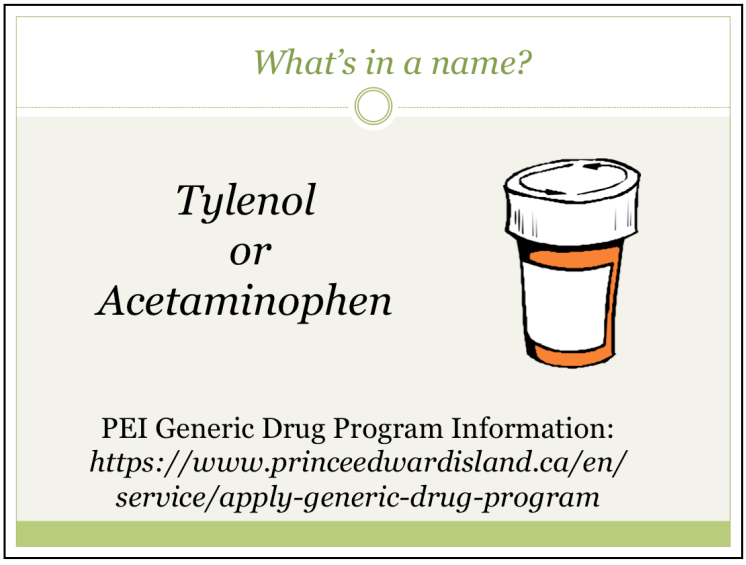


Image obtained from www.clipartpanda.com

When a drug or medication, prescription or over-the-counter, is created by a pharmaceutical company, that company gains a patent on the drug for a particular number of years to prevent other companies from producing and selling the same drug. When created, the drug is given two names: a generic name and a brand name. The generic name is the drugs scientific name whereas the brand name is a name that is intended to make the drug stand out for the purpose of marketing. For example Tylenol is a brand name and the drugs generic name is Acetaminophen. After a patent expires the company or another company can produce the same drug and sell it by its generic name. A generic drug is required to be bioequivalent (the same as) a brand name drug. A generic and brand drug have the same active ingredient, strength, dose, and route. The two may differ in appearance and cost. Generic drugs are typically 80 to 85% cheaper then brand name drugs. The company who created the brand name drug had additional costs associated with development, research, clinical trials etc. (Food and Drug Administration, 2016; Depression and Bipolar Support Alliance, 2007)

All drugs or medications also fall under one or more classifications. Classes contain various drugs that are similar and utilized for the same purpose. They are not identical. For example Tylenol or Acetaminophen falls under the classification of

Types of Medications

- Oral Anti-Inflammatory (Prednisone)
- Antibiotics
- Anti-Anxiety Medications
- Diuretics (Lasix)
- Morphine
- Daxas
- Esbriet and Ofev
- Vaccines

Image obtained from www.clipartpanda.com

Note: All medications have a benefit or we would not take them; they also all have potential side effects!

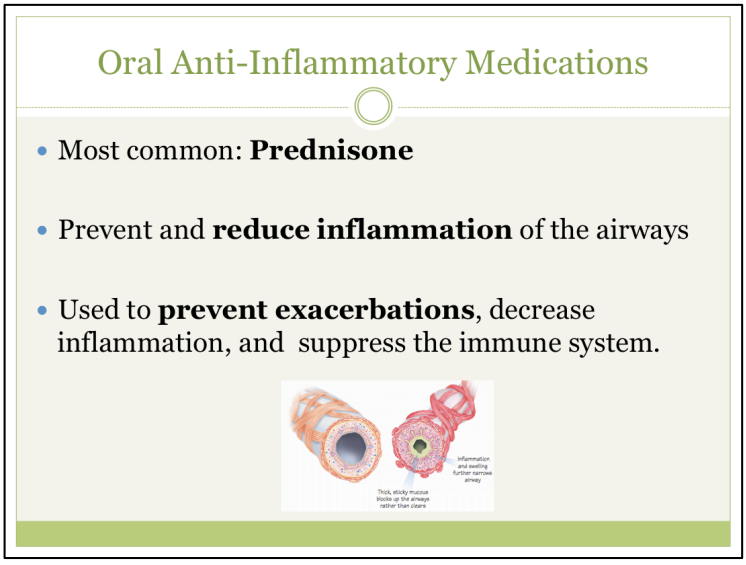


Image obtained from www.livingwellwithCOPD.com

Used for patients with both COPD and pulmonary fibrosis.

During episodes of exacerbation or illness dose may be increased for 5-14 days.

Oral medications do not provide quick relief and are not used as a rescue therapy.

Oral Anti-Inflammatory Medications

- Common **side effects**:
  - Headache
  - Weight gain
  - Thinning and bruising of the skin
  - Hair growth
  - Glucose intolerance
  - HTN
  - Increased susceptibility to infections
  - Osteoporosis

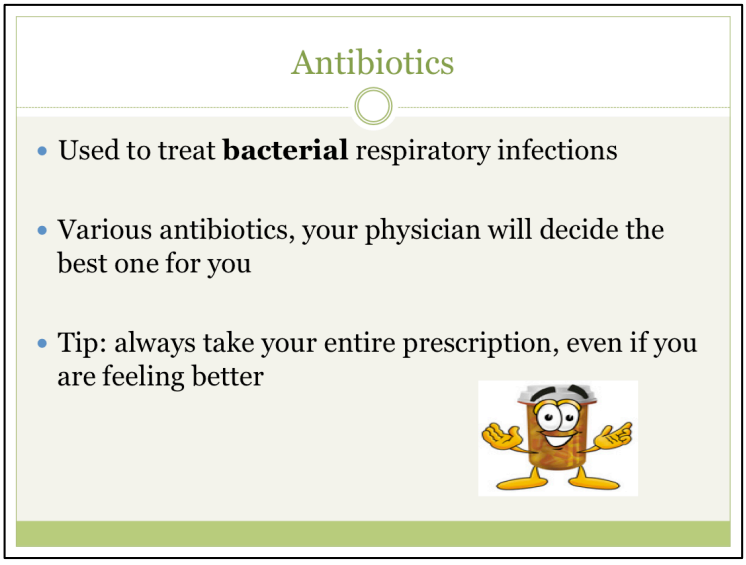
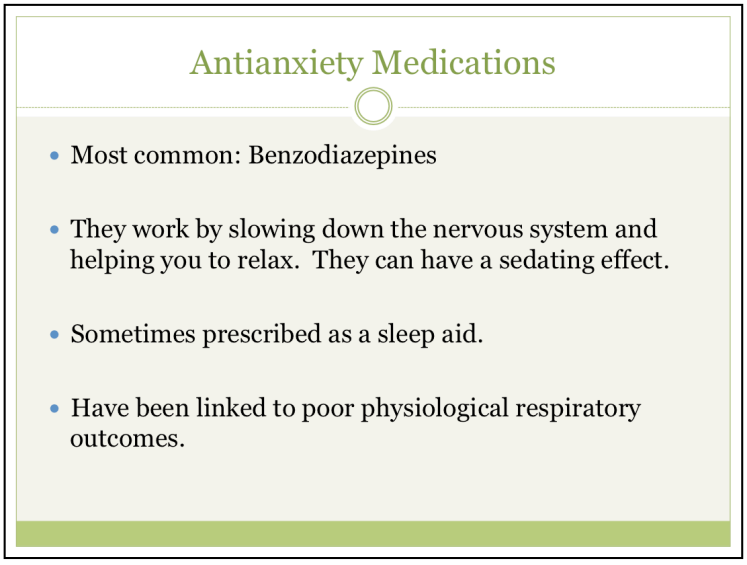


Image obtained from www.clipartpanda.com

Used to treat bacterial respiratory infections. Antibiotics have no effect on viral infections, this is why you typically are instructed to only start your antibiotic of your COPD action plan if your sputum changes color. During exacerbation, individuals with PF are often also prescribed antibiotic therapy.

Stopping your antibiotic before the last does can cause bacteria adapting and resistance to antibiotics.



Generic name typically ends in “pam”; clonazepam, diazepam (Valium), or lorazepam (Ativan)

Caution:

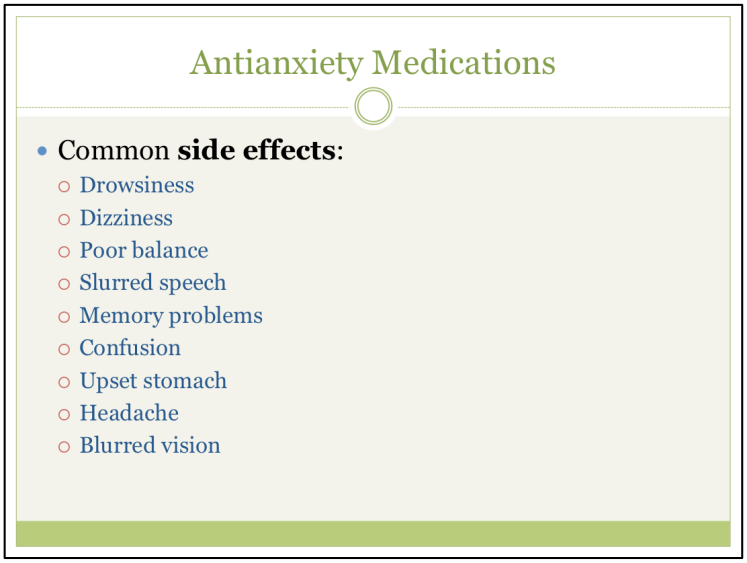
Older adults are more sensitive to the sedating effects of benzodiazepines.

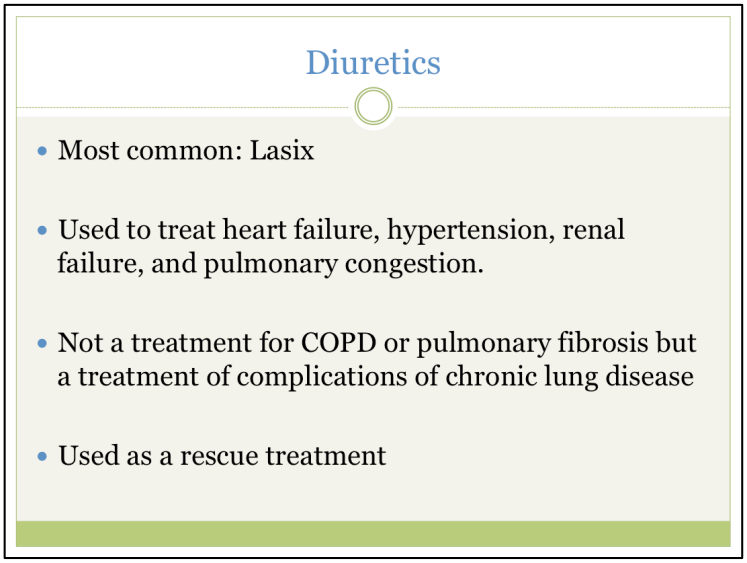
Benzodiazepines can worsen symptoms of pre-existing depression. Can cause emotional blunting or numbness and increase suicidal thoughts or feelings.

If taken regularly, benzodiazepines can lead to physical dependence. Stopping these medications quickly can lead to severe withdrawal symptoms such as increased anxiety, restlessness, insomnia, depression, stomach pain, sweating, or in severe cases seizure.

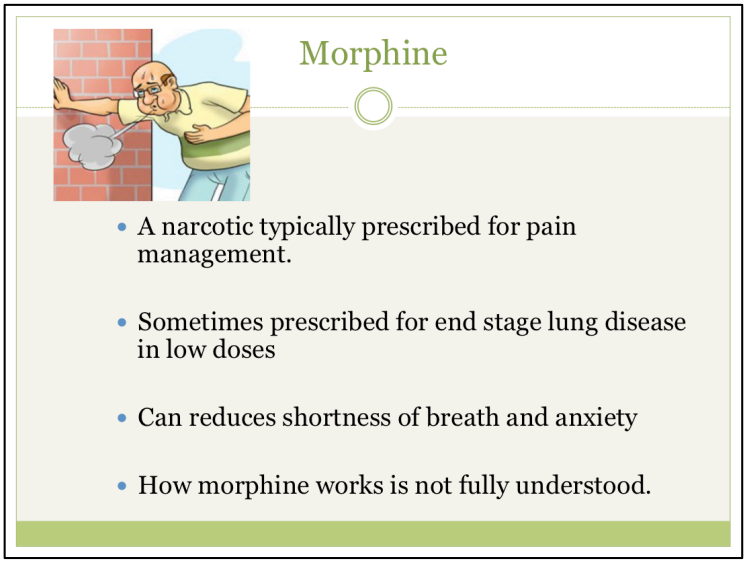
Benzodiazepines and alcohol should not be mixed.

Benzodiazepines are typically prescribed to individuals with chronic lung disease for the treatment of insomnia, anxiety/depression, and dyspnea. Current research links benzodiazepines to adverse physiological respiratory outcomes (Vozoris et al., 2013).

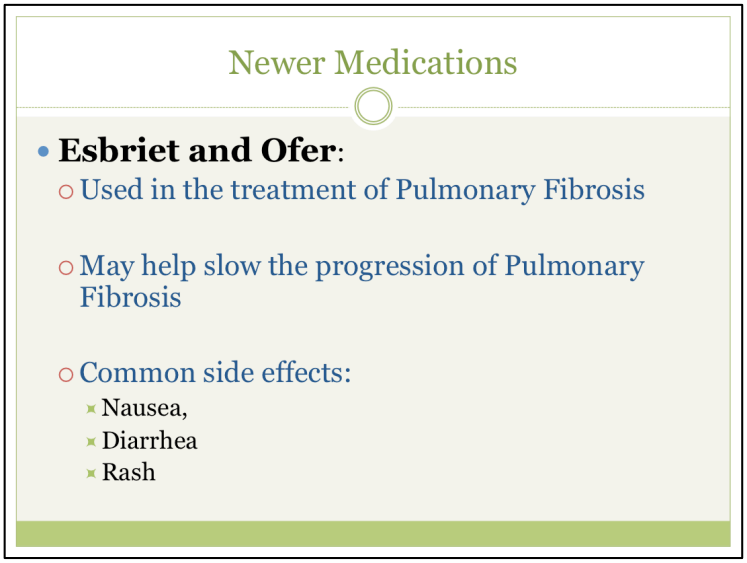

Antianxiety Medications
Common side effects:
Drowsiness
Dizziness
Poor balance
Slurred speech
Memory problems
Confusion
Upset stomach
Headache
Blurred vision



Chronic lung disease can lead to heart failure which can lead to pulmonary congestion. Essentially your heart isn't pumping properly and blood enters the vessels of your lungs. This causes SOB to worsen. Diuretics remove fluid through increased production of urine.



How morphine works is not fully understood but thought to diminish the response to elevated CO2 levels and hypoxia, decreasing shortness of breath, and to cause vasodilation. Your heart and lungs are closely connected. Morphine also reduces preload, decreasing the workload of your heart. If your heart isn't working as hard, you are using less oxygen and therefore less short of breath.

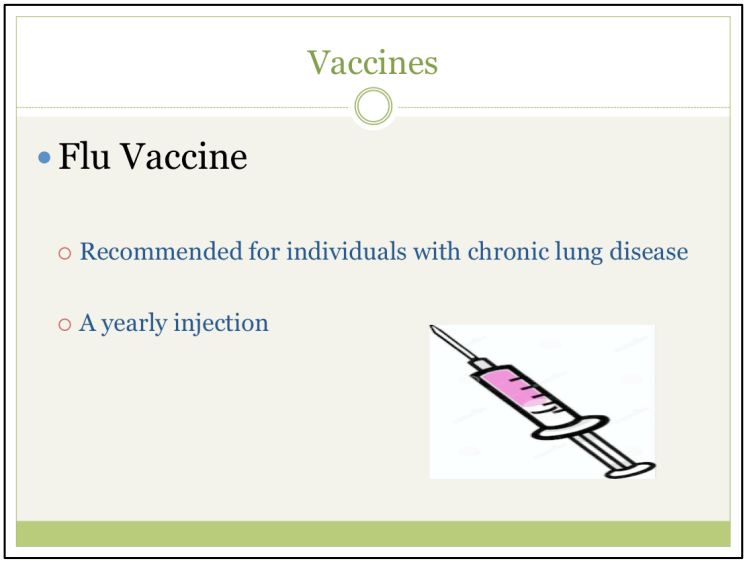


Newer medications.

Daxas is also an oral anti-inflammatory. Used as an add on to a bronchodilator for the maintenance of severe COPD. Not used as a rescue medication during acute exacerbations. Typically take 1 tablet/day.

Esbriet and Ofer are anti-fibrotics. Do not repair scar tissue that has already formed but may help slow the progression of future scarring.

- **Daxas**:
  - Used in the treatment of COPD
  - Common side effects:
    - Nausea
    - Diarrhea
    - Weight loss
    - Anxiety/depression
    - Irregular heart rate
    - Difficulties sleeping



Influenza is a respiratory infection that is typically caused by influenza A and B viruses occurring in the fall and winter months.

Approximately 10-20% of the population are infected with influenza annually.

The flu shot does not cause the flu!!

Symptoms Include:
Fever
Muscle aches
Cough
Chills
Throat irritation

A complication of influenza is worsening of underlying conditions such as chronic lung disease.

Pneumonia vaccine was typically thought to be good for life, new recommendations may suggest a booster after 5 years particularly for patients who are immunocompromised. Frequency decided by your physician and provincial regulations; typically 1 dose at over 65 years of age.

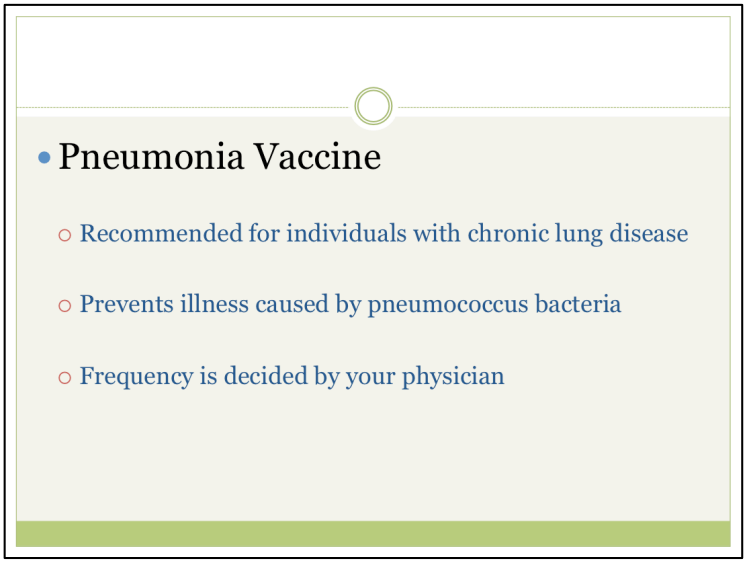

Pneumonia Vaccine
Recommended for individuals with chronic lung disease
Prevents illness caused by pneumococcus bacteria
Frequency is decided by your physician

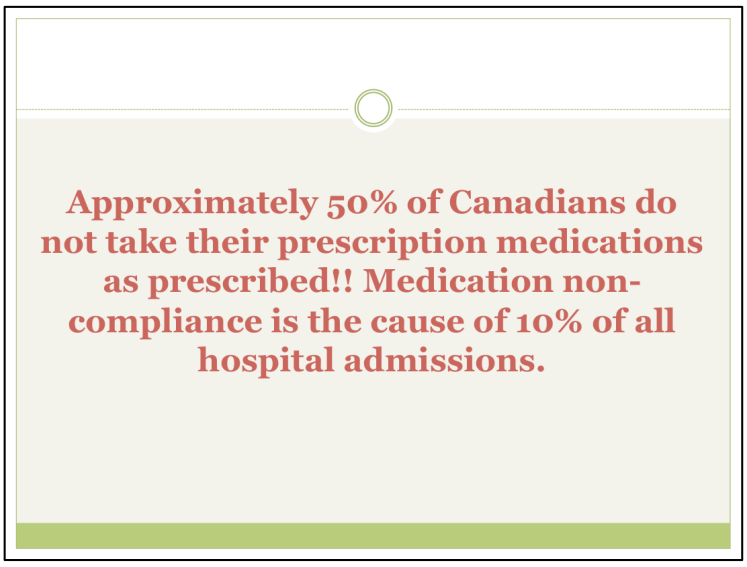
Image obtained from www.livingwellwithCOPD.com

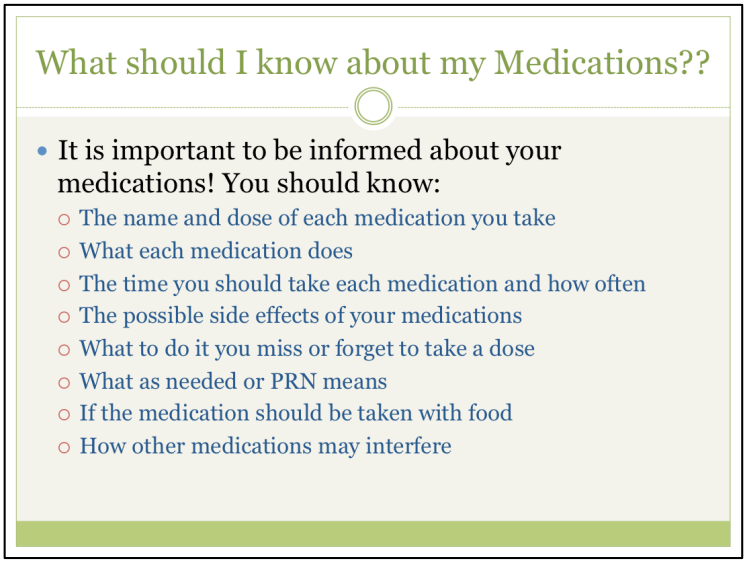
Compliance is a word that is often used in the medical world. Patients are compliant or non-compliant. What nurses and other health care professionals are interested in is why patients are non-compliant? In other words, why do people stop taking their meds? What are the barriers?

Poor medication compliance increases incidence of hospitalizations and morbidity. Improved compliance to current medications therapies may in fact have a great impact on overall quality of life and well being than improvement in medical therapies (Brown & Bussell, 2011).

Various factors influence medication compliance including (Brown & Bussell):

- Lack of understanding of disease process
- Lack of involvement in decision making related to treatment options
- Suboptimal health literacy
- Previous experience
- Lack of motivation
- Low socioeconomic status
- Ineffective communication between patients and healthcare practitioners
- Inadequacies in recognizing financial burden to patient
- Limitations surrounding access to care
- Lack of health information technology


Approximately 50% of Canadians do not take their prescription medications as prescribed!! Medication non-compliance is the cause of 10% of all hospital admissions.



(US Food & Drug Administration, 2015; Living Well with COPD, 2017)

Discussion Question: Who knows all of these things about every medication they take ?

Tips:

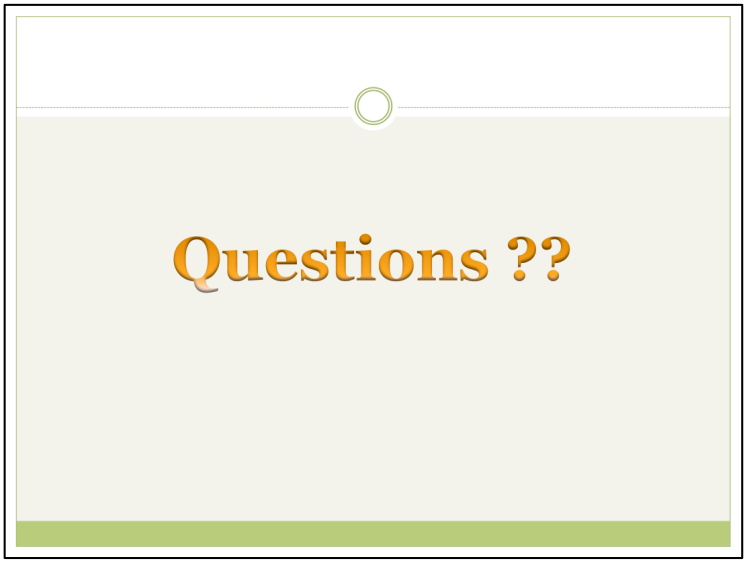
Keep a med list in your purse, wallet, or on your cell phone.
Make an appointment with your community pharmacist to discuss your individual medications.

Key Messages

- Taking medications as prescribed optimizes lung function and slow disease progression
- Medications can reduce symptoms of chronic lung disease
- Medications have a classification, generic name, and brand name

Key Messages

- Many medications, other then puffers, are used to treat chronic lung disease
- Know your medications – keep a list with you
- About 50% of Canadians do not take their medications as prescribed!


Questions ??

Module Handout

Handout retrieved from: http://www.gov.pe.ca/photos/original/hpei_med_list.pdf

MEDICATION LIST

Please fill out this form.

Your name:

Your Medication Allergies	Reaction

Please list ALL your medications such as pills, inhalers, eye drops, patches, injections, creams, and so on. Also include any medications you buy over the counter such as herbal products and vitamins.

Your Pharmacy: Your Family Doctor:

Medication Name & Strength	Dose (How much do you take?)	Directions (How often do you take it?)

List reviewed/updated by (initial the actual change):

Print Name	Relationship	Date/Time

Additional Comments:

Please keep this form updated as your medications change.

Module 7: Self-Management & Signs of an Acute Exacerbation

Description

This module will discuss the concept of self-management. It will also highlight the goal of pulmonary rehabilitation in promoting and developing self-management skills. The term acute exacerbation will be described and common symptoms discussed with the participants. To complete the module, Actions Plans will be reviewed. It is important that participants have an understanding of how to properly utilize their action and know when to seek emergency assistance.

Learning Objectives

By the end of a group education session, participants will:

1. Describe in simple words the concept of self-management.
2. State the **two** most common symptoms of an acute exacerbation of chronic lung disease.
3. Describe how to properly utilize their personal Action Plan.

Teaching Aids/Activities

It is intended that the materials presented within this module be utilized during a one hour group education session. Various aids have been provided within the module to assist with ease of education delivery.

- Visual Aids: PowerPoint presentation containing various pictures/graph; whiteboard and markers
- Patient Activity: Chronic Lung Disease Case Studies
- Handout: "Hand Washing" and "My Personal COPD Action Plan"
- Potential questions for facilitated group discussion

Content

What is Self-Management?

Many participants and their family members may in fact already be participating in self-management behaviors, but may not recognize the term. Facilitate a group discussion to answer the following question.

Discussion Question: What does self-management mean to you?

- Self-management refers to the ability of an individual to adequately monitor, provide treatment, and manage ongoing symptoms associated with chronic disease (Grady & Gough, 2014; Coleman & Newton, 2005). Self-management moves away from the traditional medical model and enables the patient to be responsible for the day-to-day care of their disease (Wang, Tan, Xiao, & Deng, 2017).

- In order to participate in self-management, individuals require both support and education from health care professionals (Coleman & Newton).

- Benefits of self-management include (Wang et al., 2017):
    - Improves overall quality of life
    - Improves functional ability
    - Enhances knowledge and confidence
    - Decreases incidence of acute exacerbation
    - Decreases hospitalizations

When speaking to the role of healthcare providers in the treatment of chronic lung disease, 90% of care should involve patient education (Wang et al., 2017)!

The ultimate goal of pulmonary rehabilitation is to promote and develop self-management skills through relevant education. This happens in both the classroom and gym while attending pulmonary rehabilitation! It is hoped that by the end of this 12-week program participants will have obtained the knowledge and skills required to participate in self-management of their disease.

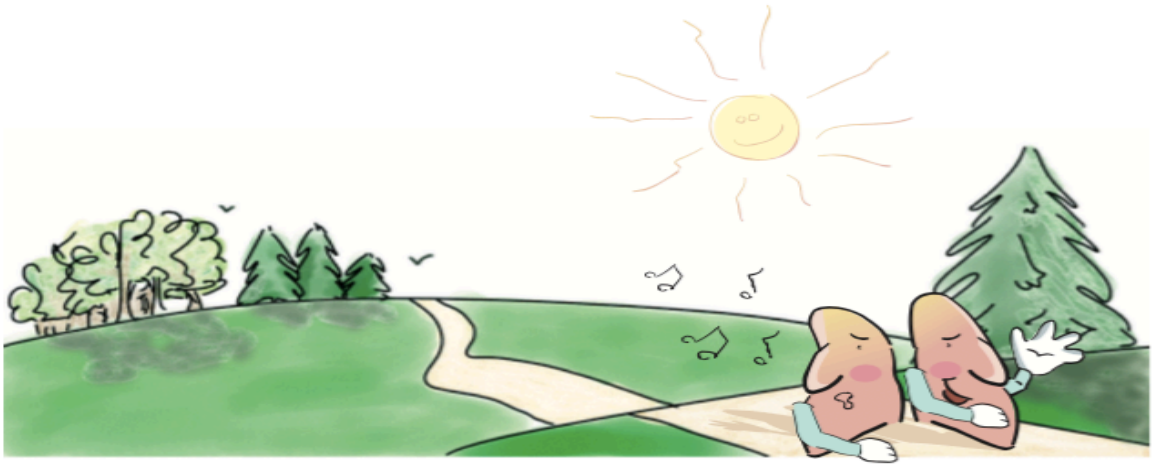
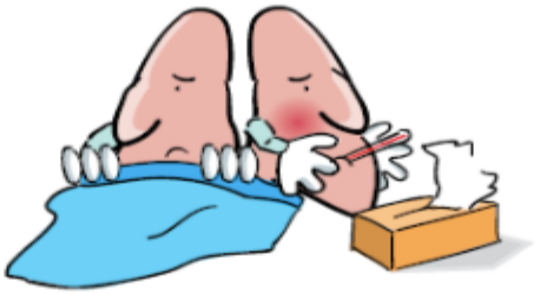


Image obtained from www.livingwellwithCOPD.com

What is an Acute Exacerbation?

- An acute exacerbation is a flair up or an aggravation of the symptoms of your chronic lung disease (Living Well with COPD, 2017). The most common causes of an exacerbation are respiratory infections and changes in temperature.



- One way to prevent or reduce risk of respiratory infections is to receive recommended vaccinations. Other tips include avoiding people with known respiratory infections and frequent hand washing.

- Hand washing removes microorganisms from the hands and is the most effective way to prevent the spread of disease and infection (Infection Prevention and Control Canada, 2017). You should wash your hands after being in contact with another individual (e.g. shaking hands), each time you are in contacting with secretions or other body fluids (ex. after covering your mouth while coughing or blowing your nose), and after performing personal functions (e.g. going to the bathroom). Effective hand washing can be done utilizing soap and water or an alcohol-based hand rub. If your hands are visibly soiled you should use soap and water (Infection Prevention and Control Canada)!

- We talked about vaccines during the additions medication module, lets review…

A handout depicting proper hand washing technique can be found that the end of this module.

Vaccines:

- Flu Vaccine
  - Recommended for individuals with chronic lung disease yearly
  - Approximately 10-20% of the population are infected with influenza annually
  - Influenza is a respiratory infection that is

typically caused by influenza A or B virus occurring in the fall or winter months yearly
    - The flu shot does not cause the flu!!
    - Common symptoms: fever, muscle aches, cough, chills, throat irritation
    - A complication of influenza is worsening of underlying conditions such as chronic lung disease

(Health PEI, 2016; Government of Canada, 2015)

- Pneumonia Vaccine
    - Recommended for individuals with chronic lung disease
    - Prevents illness caused by pneumococcus bacteria
    - Frequency decided by your physician and provincial regulations; typically one dose at over 65 years of age

(Government of Canada, 2015)

Typical Signs of an Acute Exacerbation

- The two most common symptoms of an acute exacerbation of COPD and Pulmonary Fibrosis are increased shortness of breath and a change in your sputum (Living Well with COPD, 2017; Living Well with Pulmonary Fibrosis, 2017). You should monitor the color, volume, and consistency of your sputum! Other symptoms may include:
    - Fever
    - Sore throat
    - Flu-like symptoms
    - Increased cough frequency

Action Plan Review

In a previous group education session Action Plans were discussed in detail with the RT. All participants diagnosed with COPD should have an Action Plan! In PEI no Action Plan currently exists for individuals living with Pulmonary Fibrosis. For those who do not have an Action Plan, it is recommended that you make an appointment within 48 hours to see your health care professional when you feel unwell or have a change in your typical symptoms (Living Well with COPD, 2017; Living Well with Pulmonary Fibrosis).

Your Action Plan is a key component to your self-management plan. It tells you what to do during an exacerbation or when your symptoms worsen!

Prior to reviewing the concept of Action Plans, facilitate a group discussion to explore the following questions.

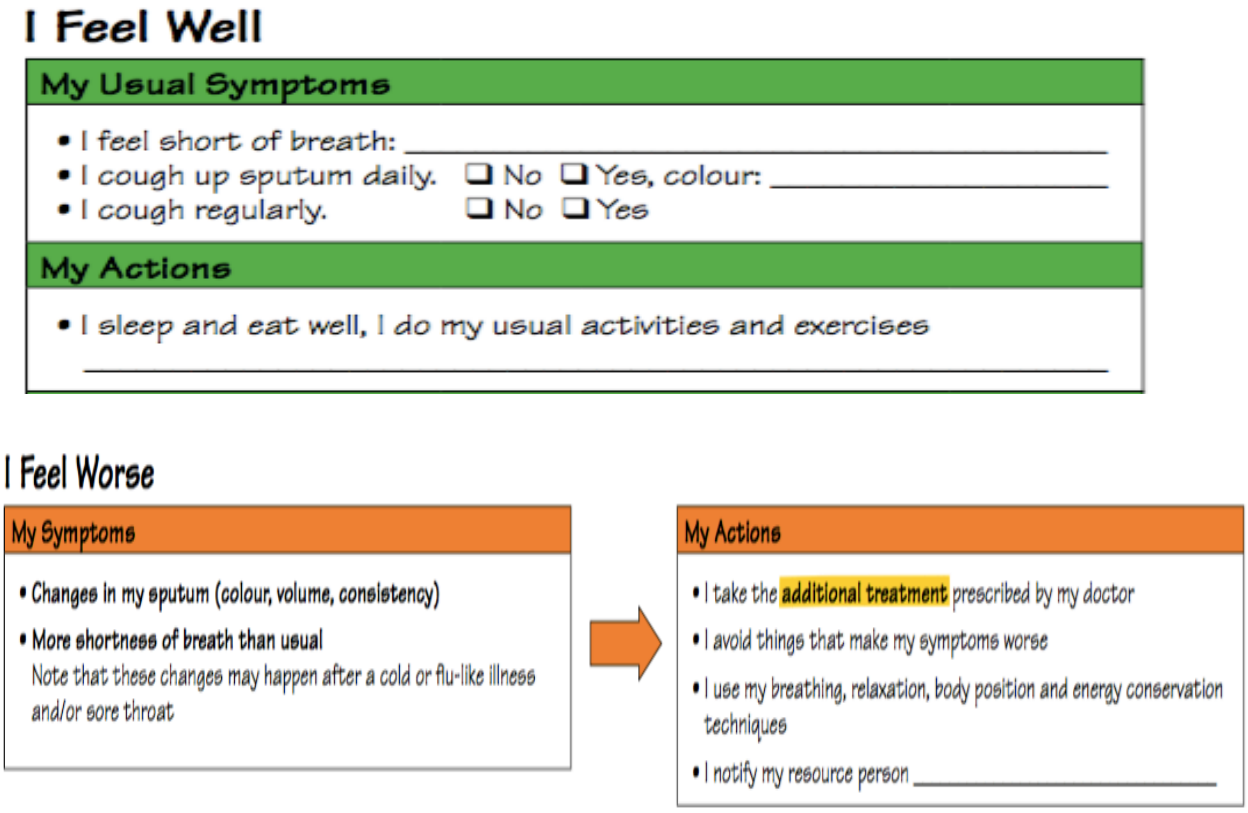
Discussion Questions:

1. What do you currently do when the symptoms of your lung disease worsen?
2. Do you have an Action Plan?
3. Do you know how to use your Action Plan?
4. How do you know when to call 911 or go to the Emergency Room?

The following images depict the components of a typical Action Plan. Most participants will have similar Action Plans. The specific medication utilized or dosage will differ, but each Action Plan typically contains instructions as well as a prescription for both an antibiotic and oral anti-inflammatory drug.

Note… *Throughout the program, each participant will meet one-on-on with either the RN or RT to discuss his or her personal Action Alan. For now lets review Actions Plans. The COPD Action Plan, utilized in PEI, can be found in the handout section of this module.*

COPD Action Plan:



I Feel Much Worse

My Symptoms	My Actions
• My symptoms get worse. • After 48 hours of treatment my symptoms are not better.	• I call my contact person. • After 5 pm or on the weekend, I go to the hospital emergency department.

I Feel I am in Danger

My Symptoms	My Actions
In any situation if: • I am extremely short of breath • I am confused and/or drowsy • I have chest pain	• **I dial 911 for an ambulance to take me to the hospital emergency department.**

Images obtained from www.livingwellwithCOPD.com

Pulmonary Fibrosis Action Plan:

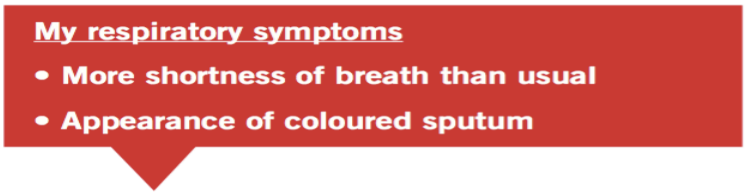
1. Look at your shortness of breath.

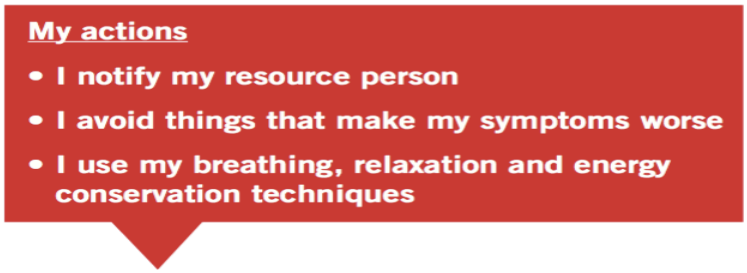
If you have more shortness of breath than usual, you should first try to contact your doctor or your resource person. This may be the sign of disease progression or an acute exacerbation.

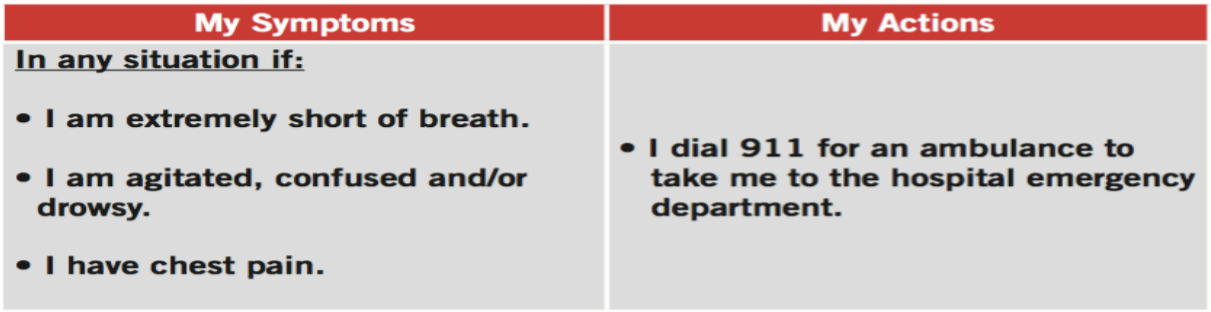
2. Notice the appearance of colored sputum (phlegm or secretions).

If the colour of your sputum is yellow or green you probably have a bacterial infection and you need to start taking an antibiotic prescribed by your doctor.

Do not wait more than 48 hours after the beginning of your symptoms worsening before contacting your doctor or resource person







Images obtained from the program "Living Well with Pulmonary Fibrosis", J. Morisset, D. Nault, A. Savard, M. Sedeno, 1st edition (2016) www.livingwellwithpulmonaryfibrosis.com

Participant Activity:

As a group, lets discuss the following scenarios and decide what action we would take.

Note… *this activity is not to be utilized as a form of evaluation or to test participants. It is to be used to facilitate discussion and questions regarding Action Plans.*

Scenario 1:

- Ms. Smith…
  - 58 year old female, diagnosed with COPD approximately 20 years ago.
  - Has an action plan that includes an antibiotic, prednisone, and an increase in the frequency of her bronchodilator.
  - Ms. Smith awoke this morning feeling more short of breath then normal. She was able to get dressed but was unable to do the typical household chores that she normally does every morning.
  - Ms. Smith notices she has been coughing more than normal however, her sputum has not changed in color, volume, or consistency.

What should Ms. Smith do?

Suggestion… Ms. Smith should avoid common exacerbation triggers and increase the frequency of her bronchodilator. They frequency will be decided by her current symptoms and personal Action Plan. She should also continue to monitor symptoms closely!

- Day 2… Ms. Smith slept poorly overnight. She continues to have increasing shortness of breath that is not being controlled with the increased frequency of her bronchodilator. Her sputum this morning is yellow in color.

What should Ms. Smith do?

Suggestion… Per her Action Plan, Ms. Smith should initiate both her antibiotic and her prednisone. If after 48 hours her symptoms are not improved, despite starting treatment, Ms. Smith should make an immediate appointment with her health care provider. It would be important for her to also be aware of when to seek help at the Emergency Room or call 911.

Scenario 2:

- Mr. Wilson…
  - 62 year old male, diagnosed with Pulmonary Fibrosis three year ago.
  - Mr. Wilson does not have an Action Plan for his Pulmonary Fibrosis.
  - Mr. Wilson has been feeling unwell for approximately three days. He is experiencing increased shortness of breath and is coughing up green sputum, which is not normal for him.
  - Mr. Wilson awoke this morning with extreme shortness of breath. He was unable to get out of bed and get dressed. He typically is independent with his activities of daily living. His wife finds him to be slightly confused, which is also not normal for him. He typically is independent with his activities of daily living.

What should Mr. Wilson or his wife do?

Suggestion… Mr. Wilson or his wife if he is unable to should call 911 and seek help at the Emergency Room. His symptoms have progressed too far for him to wait for an appointment with his typical health care provider.

Module Key Messages

- Self-management is the ability of an individual to monitor, treat, and manage symptoms of their disease.
- An acute exacerbation is a flair up or an aggravation of the symptoms of your chronic lung disease.
- The two most common symptoms of an acute exacerbation are increased shortness of breath and a change in your sputum
- Your Action Plan is a key component to your self-management plan. It tells you what to do during an exacerbation or when your symptoms worsen.
- It is recommended that you make an appointment within 48 hours to see your health care professional when you feel unwell or have a change in your typical symptoms.

The following powerpoint presentation may be utilized with the above module during group education session.

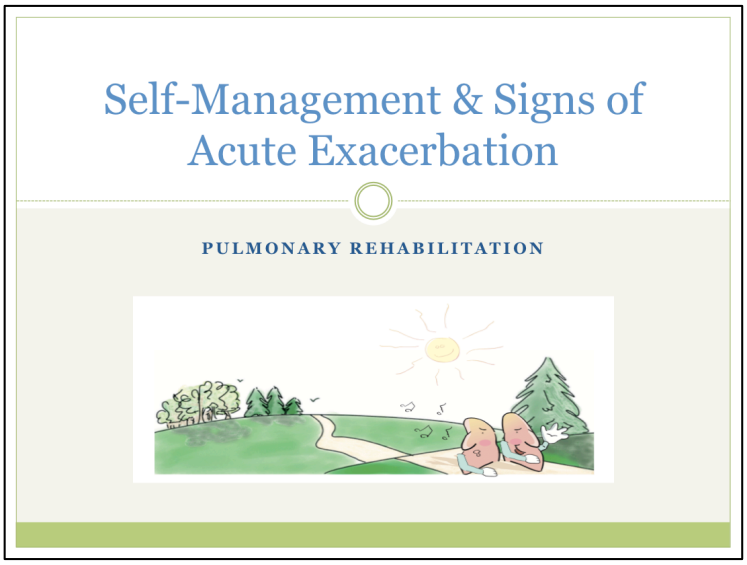
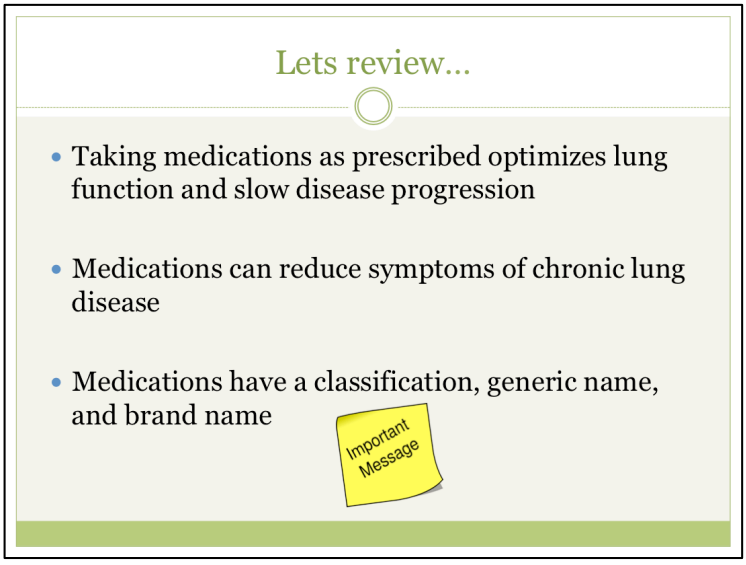


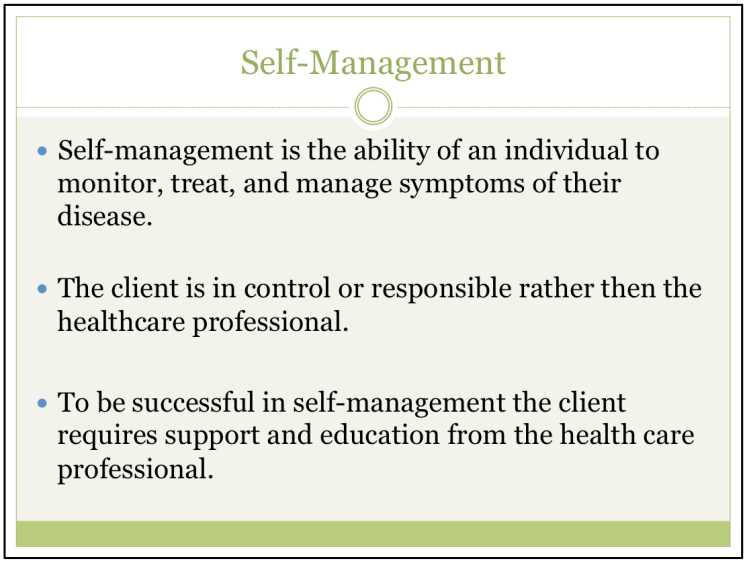
Image obtained from www.livingwellwithCOPD.com



Review Key Messages from previous module.

Image obtained from www.clipartpanda.com

- Many medications, other then puffers, are used to treat chronic lung disease
- Know your medications – keep a list with you
- About 50 percent of Canadians do not take their medications as prescribed!



Self-management refers to the ability of an individual to adequately monitor, provide treatment, and manage ongoing symptoms associated with chronic disease (Coleman & Newton, 2005). Self-management moves away from the traditional medical model and enables the patient to be responsible for the day-to-day care of their disease (Wang, Tan, Xiao, & Deng, 2017).

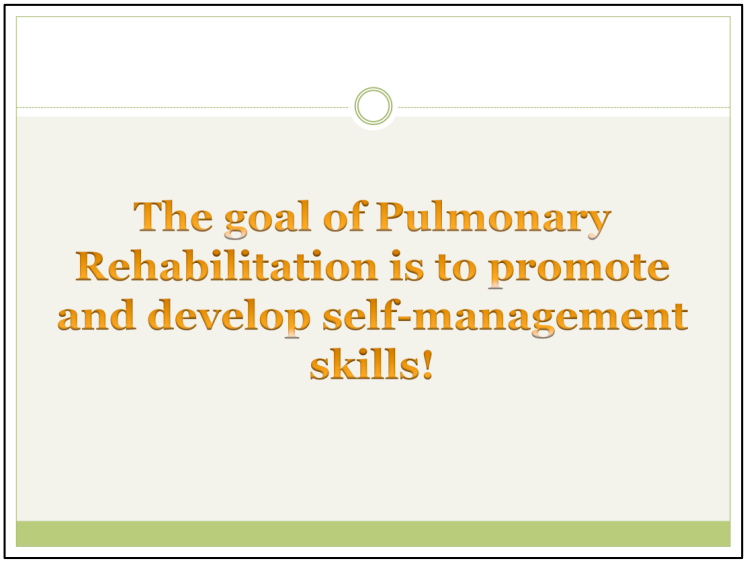
In order to participate in self-management, individuals require both support and education from health care professionals (Coleman & Newton).

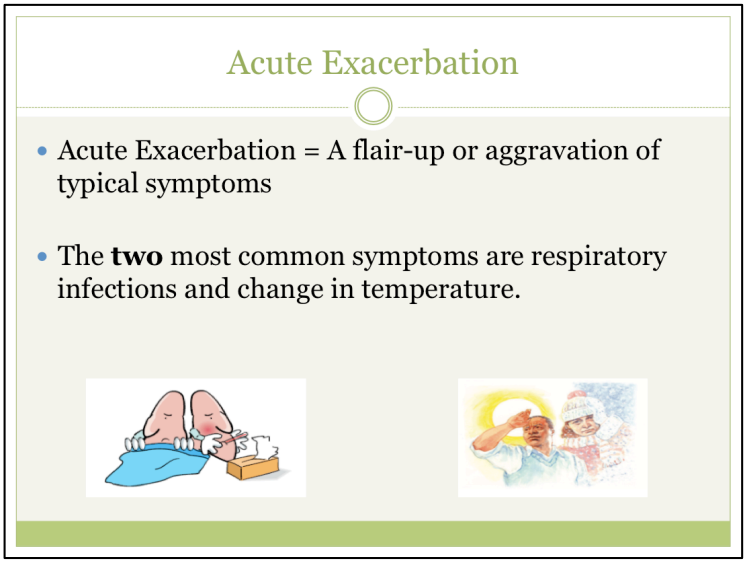
Benefits of self-management include (Wang et al., 2017):

- Improves overall quality of life
- Improves functional ability
- Enhances knowledge and confidence
- Decreases incidence of acute exacerbation
- Decreases hospitalizations

When speaking to the role of healthcare providers in the treatment of chronic lung disease, 90 percent of care should involve patient education (Wang et al., 2017)!

The ultimate goal of pulmonary rehabilitation is to promote and develop self-management skills through relevant education. This happens in both the classroom


The goal of Pulmonary Rehabilitation is to promote and develop self-management skills!



Images from www.livingwellwithCOPD.com

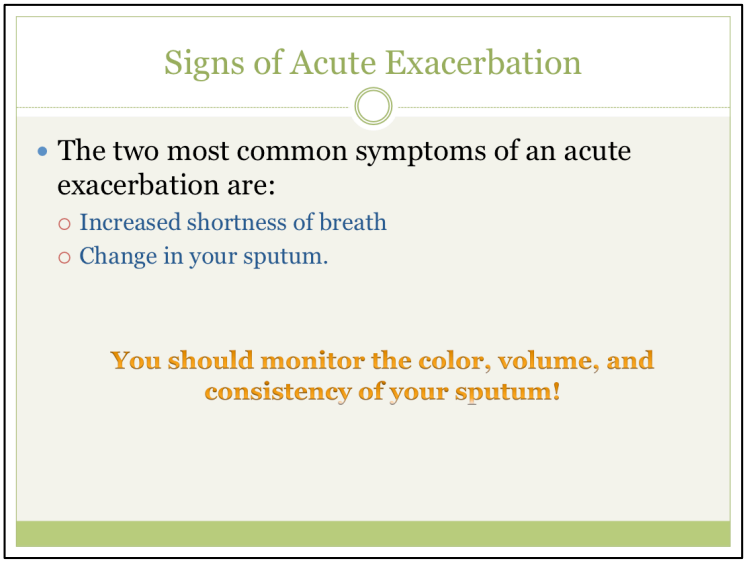
An acute exacerbation is a flair up or an aggravation of the symptoms of your chronic lung disease (Living Well with COPD, 2017). The most common causes of an exacerbation are respiratory infections and changes in temperature.

One way to prevent or reduce risk of respiratory infections is to receive recommended **vaccinations.** Other tips include avoiding people with known respiratory infections and frequent hand washing. We talked about vaccines during the additions medication module, lets review…

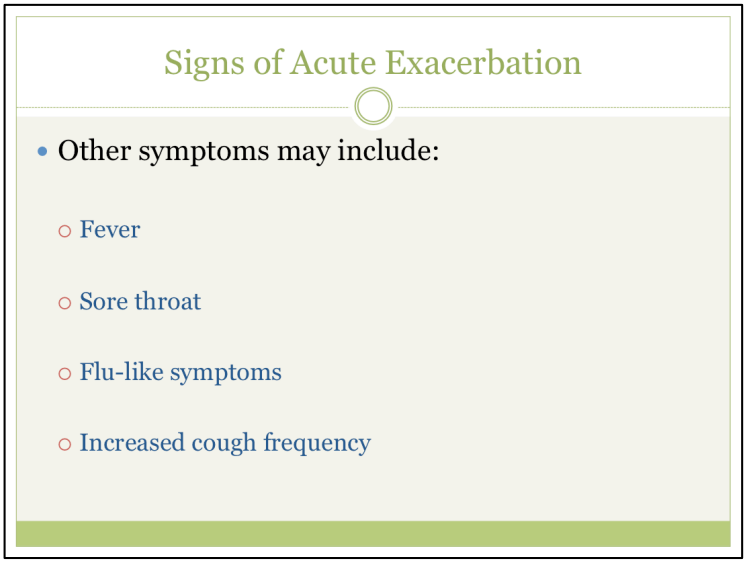
Vaccines:

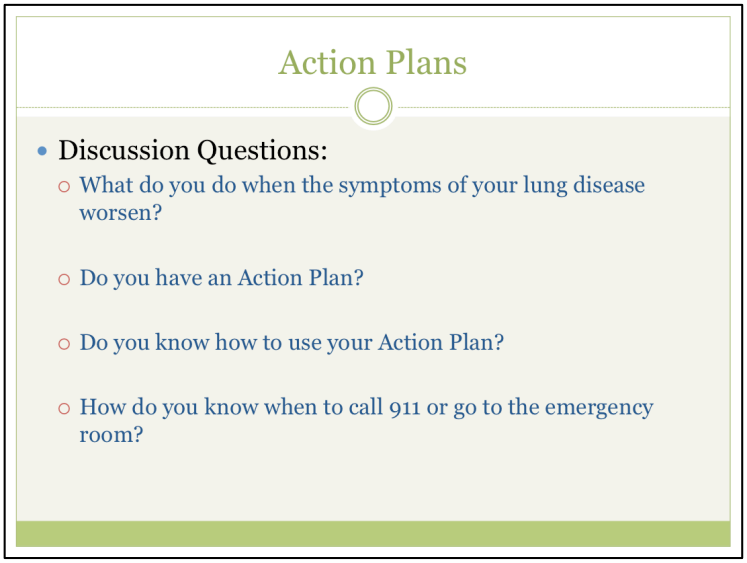
Flu Vaccine:

- Recommended for individuals with chronic lung disease yearly
- Approximately 10 to 20 percent of the population are infected with influenza annually
- Influenza is a respiratory infection that is typically caused by influenza A or B virus occurring in the fall or winter months yearly
- The flu shot does not cause the flu!!
- Common symptoms: fever, muscle aches, cough, chills, throat irritation



References: (Living Well with COPD, Living Well with Pulmonary Fibrosis, 2017)


Signs of Acute Exacerbation
Other symptoms may include:
Fever
Sore throat
Flu-like symptoms
Increased cough frequency



In a previous group education session Action Plans were discussed in detail with the Respiratory Therapist. All participants diagnosed with COPD should have an Action Plan! In PEI no Action Plan currently exists for individuals living with Pulmonary Fibrosis. For those who do not have an Action Plan, it is recommended that you make an appointment within 48 hours to see your health care professional when you feel unwell or have a change in your typical symptoms (Living Well with COPD; Living Well with Pulmonary Fibrosis).

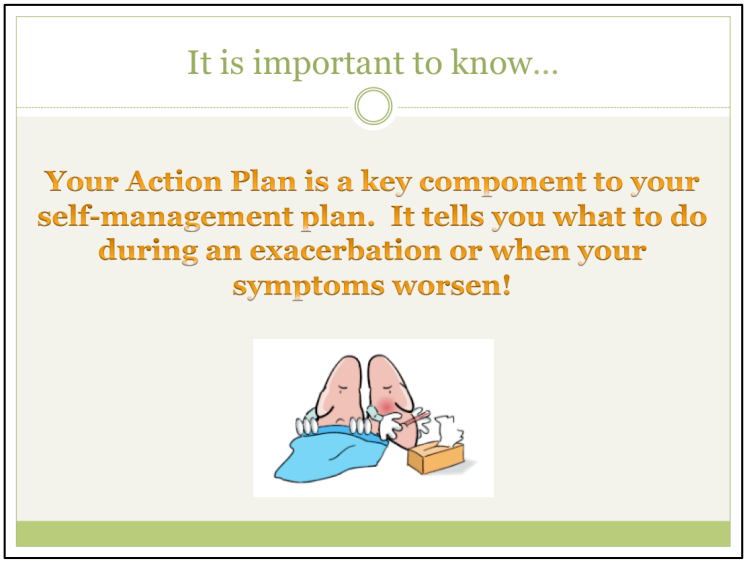
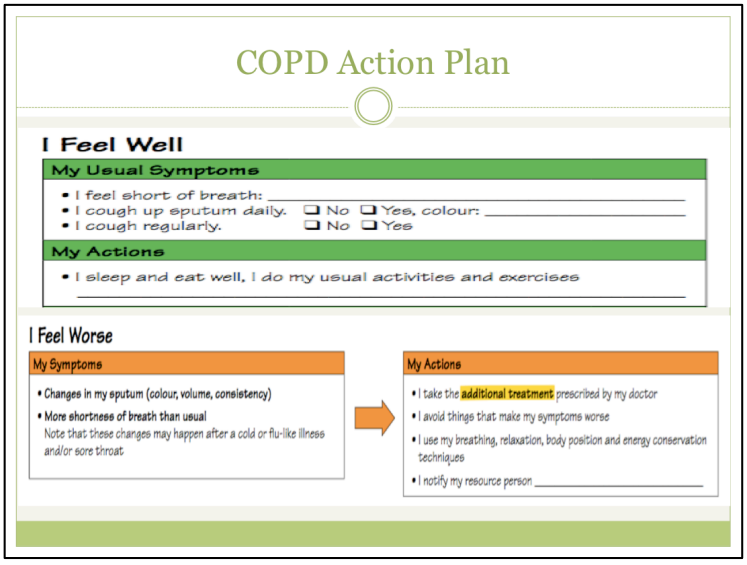


Image obtained from www.livingwellwithCOPD.com

It is important to know…

If you do not have an Action Plan make an appointment with your health care provider within 48 hours of a change in your normal symptoms!



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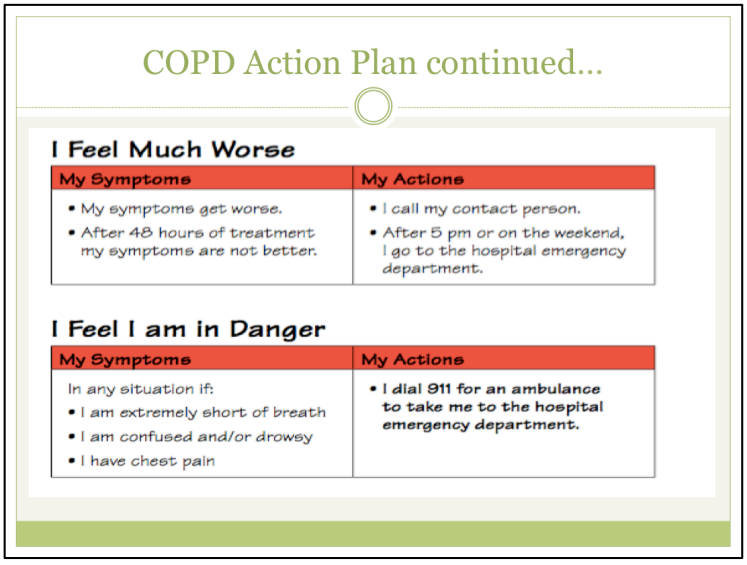

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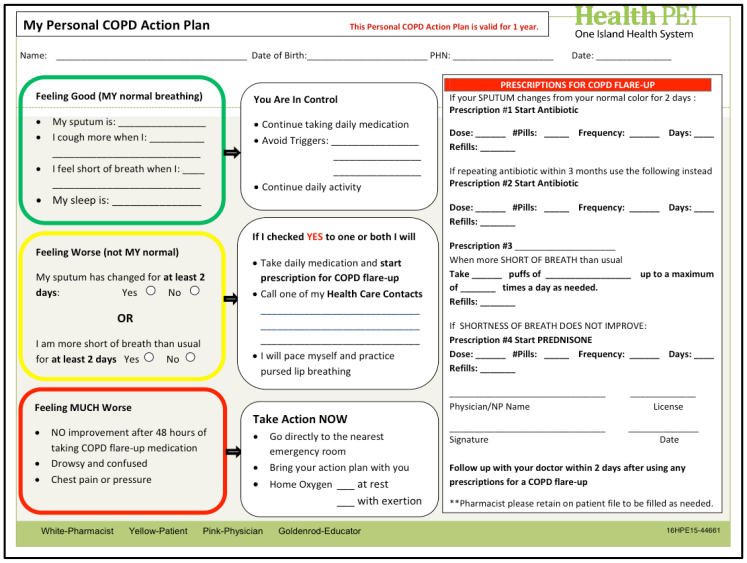


My Personal COPD Action Plan

This Personal COPD Action Plan is valid for 1 year.

Health PEI
One Island Health System

Name: _____ Date of Birth:_____ PHN: _____ Date: _____

Feeling Good (MY normal breathing)

- My sputum is: _____
- I cough more when I: _____ _____
- I feel short of breath when I: ____ _____
- My sleep is: _____

You Are In Control

- Continue taking daily medication
- Avoid Triggers: _____ _____ _____
- Continue daily activity

Feeling Worse (not MY normal)

My sputum has changed for **at least 2 days**: Yes ○ No ○

OR

I am more short of breath than usual for **at least 2 days** Yes ○ No ○

If I checked YES to one or both I will

- Take daily medication and **start prescription for COPD flare-up**
- Call one of my **Health Care Contacts** _____ _____ _____
- I will pace myself and practice pursed lip breathing

Feeling MUCH Worse

- NO improvement after 48 hours of taking COPD flare-up medication
- Drowsy and confused
- Chest pain or pressure

Take Action NOW

- Go directly to the nearest emergency room
- Bring your action plan with you
- Home Oxygen ___ at rest ___ with exertion

PRESCRIPTIONS FOR COPD FLARE-UP

If your SPUTUM changes from your normal color for 2 days :
Prescription #1 Start Antibiotic

Dose: _____ **#Pills:** _____ **Frequency:** _____ **Days:** ____
Refills: _____

If repeating antibiotic within 3 months use the following instead
Prescription #2 Start Antibiotic

Dose: _____ **#Pills:** _____ **Frequency:** _____ **Days:** ____
Refills: _____

Prescription #3 _____
When more SHORT OF BREATH than usual
Take _____ **puffs of** _____ **up to a maximum of** _____ **times a day as needed.**
Refills: _____

If SHORTNESS OF BREATH DOES NOT IMPROVE:
Prescription #4 Start PREDNISONE
Dose: _____ **#Pills:** _____ **Frequency:** _____ **Days:** ____
Refills: _____

_____ _____
Physician/NP Name License

_____ _____
Signature Date

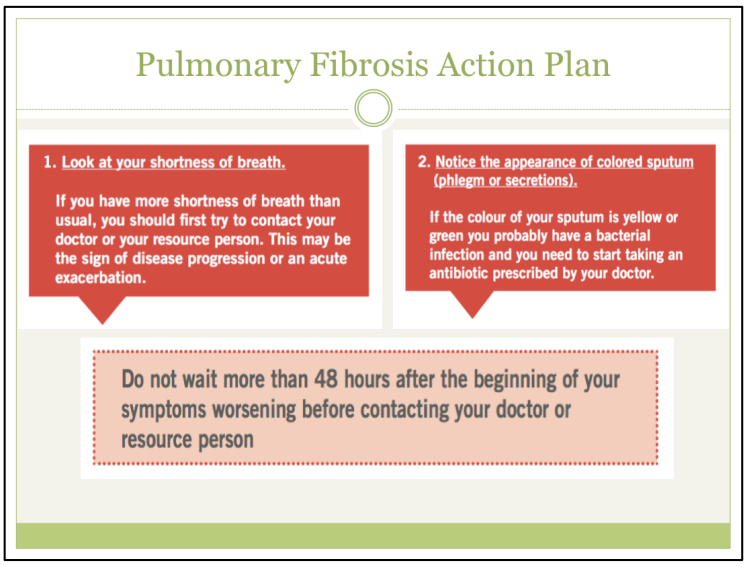
Follow up with your doctor within 2 days after using any prescriptions for a COPD flare-up

**Pharmacist please retain on patient file to be filled as needed.

White-Pharmacist Yellow-Patient Pink-Physician Goldenrod-Educator

16HPE15-44661

This is what a COPD action plan looks like in the Province of PEI.



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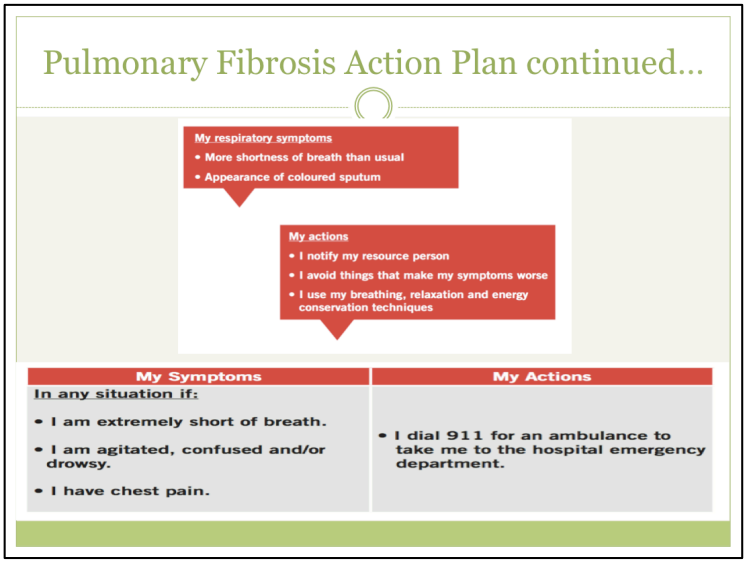

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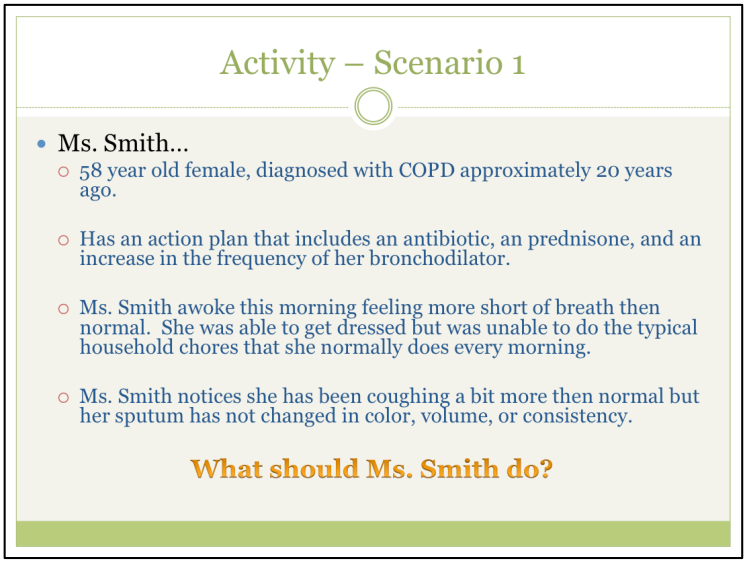
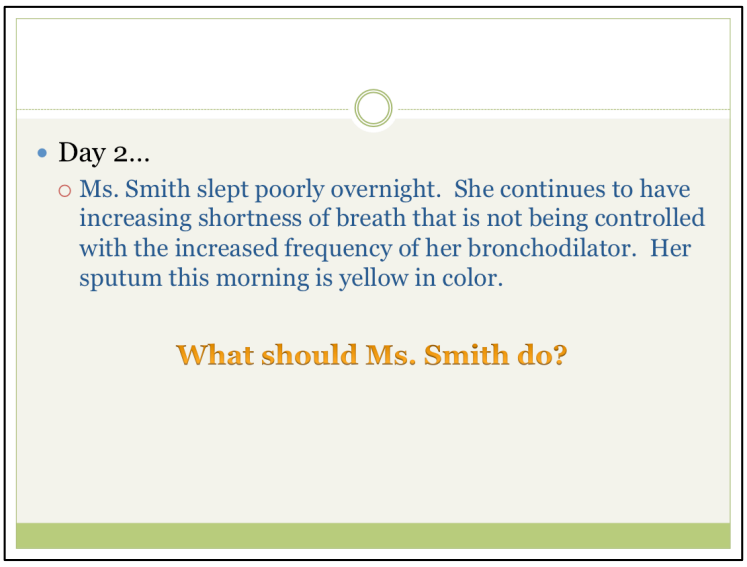


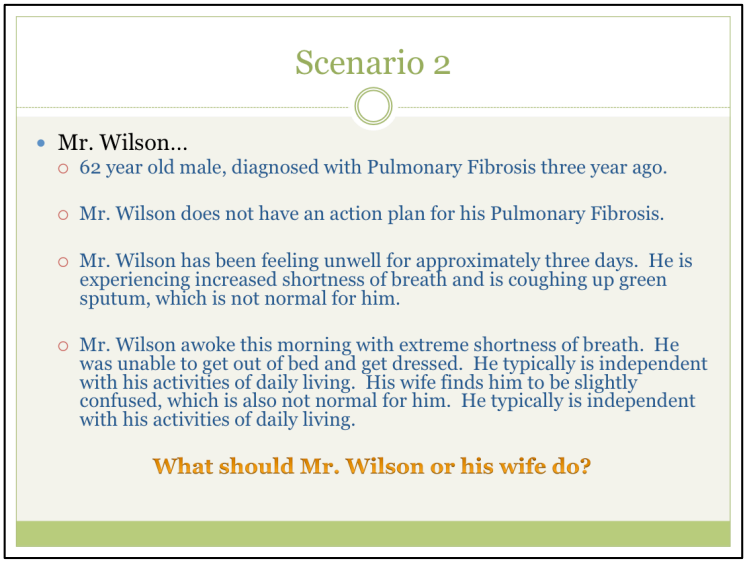
As a group, lets discuss the following scenarios and decide what action we would take.

***Note…** this activity is not to be utilized as a form of evaluation or to test participants. It is to be used to facilitate discussion and questions regarding action plans.*

Suggestion… Ms. Smith should avoid common exacerbation triggers and increase the frequency of her bronchodilator. She should also continue to monitor symptoms closely!



Suggestion… Per her Action Plan, Ms. Smith should initiate both her antibiotic and her prednisone. If after 48 hours her symptoms are not improved, despite starting treatment, Ms. Smith should make an immediate appointment with her health care provider. It would be important for her to also be aware of when to seek help at the emergency room or call 911.



Suggestion… Mr. Wilson or his wife if he is unable to should call 911 and seek help at the emergency room. His symptoms have progressed too far for him to wait for an appointment with his typical health care provider.

Key Messages

- Self-management is the ability of an individual to monitor, treat, and manage symptoms of their disease.
- An acute exacerbation is a flair up or an aggravation of the symptoms of your chronic lung disease.
- Most common symptoms of an acute exacerbation = increased shortness of breath and a change in your sputum

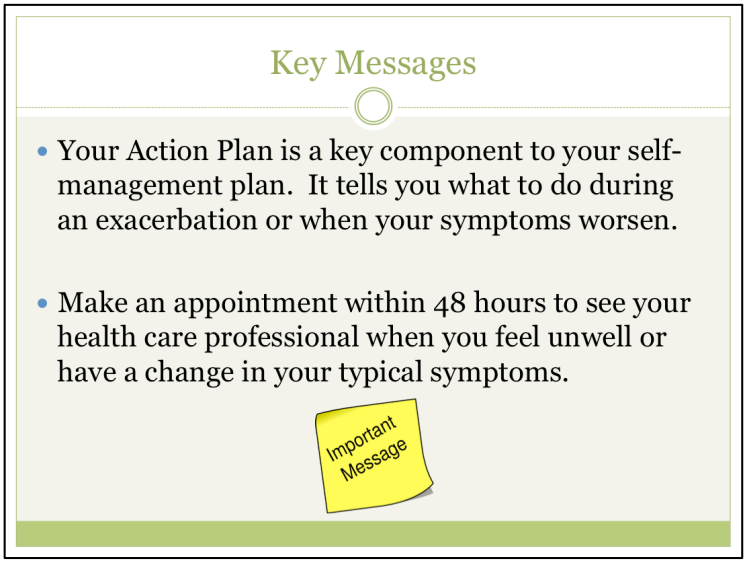
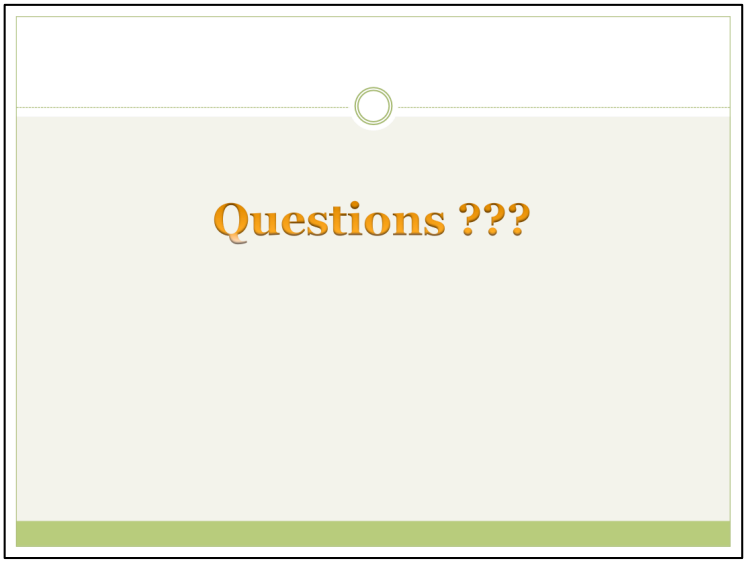


Image obtained from www.clipartpanda.com


Questions ???


FIGHT GERMS BY WASHING YOUR HANDS!
1 Wet your hands
2 Soap
3 Lather and scrub - 20 sec
4 Rinse - 10 sec
5 Dry your hands
6 Turn off tap
DON'T FORGET TO WASH:
- between your fingers
- under your nails
- the tops of your hands
www.lung.ca
THE LUNG ASSOCIATION
L'ASSOCIATION PULMONAIRE

My Personal COPD Action Plan

This Personal COPD Action Plan is valid for 1 year.

Health PEI
One Island Health System

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- My sleep is: _____

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- Continue taking daily medication
- Avoid Triggers: _____ _____ _____
- Continue daily activity

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Refills: _____

If repeating antibiotic within 3 months use the following instead
Prescription #2 Start Antibiotic

Dose: _____ #Pills: _____ Frequency: _____ Days: ____
Refills: _____

Prescription #3 _____
When more SHORT OF BREATH than usual
Take _____ puffs of _____ up to a maximum of _____ times a day as needed.
Refills: _____

If SHORTNESS OF BREATH DOES NOT IMPROVE:
Prescription #4 Start PREDNISONE
Dose: _____ #Pills: _____ Frequency: _____ Days: ____
Refills: _____

_____ _____
Physician/NP Name License

_____ _____
Signature Date

Follow up with your doctor within 2 days after using any prescriptions for a COPD flare-up

**Pharmacist please retain on patient file to be filled as needed.

White-Pharmacist Yellow-Patient Pink-Physician Goldenrod-Educator

16HPE15-44661

Module 8: Navigating the Health Care System and Tests and Interventions

Module Description

The health care system is complex and often challenging to navigate. This module will provide information regarding various aspects of the health care system, provide tips for navigation, and describe various tests and interventions that patients commonly encounter during the diagnosis, treatment, and management of chronic lung disease. Throughout the module the roles of various health care professionals will be discussed. Individuals Goals of Care should be addressed at every health care encounter, but this is often not the case. Patients and families are often faced with making these decisions at times of acute injury/disease or crisis. The Goals of Care options, R, M, and C will be discussed and described. Drug plans, as well as additional health care resources, available to residents of PEI, will be identified in the content.

Learning Objectives

By the end of a group education session participants will:

1. Explain the roles of various health care professionals.
2. State a basic definition of each Goal of Care (R, M, and C).
3. Identify **two** tips helpful in optimizing health care appointments.
4. Be aware that there are provincially funded drugs plans available to residents of PEI.
5. Identify a health care resource available to residents of PEI.
6. Simply describe common tests utilized in the diagnosis and treatment of their chronic lung disease.

Teaching Aids/Activities

It is intended that the materials presented within this module be utilized during a one hour group education session. Various aids have been provided within the module to assist with ease of education delivery.

- Visual Aids: PowerPoint presentation; whiteboard and markers
- Potential questions for facilitated group discussion
- Video: What is Spirometry avaliable at: https://www.youtube.com/watch?v=LeXgXKIyRA0

Module Content

Navigating the Health Care System

Understanding the Role of Various Health Care Professionals

- Various healthcare professionals make up the multidisciplinary team that provides care to patients both in the hospital and community setting. These professionals have varying education levels, specialties, scopes of practice, and therefore different responsibilities to the patient. Sometimes it is difficult for patients to understand the role of all of these professionals or to even distinguish between them.
- Multidisciplinary teams improve patient outcomes and satisfaction. They also decrease lengths of hospital stays and in turn health care costs, while improving the job satisfaction of health care providers (Epstein, 2014).

Team members may include:

- Respirologist
- Thoracic or Transplant Surgeon
- Family Physician
- Internal Medicine
- Nurse Practitioner
- Registered Nurse
- Licensed Practical Nurse
- Resident Care Worker
- Respiratory Therapist
- Pharmacist
- Physiotherapist
- Occupational Therapist
- Registered Dietician
- Psychologist
- Social Worker
- Spiritual Care Worker
- Students

Image obtained from www.clipartpanda.com

The Pulmonary Rehabilitation Program is an example of a multidisciplinary team. Working day to day with the program is a RN, RT, and PT. The Medical Director for the program is a Respirologist and works within the Internal Medicine Department. Guest speakers for the program include a Registered Dietician, SW, Psychologist, Spiritual Care Worker, and OT. This team approach to the program helps to ensure that the program best meets the needs of all participants and is holistic.

Discussion Questions:

1. Can you share your hospital experience? What do you remember most?
2. Was your experience positive or negative?
3. Did you feel that your family was included within your multidisciplinary team?
4. Were you able to identify the profession of each healthcare worker that you encountered or did they all look the same?
5. Did the language that healthcare providers use confuse you?
6. Do you find tests and interventions confusing?

Goals of Care

- Traditionally in the hospital setting the concept Goals of Care may have been referred to as Code Status.
- Goals of Care provide instruction to healthcare providers in relation to your wishes and ultimately guide the treatment you will receive (Government of Prince Edward Island).
- Goals of Care should ideally be discussed with loved ones, family, and friends on an ongoing bases. A time of acute illness or emergency is often a difficult time to address goals of care.

In PEI Goals of Care are defined by the following:

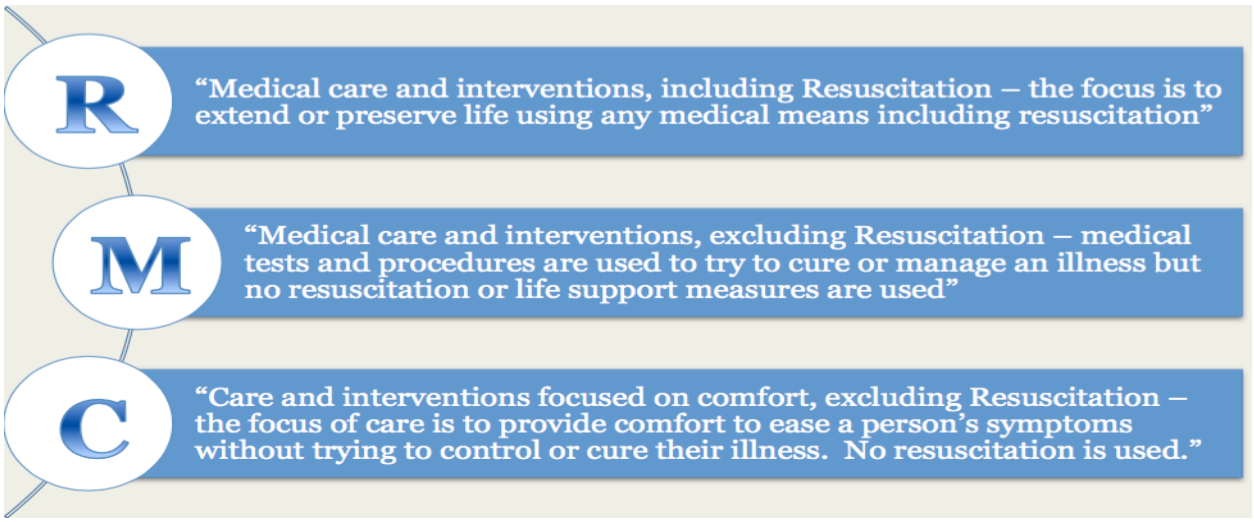


Image created utilizing definitions obtained from Government of Prince Edward Island (2016).

Goals of Care should be addressed with patients at every health care encounter!

Later in the program we will be doing an entire education session on advance care planning. We will further discuss Goals of Care during this session.

How do I make the most of my Health Care Appointments?

Health care appointment can be overwhelming, confusing, and frustrating. Patients often identify that they feel rushed during their appointments and rarely get all issues addressed during the allotted time.

Image obtained from www.clipartpanda.com

Helpful Tips (Harvard Health Publications, 2017):

- Be prepared
  - Arrive to your appointment on time and make a list of questions to have addressed before you arrive.
- Identify symptoms
  - Your health care professional can not diagnosis or treat a problem they don't know you have. Be specific and concise.
- Ask questions
  - Don't be afraid to ask questions. If you do not understand information that your health care provider is giving ask for clarification. Health care providers have a responsibility to ensure you are adequately informed and to involve you as an active participant in your care.
- Bring a friend
  - Appointments can be confusing and we rarely hear everything that is said. Four ears are always better than two!
- Bring an updated medication list
  - This will save time if your health care provider asks you what medications you take.
- Get a recap
  - Ask for a quick repeat of important information. Make sure you know the plan for follow up. Advocate for yourself, as your health care professional may not!

Drug Plans

FYI… Various drug plans are available to residents of PEI. Those most relevant to the pulmonary rehabilitation population will be discussed. A full list and additional information can be found at: https://www.princeedwardisland.ca/en/information/health-pei/drug-programs

Obtained from www.livingwellwithCOPD.com

- **Generic Drug Program:** the program is for individuals under the age of 65 who do not have private healthcare insurance. The program limits the cost per prescription to $19.95 for medications listed within the provincial formulary. Note: does not cover diabetic drugs or narcotics

- **Seniors Drug Program:** the program is for individuals over the age of 65. You will pay $15.94 per prescription for medications listed within the provincial formulary. All additional cost will be covered. You will be automatically enrolled at the age of 65.

- **Catastrophic Drug Program:** program caps annual cost of prescription medications, listed within the provincial formulary, based on your household income.

- **Home Oxygen Program:** subsidizes up to 50 percent of the cost of prescribed oxygen to a maximum of $200 per month. There are clinical requirements you must meet to be eligible.

- **Quit Smoking Drug Program:** the program will pay $75 per year towards the cost of approved smoking cessation medications.

- **Financial Assistance Drug Program:** the program covers the cost of all prescription and non-prescription medications, listed within the provincial formulary, for individuals approved for Social Assistance.

(Government of Prince Edward Island)

Additional Resources

FYI… There are resources available to residents of PEI who have difficulty navigating the healthcare system or need advice.

- **Patient Navigator:** Health PEI recognizes that the health care system is often confusing and difficult to navigate. The patient navigator works within Health PEI and is available to assist patients, families, and caregivers. The patient navigator can provide information, support, coordinate, and connect individuals to the right health care professional based on their individual needs (Government of Prince Edward Island, 2016).
  - **Contact at:**
    Toll free: 1-844-882-3141
    Telephone: (902) 620-3418
    Email: patientnavigator@gov.pe.ca
    Website: https://www.princeedwardisland.ca/en/information/health-pei/patient-navigator

- **811:** Provides access to a Registered Nurse 24 hours per day, 365 days per year. This is not an emergency service. It provides access to a registered nurse who can provide information, advise, and guidance regarding available healthcare services (Government of Prince Edward Island).
  - **Contact at:**
    Telephone: 811
    Website: https://www.princeedwardisland.ca/en/information/health-pei/811-telehealth

Important note… Health PEI recommends that individuals seek care in an Emergency Room or call 911 in the following situations (Government of Prince Edward Island):
- Experiencing chest discomfort of tightness
- Atypical shortness of breath
- Prolonged headache or dizziness

Tests and Interventions

Various tests and interventions are utilized in the diagnosis, treatment, and management of chronic lung disease. Often times these tests can be scary, overwhelming, and confusing.

Spirometry
- Useful in the diagnosis of chronic lung diseases such as COPD and asthma. It is also utilized to monitor lung function and disease progression. Spirometry measures how much air you can blow out and how fast (Canadian Lung Association, 2017).

Watch the following video to see how spirometry is conducted…

Video: What is Spirometry?
https://www.youtube.com/watch?v=LeXgXKIyRA0

- Various measurement are obtained during Spirometry testing including (Australia Lung Foundation, 2016):
  - Forced Expiratory Volume in one second (FEV_1)
    - The maximal amount of air that can be blown out from the lungs in one second.
  - Forced Vital Capacity (FVC)
    - The maximal amount of air that can be blown out forcefully in one entire breath.

Participants of Pulmonary Rehabilitation complete spirometry during their initial assessment and at the completion of the program.

Bronchoscopy

- A test that is conducted by a Respirologist. A flexible tube with a light and camera is inserted through your mouth or nose to the bronchi of your lungs. During the test, the Respirologist can collect tissue or fluid samples to be sent to the lab for assessment. A bronchoscope is helpful in the diagnosis and treatment of various chronic lung diseases (Canadian Lung Association).
- A bronchoscope is considered safe but is an invasive test. It typically takes 30 to 60 minutes to complete. You are typically sedated for a bronchoscope, told not to eat or drink prior to the test, and may be told not to take certain medications (Canadian Lung Association).
- Risks include: bleeding, pneumothorax (collapsed lung), infections, and allergic reaction to medications.

Image obtained from www.lung.ca

Chest X-ray

- Provides a visual depiction of damage to your lungs (Canadian Lung Association).
- Non-invasive test but does provide exposure to radiation

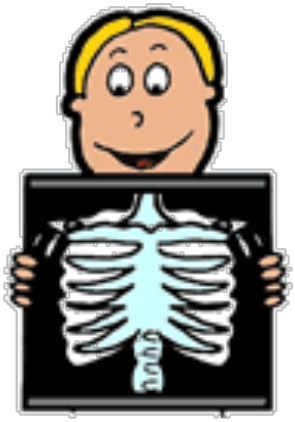


Image obtained from www.clipartpanda.com

Oximetry

- Commonly known as SP02 level or monitoring
- **Estimates** the oxygen saturation of your blood with a finger or ear probe. Oximetry is non-invasive, has no risks, and provides an almost instant result (Living Well with COPD, 2017; Canadian Lung Association)
- Oximetry is not always accurate. If a reading does not match the presentation of the patient check the equipment or try another oximeter.

This is assessed during each visit to the Pulmonary Rehabilitation Program when we perform oximetry with your initial vital signs and while you are exercising in the gym.

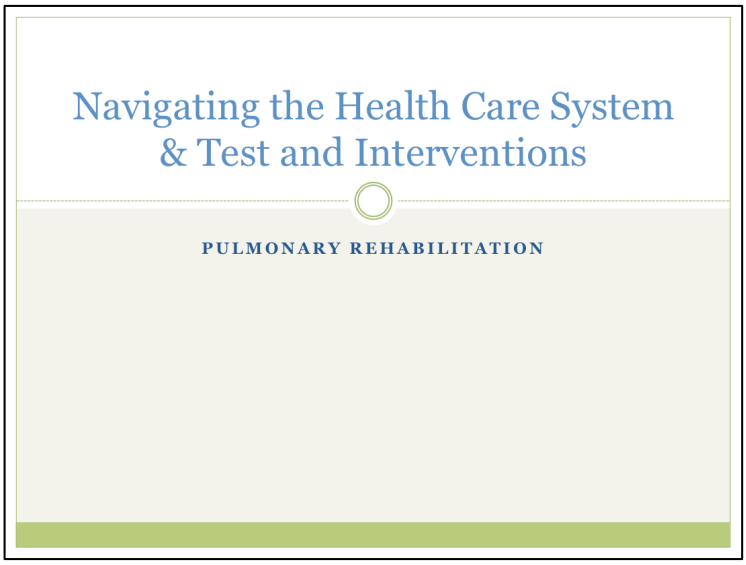
Arterial Blood Gas (ABG)

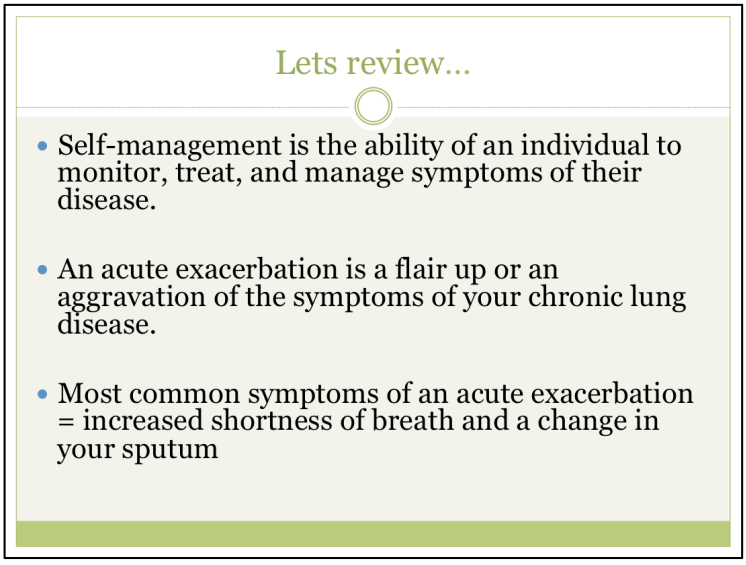
- Measures the amount of oxygen and carbon dioxide in your blood. A needle is used to obtain a small amount of blood from an artery, typically in your wrist (Living Well with COPD, 2017).
- Specially trained Registered Nurses and Respiratory Therapists can draw ABG's. An ABG does not give an instant result like Oximetry. The sample must be sent to the lab to be analyzed. Individuals on home oxygen will have an initial ABG drawn and have the test repeated in **three** months. This test is also utilized frequently in emergency rooms and critical care units for individuals with chronic lung disease during exacerbation.

Key Messages

- Multidisciplinary teams, made up of various healthcare professionals, improve patient outcomes and satisfaction.
- Goals of Care provide instruction to healthcare providers about your wishes and guide the treatment you will receive.
- To make the most of your healthcare appointments be prepared, identify symptoms, ask questions, bring a friend, bring an updated medication list, and get a recap.
- Resources available to residents of PEI who have difficulty navigating the healthcare system or need advice include the patient navigator and 811.
- Tests and interventions can be scary, overwhelming, and confusing.

The following powerpoint presentation may be utilized with the above module during group education session.





Review Key Messages from previous module.

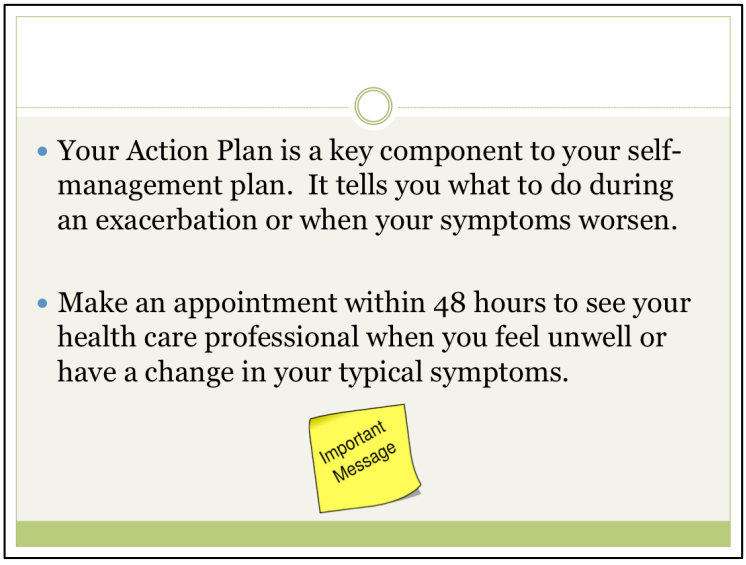


Image obtained from www.clipartpanda.com

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Various healthcare professionals make up the multidisciplinary team that provides care to patients both in the hospital and community setting. These professionals have varying education levels, specialties, and scopes of practice and therefore varying responsibilities to the patient. Sometimes it is difficult for patients to understand the role of all of theses professionals or to even distinguish between them.

Multidisciplinary teams improve patient outcomes and satisfaction, decrease lengths of hospital stays and in turn health care costs, and improve the job satisfaction of health care providers (Epstein, 2014).

The Pulmonary Rehabilitation Program is an example of a multidisciplinary team. Working day to day with the program is a Registered Nurse, Respiratory Therapist, and Physiotherapist. The medical director for the program is a Respirologist and works within the Internal Medicine Department. Guest speakers for the program include a Registered Dietician, Social Worker, Psychologist, Spiritual Care Worker, and Occupational Therapist. This team approach to the program helps to ensure that the program best meets the needs of all participants and is holistic.

Multidisciplinary Health Care Team

Team members may include:

- Pharmacist
- Physiotherapist
- Occupational Therapist
- Registered Dietician
- Psychologist
- Social Worker
- Spiritual Care Worker
- Students

Image obtained from http://familiesusa.org/share-your-story, copyright permission not required per website.

Discussion Questions:

1. Can you share your hospital experience? What do you remember most?
2. Was your experience positive or negative?
3. Did you feel that your family was included within your multidisciplinary team?
4. Were you able to identify the profession of each healthcare worker that you encountered or did they all look the same?
5. Did the language that healthcare providers use confuse you?
6. Do you know the name and purpose of every test you had done?

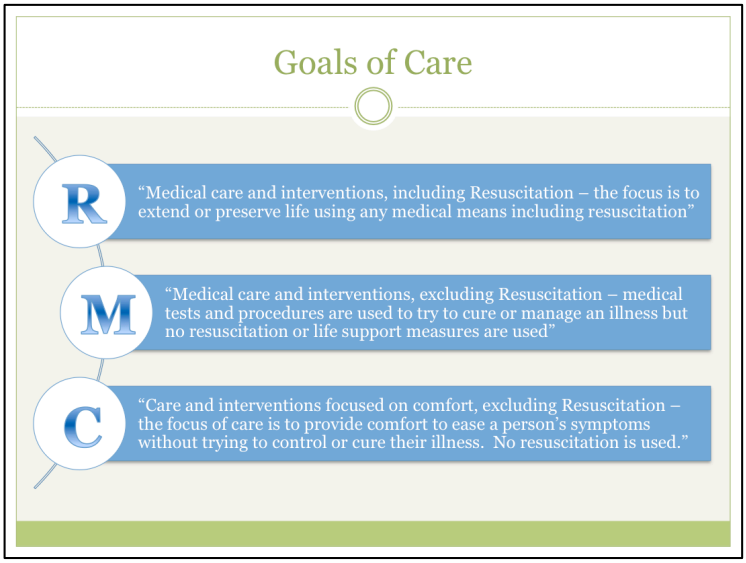

Image created utilizing definitions obtained from Government of Prince Edward Island (2016).

Traditionally in the hospital setting the concept Goals of Care may have been referred to as Code Status.

Goals of Care provide instruction to healthcare providers in relations to your wishes and ultimately guide the treatment you will receive (Government of Prince Edward Island).

Goals of Care should ideally be discussed with family, friends, and loved ones on an ongoing bases. A time of acute illness or emergency is often a difficult time to address goals of care.

Later in the program we will be doing an entire education session on advance care planning. We will further discuss Goals of Care during this session.

Health care appointment can be overwhelming, confusing, and frustrating. Patients often identify that they feel rushed during their appointments and rarely get all issues addressed during the allotted time.

Helpful Tips (Harvard University, 2017):

- Be prepared
  Arrive to your appointment on time and make a list of questions to have addressed before you arrive.
- Identify symptoms
  Your health care professional can not diagnosis or treat a problem they don't know you have. Be specific and concise.
- Ask questions
  Don't be afraid to ask questions. If you do not understand information that your health care provider is giving ask for clarification. Health care providers have a responsibility to ensure you are adequately informed and to involve you as an active participant in your care.
- Bring a friend
  Appointments can be confusing and we rarely hear everything that is said. Four ears are always better than two!
- Bring an updated medication list
  This will save time if your health care provider asks you what medications you

Image obtained from www.livingwellwithCOPD.com

Various Drug Plans are available to resident of PEI including (Government of Prince Edward Island, 2016):

Generic Drug Program: the program is for individuals under the age of 65 who do not have private healthcare insurance. The program limits the cost per prescription to $19.95 for medications listed with the provincial formulary. Note: does not cover diabetic drugs or narcotics

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Catastrophic Drug Program: program caps annual cost of prescription medications, listed within the provincial formulary, based on your household income.

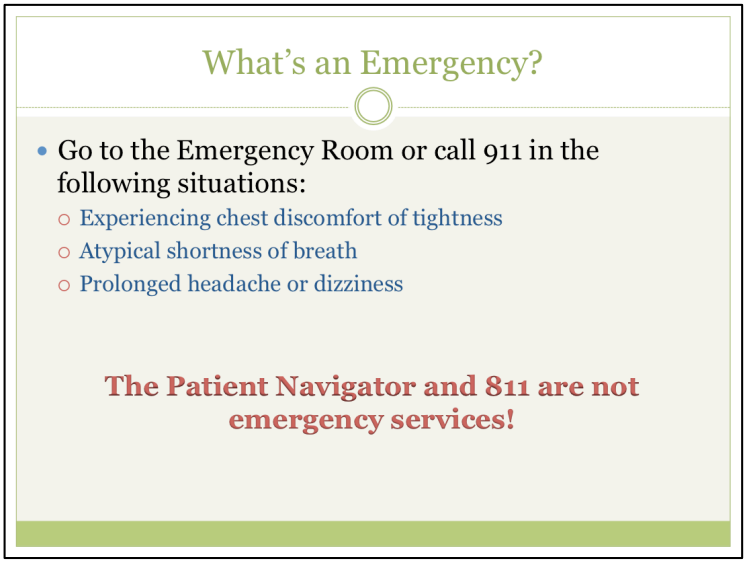
Home Oxygen Program: subsidizes up to 50 percent of the cost of prescribed oxygen to a maximum of $200 per month. There are clinical requirements you must meet to be eligible.

Additional PEI Resources

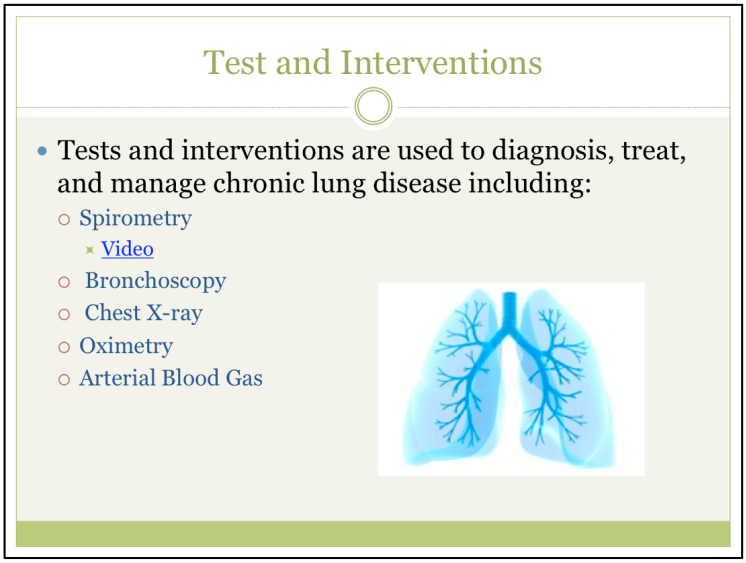
- Patient Navigator
  - **Contact at:**
  - Toll free: 1-844-882-3141
  - Telephone: (902) 620-3418
  - Email: patientnavigator@gov.pe.ca
  - Website: https://www.princeedwardisland.ca/en/information/health-pei/patient-navigator

Additional PEI Resources

- 811
  - **Contact at:**
  - Telephone: 811
  - Website: https://www.princeedwardisland.ca/en/information/health-pei/811-telehealth



Reference: (Government of Prince Edward Island, 2016)



Spirometry:

- Useful in the diagnosis of chronic lung diseases such as COPD and asthma and is also utilized to monitor lung function and disease progression. Spirometry measures how much air you can blow out and how fast.

A link to a vide, obtained from www.lung.ca, depicting spirometry is found above

- Various measurement are obtained during Spirometry testing including (Australia Lung Foundation, 2016):
  Forced Expiratory Volume in one second (FEV_1): The maximal amount of air that can be blown out from the lungs in one second.
  Forced Vital Capacity (FVC): The maximal amount of air that can be blown out forcefully in one entire breath.

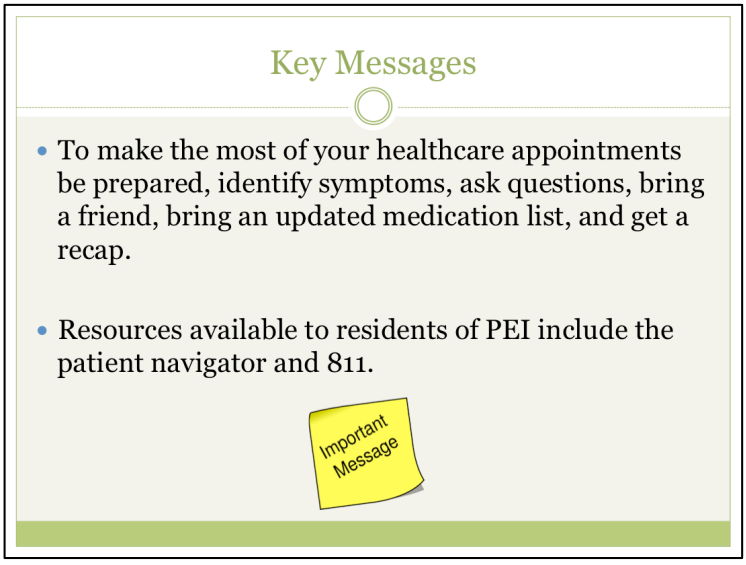
Participants of Pulmonary Rehabilitation complete spirometry during their initial assessment and at the completion of the program.

Bronchoscopy

- A test that is conducted by a Respirologist. A flexible tube with a light and camera is inserted through your mouth or nose to the bronchi of your lungs. During the test, the Respirologist can collect tissue or fluid samples to be sent to the lab for

Key Messages

- Multidisciplinary teams, made up of various healthcare professionals, improve patient outcomes and satisfaction.
- Goals of Care provide instruction to healthcare providers about your wishes and guide the treatment you will receive.
- Tests and interventions can be scary, overwhelming, and confusing.



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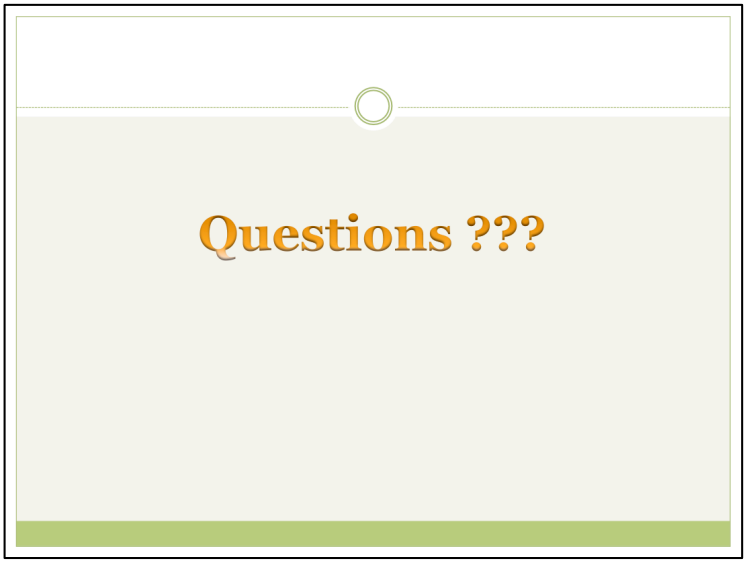

Questions ???

Module 9: Stress, Anxiety, and/or Depression

Module Description

It is recognized that there is an association between chronic lung disease and stress, depression, and anxiety (Kunik et al., 2005). This module will introduce the concepts of stress, depression, and anxiety and provide participants an opportunity to share their personal experience or story. The Anxiety-Breathlessness Cycle will be introduced as well as various coping strategies.

Learning Objectives

By the end of a group education session participants will:

1. Identify the **three** domains of health.
2. Simply explain the Anxiety-Breathlessness Cycle.
3. Identify two strategies to assist with stress, depression, and anxiety.
4. Share their personal impact of chronic lung disease.

Teaching Aids/Activities

It is intended that the materials presented within this module be utilized during a one hour group education session. Various aids have been provided within the module to assist with ease of education delivery.

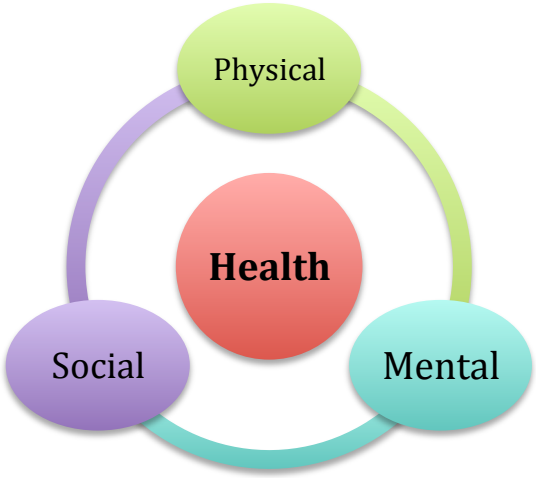
- Visual Aids: PowerPoint presentation; whiteboard and markers
- Potential questions for facilitated group discussion
- Handout: Test your Confidence Level in Managing your Stress and Anxiety
- Video: "Pursed Lip Breathing" avaliable at https://www.youtube.com/watch?v=7kpJ0QlRss4

Module Content

- The reality of living with lung disease is burdensome and debilitating to individuals with these conditions (World Health Organization, 2007). As we know, lung disease is a chronic disease associated with symptoms that gradually progress over time. How does this reality impact our overall health?

What is Health?

- The World Health Organization (WHO) (1948) defines health as "a state of complete physical, mental, and social well-being and not merely the absence of disease" (para. 1).
- Health is holistic and encompasses three domains:



Patients often identify that health care professionals do not address the mental health or emotional aspect of their overall well-being. This module will provide an opportunity to first address the significance of stress and anxiety and allow participants to share their personal experience or story. Facilitate a group discussion to address the following questions.

Discussion Questions:

1. How did you feel when you were diagnosed with chronic lung disease?
2. Have those feelings changed over time?

Obtained from www.clipartpanda.com

Stress

What is Stress?

- Stress is a response to a situation, typically a real or perceived threat.
- We experience stress as a result of both good and bad things that happen to us.
- Stress can be good! I can be utilized as a form of motivation.
- Stress can also effect us negatively, leading to:
  - ❖ Avoidance
  - ❖ Difficulty concentrating

- ❖ Sleep disturbances
- ❖ Increased heart rate
- ❖ Headaches

(Canadian Mental Health Association, 2017)

- Chronic lung disease presents additional challenges. There are various reactions to stress that have an impact on our overall ability to cope such as fear, anxiety, or panic (Living Well with COPD, 2017).

Depression

Stress and the various associated reactions may lead to depression if not paired with effective coping.

- Depression is characterized by ongoing feelings of sadness, worthlessness, worrying, or withdrawal, and is caused by a chemical imbalance.
- There is a link between how we feel emotionally and feel physically!
- Depression is not having a bad day or feeling sad. Without appropriate treatment and support, depression will not go away.
- Many symptoms of depression are similar to those of lung disease including:
  - ❖ Sleep disturbances
  - ❖ Fatigue
  - ❖ Moving slower
  - ❖ Withdrawing from activities
  - ❖ Difficulty remembering or concentrating
  - ❖ Loss of appetite

(Canadian Mental Health Association, 2017)

- Depression is under diagnosed and under treated in individuals living with chronic lung disease.
- Depression and anxiety increase incidence of acute exacerbation.

(Australian Lung Foundation, n.d; Living Well with COPD, 2017)

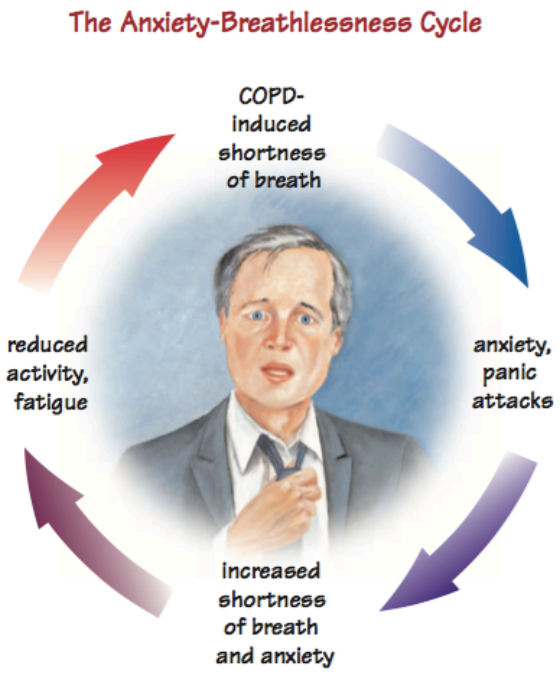
Obtained from www.clipartpanda.com

It is essential to seek emergency help if you are experiencing thoughts of suicide or self harm.

Anxiety and Chronic Lung Disease

- The main symptom of chronic lung disease is typically shortness of breath (SOB). SOB may cause anxiety or panic attacks. Anxiety causes your to breathe faster, which in turn increases your anxiety and SOB (Doyle et al., 2013).

- This may cause individuals with chronic lung disease to avoid activity due to fear and anxiety associated with SOB. The less activity we do the less in shape we are, also causing SOB. This may also increase social isolation. The uncertainty of being able to climb stairs or walk a long distance creates anxiety, resulting in avoidance of social situations (Living Well with COPD, 2017). This cycle is depicted in the following picture obtained from www.livingwellwithCOPD.com.



- Various strategies can be utilized to break the Anxiety-Breathlessness Cycle including (COPD Foundation, 2017):
  - ❖ Learn to relax
  - ❖ Recognize, examine, and face you fears
  - ❖ Solve one problem at a time and don't worry about future events
  - ❖ Plan actions in advance
  - ❖ Do things you enjoy and enjoy humor
  - ❖ Maintain a positive attitude
  - ❖ Seek help when needed

- The impact of anxiety on chronic lung disease has been linked to greater disability, increased frequency of hospital admissions for acute exacerbations, and increased breathlessness (Doyle et al., 2013; Australia Lung Foundation, n.d).

- A review of 22 published studies between 1999 and 2009 found that the prevalence of anxiety symptoms ranged from 6% to 74% among individuals diagnosed with chronic lung disease. Clinical anxiety was experience by up to 55% of individuals with COPD (Australia Lung Foundation, n.d).

- Similarly, a research study by Kunik et al. (2005) identified that 80% of individuals with chronic lung disease screen positive for anxiety and/or depression.

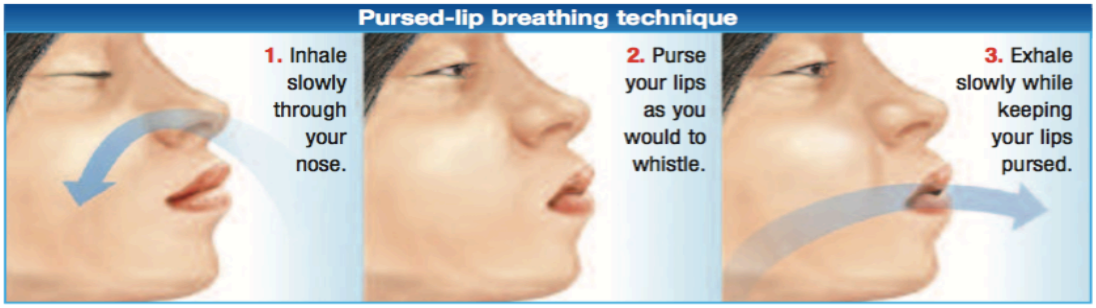
Common Signs of anxiety include (Canadian Mental Health Association, 2017):

- ❖ Tightening of the chest
- ❖ Increased heart rate
- ❖ Shortness of breath
- ❖ Nausea
- ❖ Fear
- ❖ Hot and cold flashes
- ❖ Excessive worrying
- ❖ Sleep disturbances

- It is important to note that the treatment for anxiety and depression is complex and varies among individuals. The different side effects of medications used in the treatment and management of chronic lung disease may also have an impact on and individual's mental or emotional health (Kunik et al., 2005; Australia Lung Association, n.d).

- Using breathing techniques such as pursed lip breathing will help manage both anxiety and SOB (Borge et al., 2014).

Lets review pursed-lip breathing:



Steps

1. Inhale slowly through your nose until you feel that your lungs are filled with air.
2. Purse your lips as you would if you were whistling or about to kiss someone.
3. Exhale slowly while keeping your lips pursed. Make sure to take longer to breathe out than you would to breathe in. Remember to keep your lips pursed.
4. **Do not force your lungs to empty.**

(Living Well with COPD, 2005, p. 11)

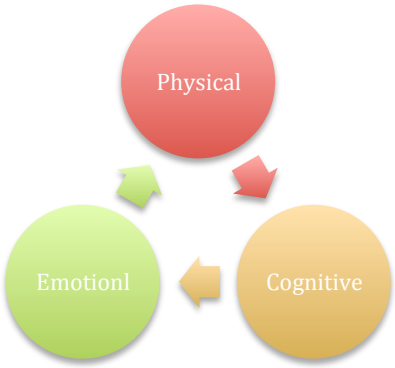
Video: "Pursed Lip Breathing" available at
https://www.youtube.com/watch?v=7kpJ0QlRss4

Pulmonary Rehabilitation is recognized as beneficial for individuals with chronic lung disease who are experiencing anxiety and depression since it provides psychosocial support. It has been shown to be helpful with symptom management and to improve overall mood (Australia Lung Association, n.d).

Coping with Chronic Lung Disease

- Effective coping, associated with chronic lung disease, requires ongoing physical, cognitive, and emotional adjustments as individuals experience disease progression. Possible adjustments may include:
  - ❖ Physical: managing shortness of breath or other symptoms associated with lung disease, inability to participate in activities, environmental conditions, or managing new medical equipment.

- ❖ Cognitive: changes to self-esteem, learning new skills, planning for the future, acceptance of limitations
- ❖ Emotional: anger, grief, denial, or fear



FYI… Often physical or cognitive adjustments are easier then emotional adjustments!

Activity: *Distribute handout Test your Confidence Level in Managing your Stress and Anxiety*

Discussion Questions:

1. Did you have to make any adjustment in your life after you were diagnosed with lung disease?
2. Is this an ongoing process as your disease progresses?

Provide an opportunity for participants and family members to share their personal experience or story. They following discussion may be helpful to facilitate discussion if required.

Discussion Questions:

1. What situations cause you to experience stress or anxiety?
2. How does stress or anxiety affect your breathing?
3. What strategies do you use to cope with stress and anxiety?
4. Do you think that health care providers adequately address your emotional needs that are associated with chronic lung disease?
5. Do your family and friends understand the impact of your disease and the associated emotions?

Available Resources

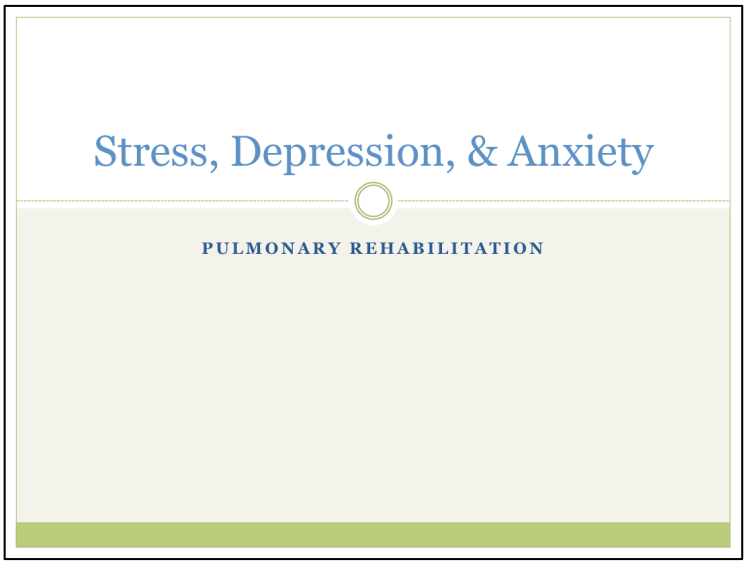
- The Pulmonary Rehabilitation Team
- Friends and Family Members
- Primary Care Provider such as Family Doctor or Nurse Practitioner

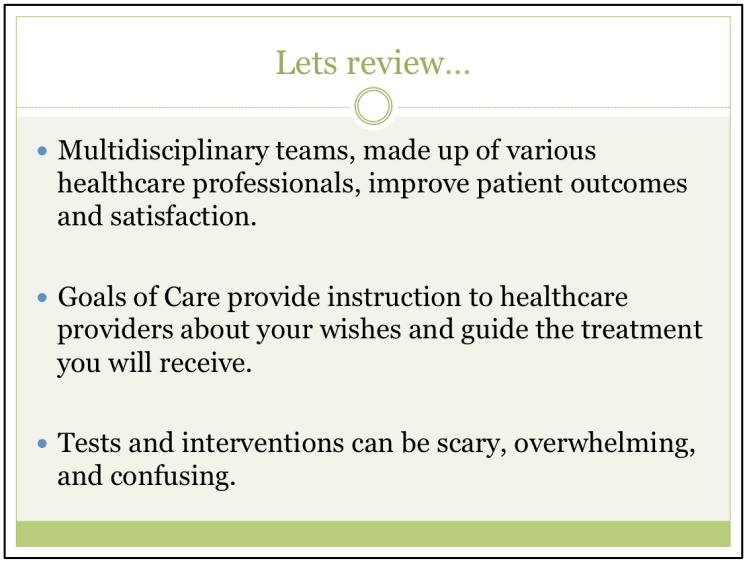
- Community Mental Health Services across PEI
- Hospital Emergency Department

Key Messages

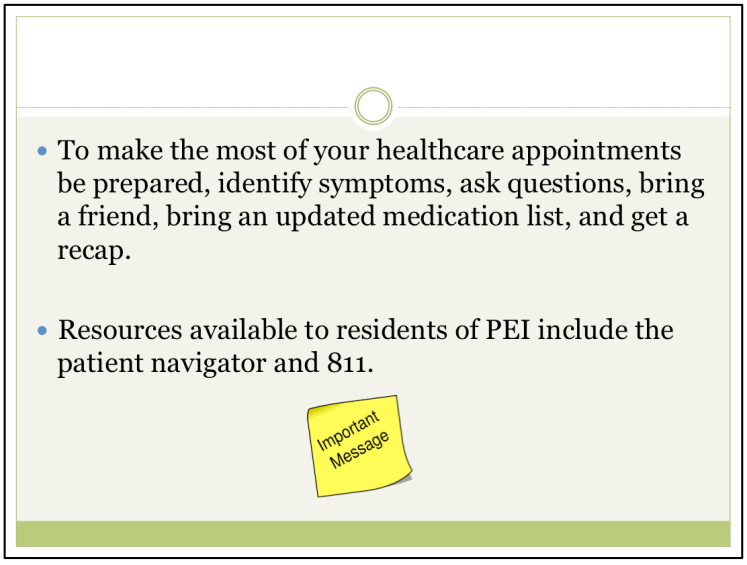
- ❖ Health is a "state of complete physical, mental, and social well-being and not merely the absence of disease".
- ❖ 80% of individuals with chronic lung disease screen positive for anxiety and/or depression. You are not alone!
- ❖ Using breathing techniques such as pursed lip breathing will help manage both anxiety and SOB.
- ❖ Depression and anxiety increase incidence of acute exacerbation.
- ❖ It is essential to seek emergency help if you are experiencing thoughts of suicide or self harm.

The following powerpoint presentation may be utilized with the above module during group education session.





Review Key Messages from previous module.



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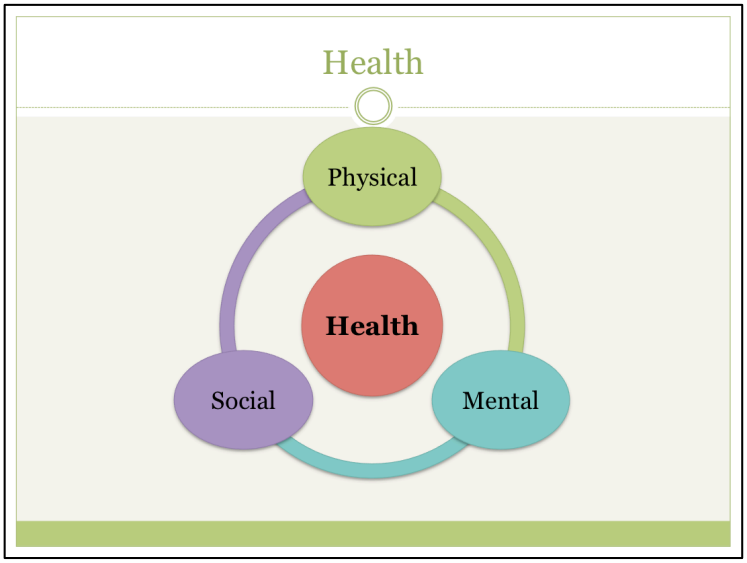


The World Health Organization (WHO) (1948) defines health as "a state of complete physical, mental, and social well-being and not merely the absence of disease" (para. 1)

Patients often identify that health care professionals do not address the mental health or emotional aspect of their overall well-being. This module will provide an opportunity to first address the significance of stress and anxiety and allow participants to share their personal experience or story. Facilitate a group discussion to address the following questions.

Emotions and Lung Disease

- Lung disease is associated with symptoms that gradually progress over time.
- How did you feel when you were diagnosed with chronic lung disease?
- Have those feelings changed over time?

Image obtained from www.clipartpanda.com

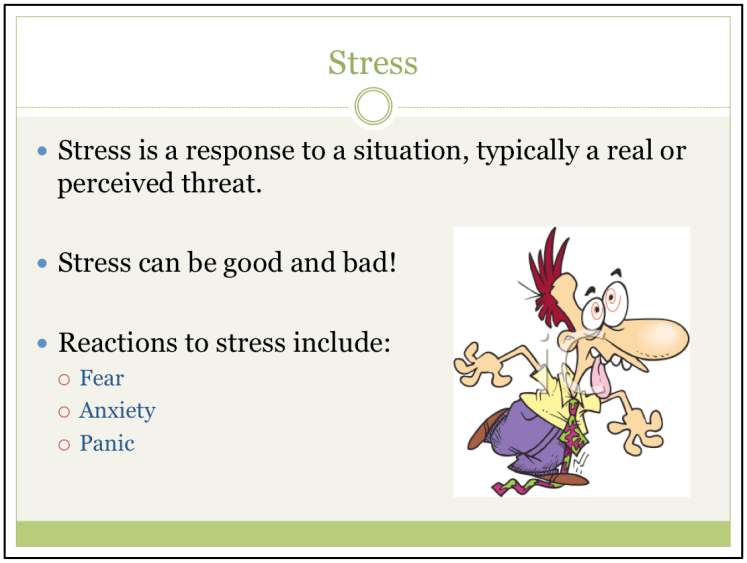


Image obtained from www.clipartpanda.com

What is Stress?

Stress is a response to a situation, typically a real or perceived threat.

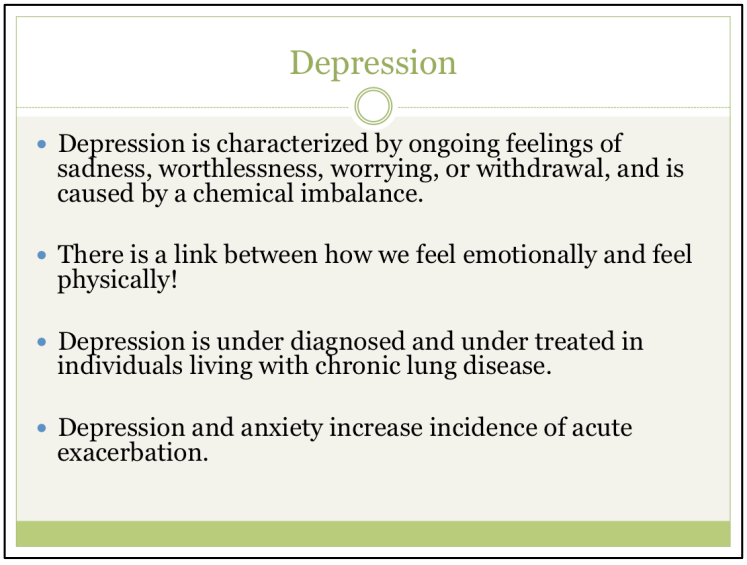
We experience stress as a result of both good and bad things that happen to us.

Stress can be good! I can be utilized as a form of motivation.

Stress can also effect us negatively, leading to:
- Avoidance
- Difficulty concentrating
- Sleep disturbances
- Increased heart rate
- Headaches

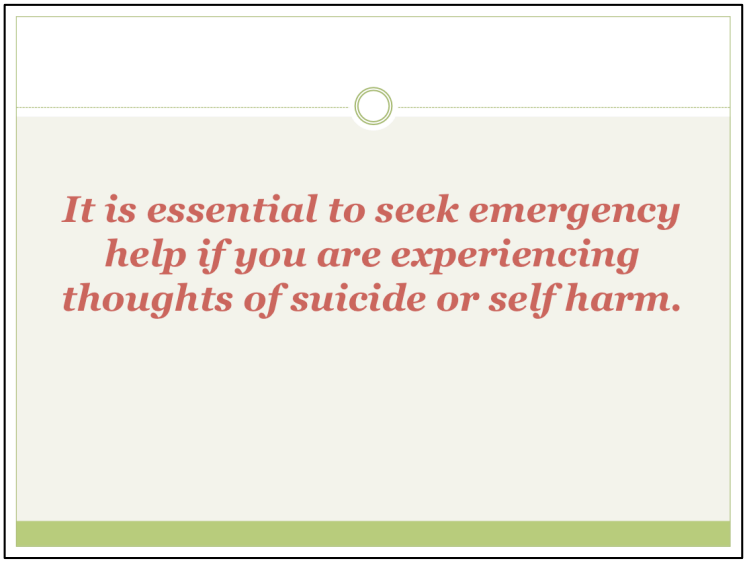
(Canadian Mental Health Association, 2017)

Chronic lung disease presents additional challenges. There are various reactions to stress that have an impact on our overall ability to cope such as fear, anxiety, or panic (Living Well with COPD, 2017).



References: (Canadian Mental Health Association, 2017; Australian Lung Foundation, n.d; Living Well with COPD)

Depression is not having a bad day or feeling sad. Without appropriate treatment and support, depression will not go away.


It is essential to seek emergency help if you are experiencing thoughts of suicide or self harm.

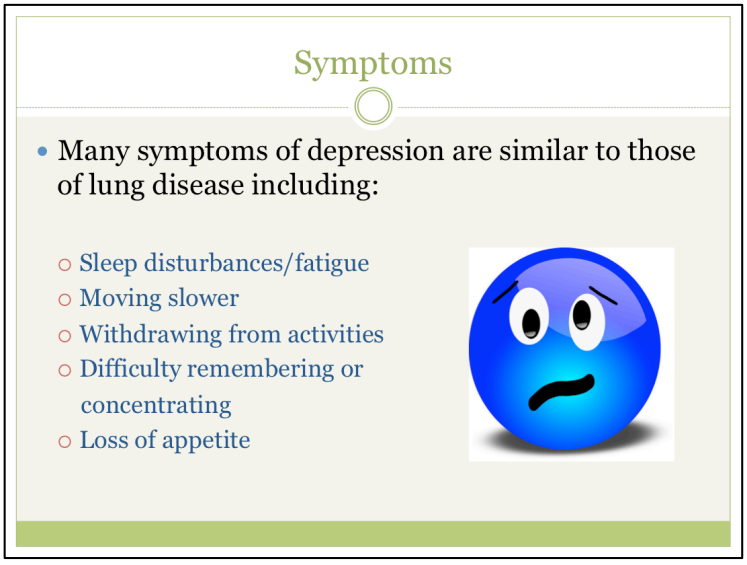


Image obtained from www.clipartpanda.com

Reference: (Canadian Mental Health Association, 2017)

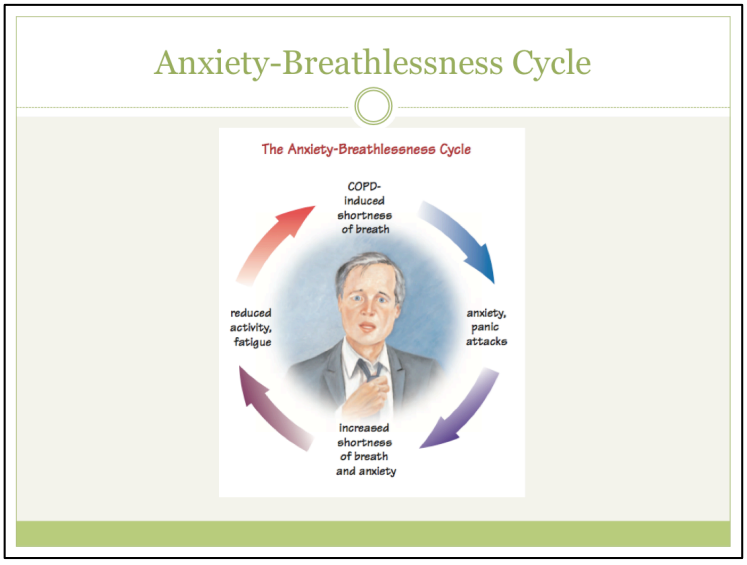
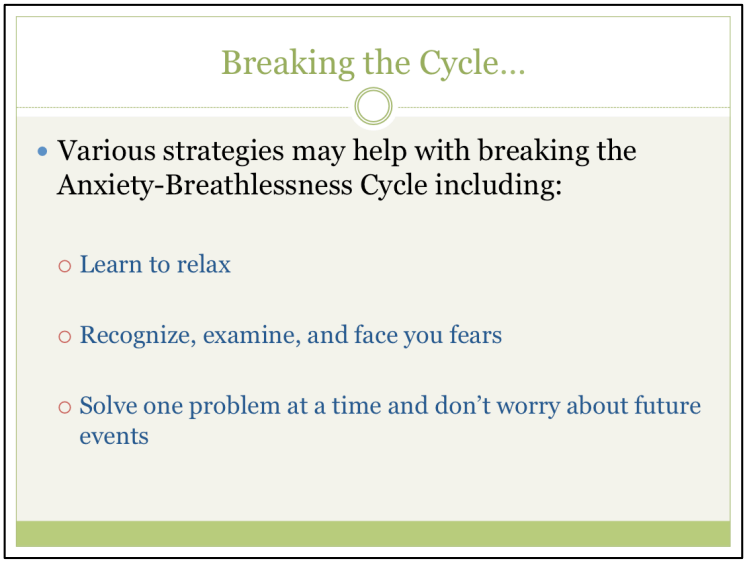


Image obtained from www.livingwellwithCOPD.com

The main symptom of chronic lung disease is typically shortness of breath (SOB). SOB may cause anxiety or panic attacks. Anxiety causes your to breathe faster, which in turn increases your anxiety and SOB (Doyle et al., 2013).

This may cause individuals with chronic lung disease to avoid activity due to fear and anxiety associated with SOB. The less activity we do the less in shape we are, also causing SOB. This may also increase social isolation. The uncertainty of being able to climb stairs or walk a long distance creates anxiety, resulting in avoidance of social situations (Living Well with COPD, 2017). This cycle is depicted in the following picture obtained from www.livingwellwithCOPD.com.



Reference: (Living Well with COPD)

It is important to note that the treatment for anxiety and depression is complex and varies among individuals. The different side effects of medications used in the treatment and management of chronic lung disease may also have an impact on and individual's mental or emotional health (Australia Lung Association, n.d).

Pulmonary Rehabilitation is recognized as beneficial for individuals with chronic lung disease who are experiencing anxiety and depression as it provides psychosocial support. It has been shown to be helpful with symptom management and to improve overall mood (Australia Lung Association, n.d).

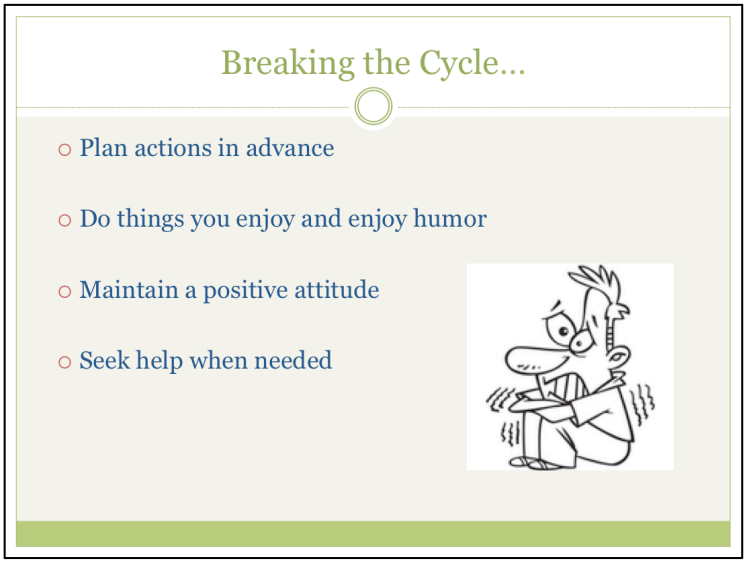
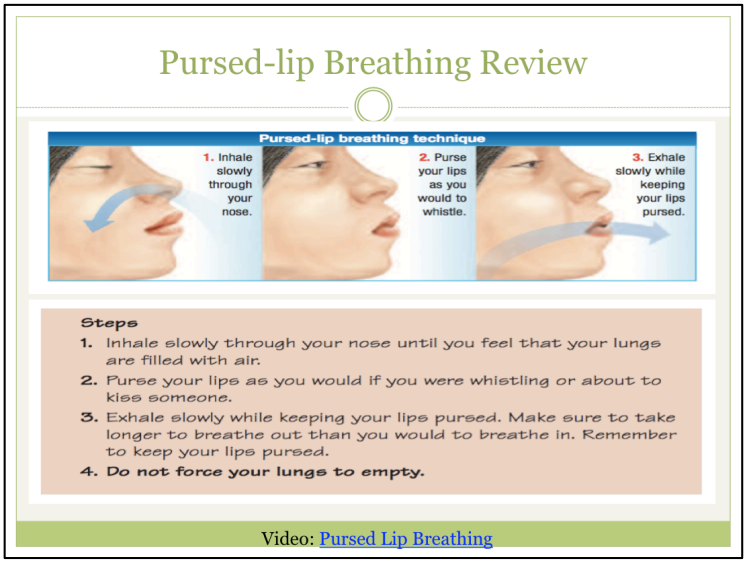


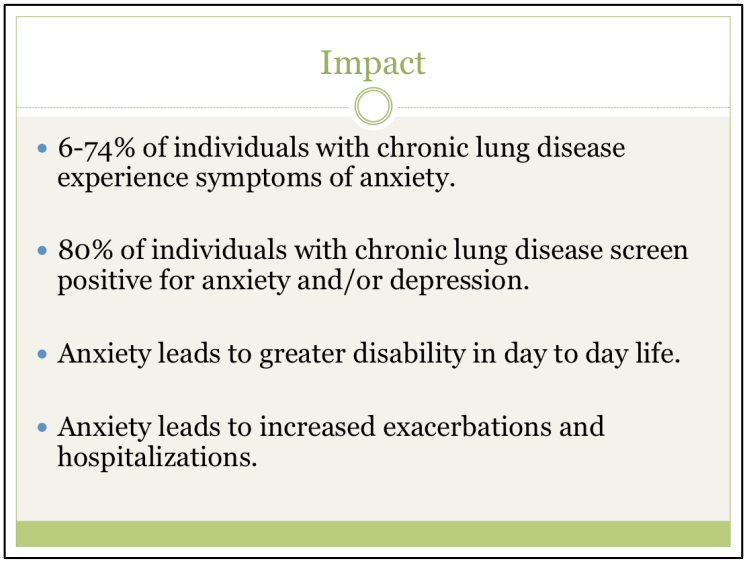
Image obtained from www.clipartpanda.com

Reference: (Living Well with COPD)



Reference: (Living Well with COPD, 2005, p. 11)

Using breathing techniques such as pursed lip breathing will help manage both anxiety and SOB (Living Well with COPD).



The impact of anxiety on chronic lung disease has been linked to greater disability, increased frequency of hospital admissions for acute exacerbations, and increased breathlessness (Doyle et al., 2013; Australia Lung Foundation, n.d).

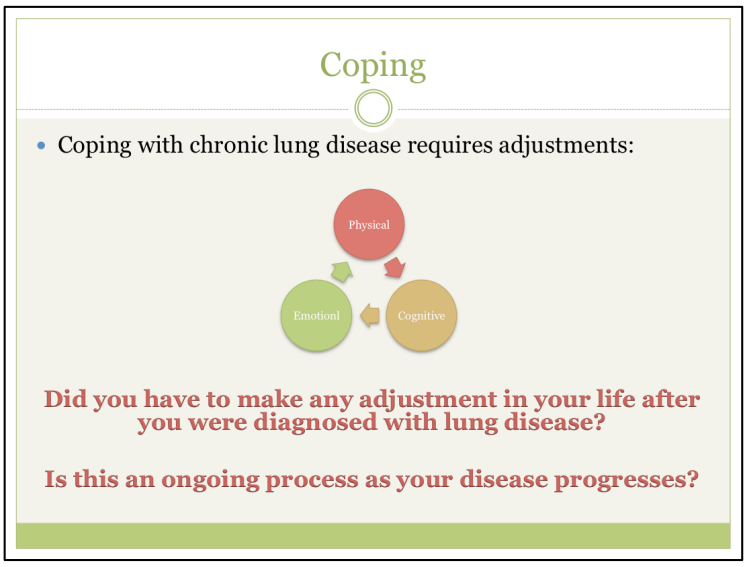
A review of 22 published studies between 1999 and 2009 found that the prevalence of anxiety symptoms ranged from 6% to 74% among individuals diagnosed with chronic lung disease. Clinical anxiety was experience by up to 55% of individuals with COPD (Australia Lung Foundation, n.d).

Similarly, a research study by Kunik et al. (2005) identified that 80% of individuals with chronic lung disease screen positive for anxiety and/or depression.

Image obtained from http://familiesusa.org/share-your-story, copyright permission not required per website.

Discussion Questions:

1. What situations cause you to experience stress or anxiety?
2. How does stress or anxiety affect your breathing?
3. What strategies do you use to cope with stress and anxiety?
4. Do you think that health care providers adequately address your emotional needs that are associated with chronic lung disease?
5. Do your family and friends understand the impact of your disease and the associated emotions?



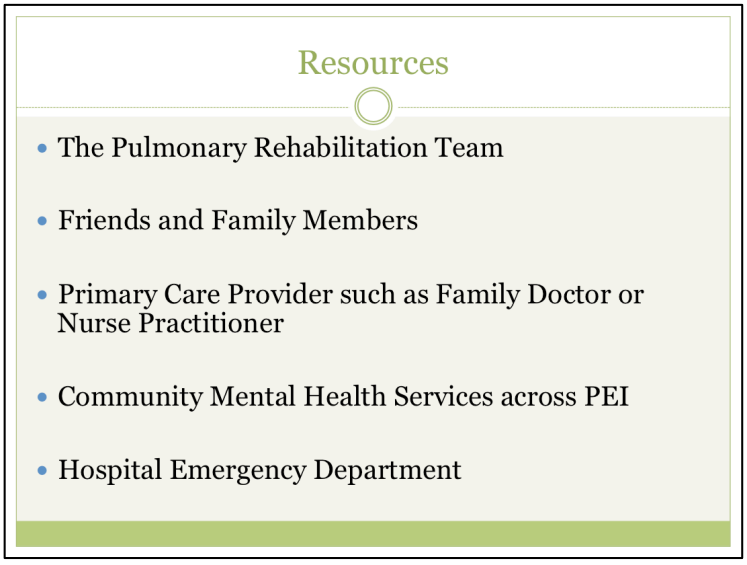
Physical: managing shortness of breath or other symptoms associated with lung disease, inability to participate in activities, environmental conditions, or managing new medical equipment.

Cognitive: changes to self-esteem, learning new skills, planning for the future, acceptance of limitations

Emotional: anger, grief, denial, or fear

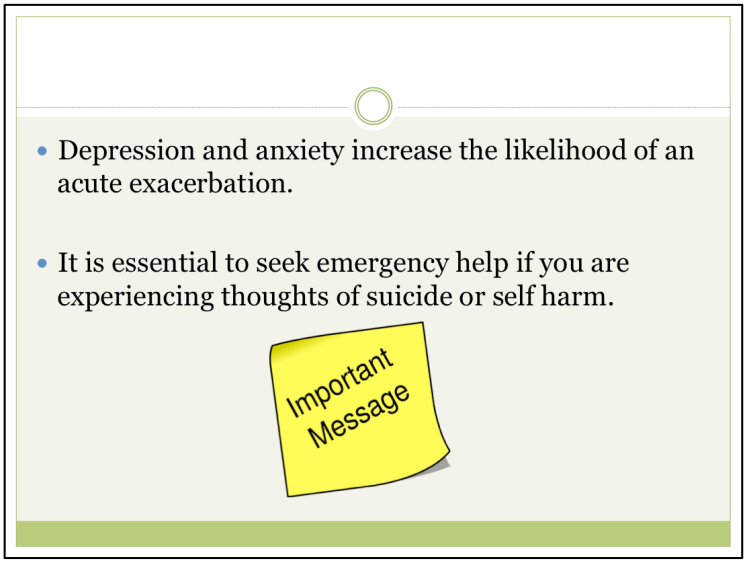
FYI… Often physical or cognitive adjustments are easier then emotional adjustments!

Activity: *Distribute handout Test your Confidence Level in Managing your Stress and Anxiety*


Resources
The Pulmonary Rehabilitation Team
Friends and Family Members
Primary Care Provider such as Family Doctor or Nurse Practitioner
Community Mental Health Services across PEI
Hospital Emergency Department

Key Messages

- Health incorporates physical, mental, and social well-being.
- 80% of individuals with chronic lung disease screen positive for anxiety and/or depression. **You are not alone!**
- Breathing techniques, such as pursed lip breathing, will decrease anxiety and SOB.



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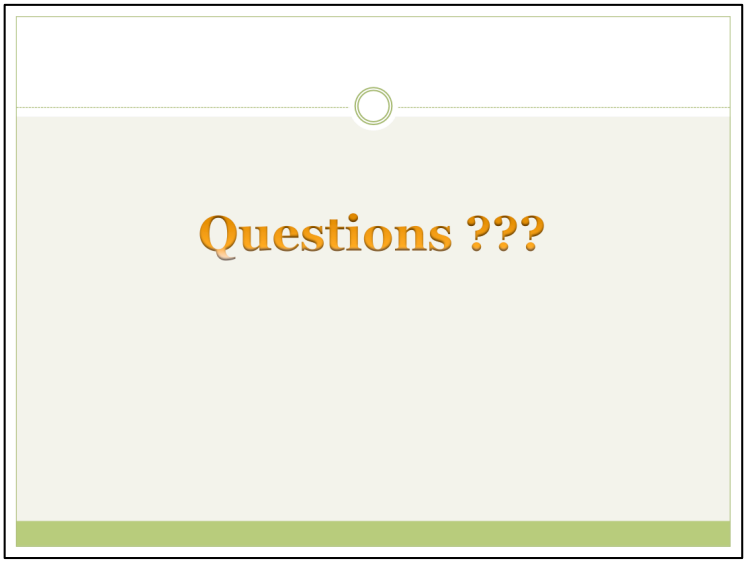

Questions ???

Now test your confidence level in managing your stress and anxiety.

On a scale of 1 to 10, circle the number that best represents the confidence that you have in your ability to apply the strategies and techniques taught in this module.

1. To identify stressors in your life?

1 2 3 4 5 6 7 8 9 10
not at all confident very confident

2. To control your reactions when facing stressful situations?

1 2 3 4 5 6 7 8 9 10
not at all confident very confident

3. To express your needs assertively?

1 2 3 4 5 6 7 8 9 10
not at all confident very confident

4. To maintain a positive attitude?

1 2 3 4 5 6 7 8 9 10
not at all confident very confident

5. To use relaxation techniques?

1 2 3 4 5 6 7 8 9 10
not at all confident very confident

6. Do you think that the strategies and techniques taught in this module can help you to better manage your stress and anxiety?

1 2 3 4 5 6 7 8 9 10
not at all confident very confident

Module 10: Moving Forward

Module Description

This module completes the 12-week Pulmonary Rehabilitation Program. We will look back and reflect on what each participant has achieved and discuss moving forward. The module will begin by reviewing and reflecting on personal SMART goals developed by participants during module 1. Time will then be allotted for participants to complete five out-take surveys and a program evaluation form. Throughout the program, Summary Reports are completed on each participant that contain both intake and out-take data. This report is then sent to the participant's referring and family physician to close the communication loop.

Learning Objectives

By the end of a group education session participants will:

1. Review and reflect on personal SMART goals developed in Module 1.
2. Complete five outtake surveys.
3. Review their personal Summary Report.
4. Complete a program evaluation form.

Teaching Aids/Activities

It is intended that the materials presented within this module be utilized during a one hour group education session. Various aids have been provided within the module to assist with ease of education delivery.

- Visual Aids: whiteboard and markers
- Potential questions for facilitated group discussion
- Surveys:
  - Lung Information Needs Questionnaire
  - Pulmonary Rehabilitation Program Survey
  - Patient Health Questionnaire (PHQ-4)
  - Self-Efficacy for Managing Chronic Disease 6-item Scale
  - COPD Assessment Test (CAT)
- Patient Summary Reports
- Program Evaluation Form

Module Content

Congratulations! You have successfully completed the Provincial Pulmonary Rehabilitation Program.

SMART Goal Review/Reflection

On the first day of the program participants all created three personalized SMART goals to achieve by the end of the program. Distribute copy of SMART goals to participants in order for them to review and reflect on their personal goals. Facilitate a group discussion.

Discussion Questions:

1. Did you achieve your goals?
2. Did your goals change as your progressed through the program?
3. Do you have new goals now that you have completed the program?

There may be some participants who did not achieve their goals and that is ok. Lets focus on what we did achieve during the last 12 weeks. This provides an opportunity for self-reflection for participants as well.

Discussion Question: Why did I know achieve my goals?

Outtake Surveys

During intake assessment all participants filled out the following surveys:

- Lung Information Needs Questionnaire
- Pulmonary Rehabilitation Program Survey
- Patient Health Questionnaire (PHQ-4)
- Self-Efficacy for Managing Chronic Disease 6-item Scale
- COPD Assessment Test (CAT)

Now that you have completed the program, we will now take 15 to 20 minutes and fill out the same surveys. The results of each survey will become part of your summary report! Each survey can be found in the handout section of this module.

Summary Reports

During the Pulmonary Rehabilitation Program various outcomes measures are collected from the participants. The Pulmonary Rehabilitation Team developed the following Summary Report as a tool to manage and share collected data. A Summary Report is completed for each participant, and sent to his or her physician or nurse practitioner. A folder has been created for each patient with a program completion certificate and their personal Summary Report. Review each section of the report with participants.

Health PEI Santé Î.-P.-É.
One Island Health System Un système de santé unique

Provincial Cardiac and Pulmonary Rehabilitation
Four Neighborhoods Health Centre
Phone: (902) 388-1405 **Fax:** (902) 368-6936

To:
Fax:

Pulmonary Rehabilitation Patient Summary Report

Patient: **Age:**
MRN:
Patients participating in the Provincial Pulmonary Rehabilitation Program had the opportunity to attend education and supervised exercise classes 2 days per week for 12 weeks. Assessment data was collected pre and post participation. The following is a summary report specific to the patient identified above.

Assessment Data	Pre	Post
Blood Pressure		
Resting HR		
Height (cm)		
Weight (kg)		
BMI		
Waist Circumference (inches)		
MRC		
BODE Score		
6MWT	Predicted distance Total distance/RPE Percent predicted	Predicted distance Total distance/RPE Percent predicted
Spirometry	FEV1 FVC FEV1/FVC Ratio	FEV1 FVC FEV1/FVC Ratio
Hgb a1C		
Fasting Lipid Profile	Total HDL LDL Non HDL Ratio Triglycerides	Total HDL LDL Non HDL Ratio Triglycerides
Surveys	CAT Survey Health Literacy Score LINQ Self-Efficacy Scale PHQ-4	CAT Survey Health Literacy Score LINQ Self-Efficacy Scale PHQ-4
Attendance		

Additional Summary Notes:

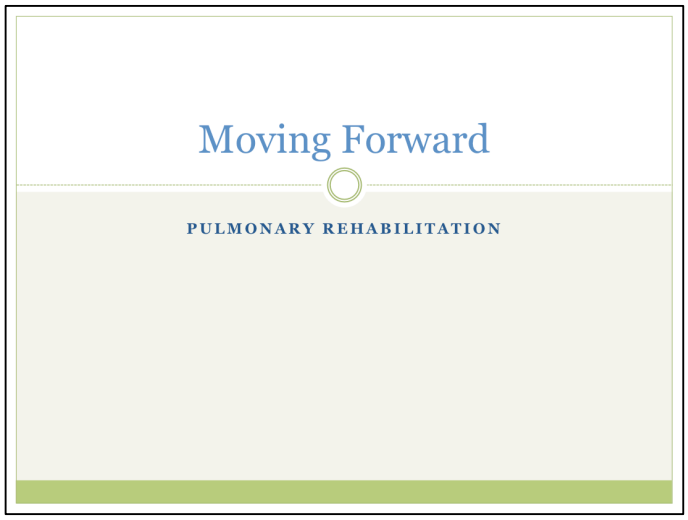
Discussion Question: Does anyone have any additional questions about their Summary Reports?

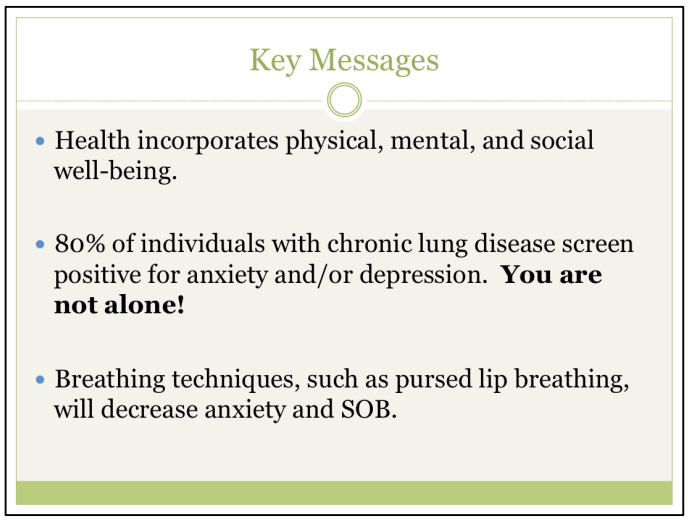
The following chart was developed by the Provincial Cardiac and Pulmonary Team. It is sent with each summery report as a guide for interpreting data contained within each report.

Measure	Description	Interpretation
BODE Index	The BODE index is a multidimensional scoring system and capacity index used to predict 4 year outcomes for people diagnosed with COPD . The BODE score is calculated using body mass index (BMI), airflow obstruction (FEV1), dyspnea rating using the MRC scale, and results from a 6 minute walk test (6MWT).	0-2 = 80% 4 year predicted survival rate 5-6 = 57% 4 year predicted survival rate 3-4 = 67% 4 year predicted survival rate 7-10 = 18% 4 year predicted survival rate
CAT	The CAT is a simple but highly valid questionnaire. It provides a reliable measure of health status in COPD patients and assists patients and health care professionals in quantifying the impact of COPD on patients' health, wellbeing and daily life.	<10= Low Impact: most days are good, but COPD causes a few problems and stops people doing one or two things that they would like to do. 10-20= Medium Impact: COPD is one of the most important problems that they have. >20= High Impact: COPD stops them from doing most things that they want to do. >30= Very High Impact: Their condition stops them from doing everything they want to do and they never have any good days.
Health Literacy Questionnaire	This is a 3 item questionnaire which screens for an individual's level of self-reported difficulty with understanding information or performing reading tasks they encounter in the health care setting.	Scores range from 3-15 with higher scores indicting higher subjective health literacy.
LINQ	The Lung Information Needs Questionnaire is a self-completed questionnaire that measures the information needs of patients with chronic obstructive pulmonary disease (COPD) and other chronic lung diseases. LINQ is designed to help clinicians identify which patients would benefit from lung information and the type of information an individual patient needs. This questionnaire can also be used to evaluate the impact of an intervention, including pulmonary rehabilitation, for research and audit purpose.	The minimum score (low information needs) is 0 and maximum score (high information needs) is 25
PHQ-4	The Patient Health Questionnaire for Depression and Anxiety (PHQ-4) was developed to allow for a very brief and accurate measurement to screen for depression and anxiety.	Normal (0-2) Mild (3-5) Moderate (6-8) Severe (9-12)
Self-Efficacy Scale	This 6-item scale is used to identify how confident a patient feels in managing their chronic disease. It covers several domains that are common across many chronic diseases: symptom control, role function, emotional functioning and communication with health care providers.	Scores range from 1 to 10, with 1 correlating with low self- efficacy and 10 correlating with high self-efficacy in managing chronic disease.

Program Evaluation: *Distribute and have participants complete a Program Evaluation form. Conclude session with an open discussion related to program evaluation, outcomes, or general comments.*

The following powerpoint presentation may be utilized with the above module during group education session.




Key Messages
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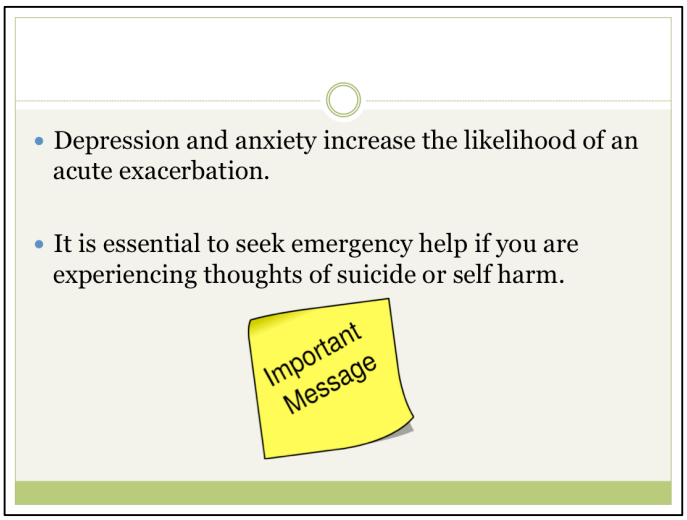
Breathing techniques, such as pursed lip breathing, will decrease anxiety and SOB.



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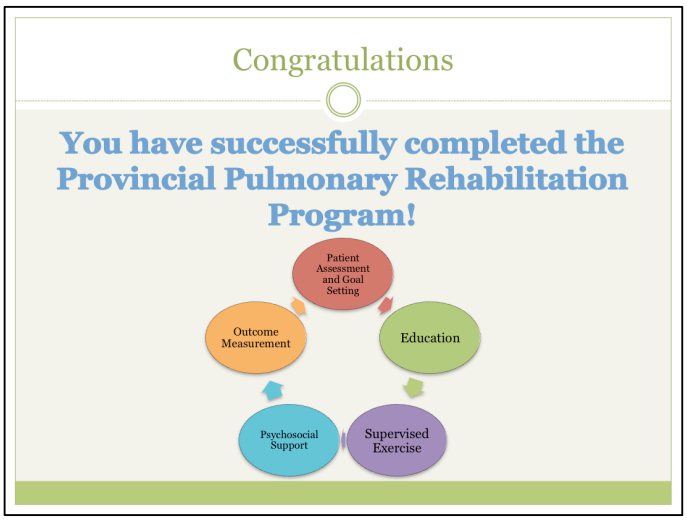

Congratulations
You have successfully completed the Provincial Pulmonary Rehabilitation Program!
Patient Assessment and Goal Setting
Education
Supervised Exercise
Psychosocial Support
Outcome Measurement

On the first day of the program participants all created three personalized smart goals to achieve by the end of the program. Distribute copy of SMART goals to participants in order for them to review and reflect on their personal goals. Facilitate a group discussion.

Discussion Questions:
Did you achieve your goals?
Did your goals change as your progressed through the program?
Do you have new goals now that you have completed the program?

There may be some participants who did not achieve their goals and that is ok. Lets focus on what we did achieve during the last 12 weeks. This provides an opportunity for self-reflection for participants as well.

Discussion Question: Why did I know achieve my goals?

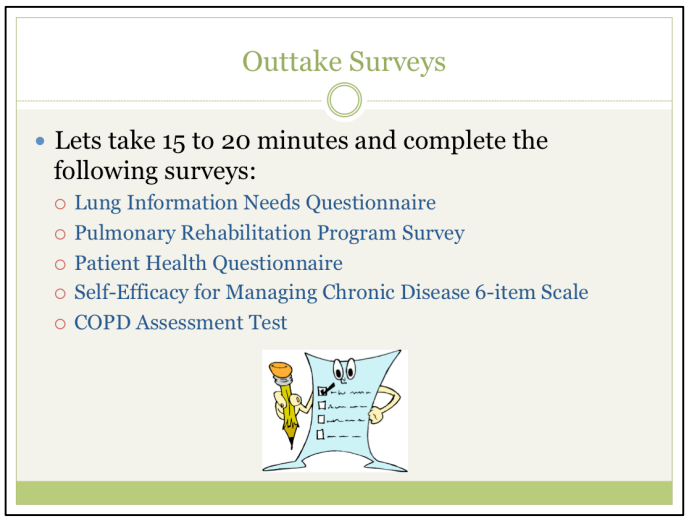


Image obtained from http://www.clipartpanda.com

During intake assessment all participants filled out the following surveys:

- Lung Information Needs Questionnaire
- Pulmonary Rehabilitation Program Survey
- Patient Health Questionnaire (PHQ-4)
- Self-Efficacy for Managing Chronic Disease 6-item Scale
- COPD Assessment Test (CAT)

Now that you have completed the program, we will now take 15 to 20 minutes and fill out the same surveys. The results of each survey will become part of your summary report! Each survey can be found in the handout section of this module.

A chart, developed by the Provincial Cardiac and Pulmonary Team, is located within the associated module and can be used to provide a description for each survey.

Image obtained from http://www.clipartpanda.com

Have participants complete a program evaluation form.

Open discussion to discuss feedback on the program.

Your name:	Today's date:

CAT
COPD Assessment Test

How is your COPD? Take the COPD Assessment Test™ (CAT)

This questionnaire will help you and your healthcare professional measure the impact COPD (Chronic Obstructive Pulmonary Disease) is having on your wellbeing and daily life. Your answers, and test score, can be used by you and your healthcare professional to help improve the management of your COPD and get the greatest benefit from treatment.

For each item below, place a mark (X) in the box that best describes you currently. Be sure to only select one response for each question.

Example: I am very happy 0 X 1 2 3 4 5 I am very sad

			SCORE
I never cough	0 1 2 3 4 5	**I cough all the time**	
I have no phlegm (mucus) in my chest at all	0 1 2 3 4 5	**My chest is completely full of phlegm (mucus)**	
My chest does not feel tight at all	0 1 2 3 4 5	**My chest feels very tight**	
When I walk up a hill or one flight of stairs I am not breathless	0 1 2 3 4 5	**When I walk up a hill or one flight of stairs I am very breathless**	
I am not limited doing any activities at home	0 1 2 3 4 5	**I am very limited doing activities at home**	
I am confident leaving my home despite my lung condition	0 1 2 3 4 5	**I am not at all confident leaving my home because of my lung condition**	
I sleep soundly	0 1 2 3 4 5	**I don't sleep soundly because of my lung condition**	
I have lots of energy	0 1 2 3 4 5	**I have no energy at all**	
		TOTAL SCORE	

Last Updated: February 24, 2012

Pulmonary Rehabilitation Program

Dear Participant:
The following questions will help us better understand health literacy levels of participants in the program. Health literacy refers to the ability to read and understand health information.

1. "How often do you have problems learning about your medical condition because of difficulty understanding written information"

□ Always
□ Often
□ Sometimes
□ Occasionally
□ Never

2. "How confident are you filling out medical forms by yourself?

□ Not at all
□ A little bit
□ Somewhat
□ Quite a bit
□ Extremely

3. "How often do you have someone help you read hospital materials?"

□ Always
□ Often
□ Sometimes
□ Occasionally
□ Never

Thank-you for completing this survey!

* From Chew et al. (2004, 2008)

LINQ

1 Do you know the name of your lung disease?

YES ☐

NO ☐

2 Has a doctor or nurse told you how this disease affects your lungs?

YES ☐

NO ☐

3 Has a doctor or nurse told you what is likely to happen in the future?

YES ☐

NO ☐

4 Which of the following statements best describes what will happen to you over the next few years? **TICK ONE ONLY**

Now that my disease is being treated, I will probably get better ☐

Now that my disease is being treated, I will probably stay the same ☐

I will get worse ☐

I have no idea ☐

5 Has a doctor or nurse explained the **reason** for taking your inhalers or medicines?

YES ☐

NO ☐

6 Do you ***try*** to take your inhalers or medicines ***exactly*** as you have been instructed by a doctor or nurse?

YES ☐

NO ☐

7 Are you satisfied with the information doctors and nurses have given you about your inhalers or medicines? **TICK ONE ONLY**

I understand everything I need to know ☐

I understand what I have been told but I would like to know more ☐

I am slightly confused about my medicines ☐

I am very confused about my medicines ☐

8 What sentence best describes what you have been told to do if your breathing gets worse (e.g., take two puffs instead of one)? **TICK ONE ONLY**

I have been told what to do and the doctor/nurse has given me written instructions ☐

I have been told but it is not written on paper ☐

I haven't been told but I know what to do ☐

I haven't been told and I don’t know what to do ☐

9 Have you been told when you should call an **ambulance** if your breathing worsens? **TICK ONE ONLY**

- I have been told what to do and the doctor/nurse has given me written instructions ☐
- I have been told but it isn't written on paper ☐
- I haven't been told but I know what to do ☐
- I haven't been told and I am uncertain when an ambulance should be called ☐

10 What best describes you? **TICK ONE ONLY**

- Never smoked (go to question 13) ☐
- Used to smoke but don't now (go to question 13) ☐
- Still smoking (go to question 11) ☐

11 Has a doctor or nurse advised you to give up smoking?

- YES ☐
- NO ☐

12 Has a doctor or nurse offered to help you to give up smoking (e.g., given you nicotine gum or patches or referral to a Smoking Cessation clinic)?

- YES ☐
- NO ☐

13 Have you been told by a doctor or nurse to try to do some physical activity (e.g., walking, brisk walking and other forms of exercise)?

YES ☐

NO ☐

14 Has a doctor or nurse told you ***how much*** physical activity (e.g., walking, brisk walking and other forms of exercise) you should do?

Yes and I know what to do ☐

Yes but I am unsure what to do ☐

Yes but I am unable to do it ☐

No ☐

15 How much physical activity do you do?

As little as possible ☐

I make an effort ☐

I push myself as much as I can ☐

16 What have doctors or nurses told you about your diet or eating?
(please tick ***all*** that apply)

Eat several small meals per day
"(e.g., 6 small meals per day instead of 3 large ones)" ☐

Lose or gain weight ☐

Eat healthy food ☐

Nothing ☐

17 Have you any questions or comments about your lung disease?
"If so, write them in the space below"

18 Do you live on your own?

YES ☐

NO ☐

19 Sex (delete one) Male Female

20 In which year were you born? 19 _ _

Patient Health Questionnaire (PHQ-4)

Name: _____

Due Date/ Delivery Date: _____

Today's Date: _____

Over the past 2 weeks have you been bothered by these problems?	Not at all	Several days	More days than not	Nearly every day
Feeling nervous, anxious, or on edge	0	1	2	3
Not being able to stop or control worrying	0	1	2	3
Feeling down, depressed, or hopeless	0	1	2	3
Little interest or pleasure in doing things	0	1	2	3

The thought of harming myself has occurred to me (circle one) No Yes

Administered by (initial): MD CMA Self	**TOTAL**
Notes: Reviewing provider:	

SATISFACTION Survey Pulmonary Rehab Program

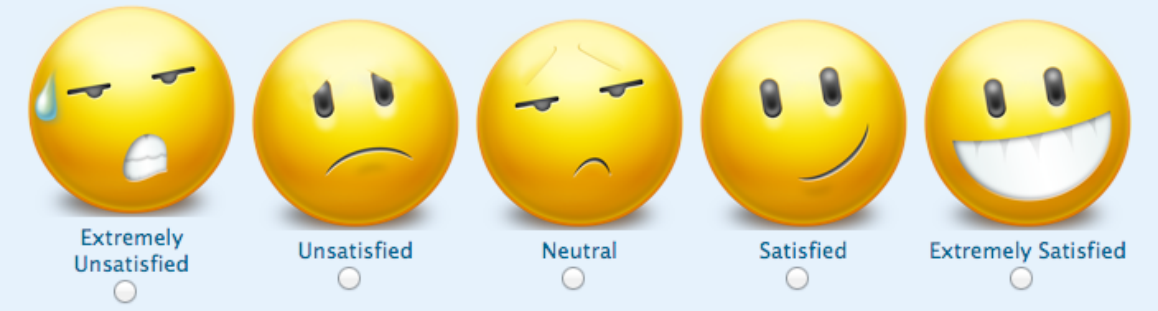
Dear Participant:

Health PEI is committed to providing the highest possible quality of care to our clients. In order to help us do that, we are asking for your feedback on your experience with the Pulmonary Rehab Program. We are interested in what worked well and where we can make improvements.

We value your input. Please be assured your responses will be held in the strictest of confidence. Answers will be grouped so that no one individual can be identified.

For each item, check the box that most closely reflects your experience.
You can skip any question you don't want to answer.

1. How would you rate your overall experience with the Pulmonary Rehab Program?



2. a) Was the time of the day chosen for the program satisfactory? O Yes O No
If not, what would be a better time? _____

b) Was the physical setting for the education sessions satisfactory? O Yes O No
If not, what would make it better? _____

c) Was the physical setting for the exercise satisfactory? O Yes O No
If not, what would make it better? _____

d) Was the length of the program (12 weeks) appropriate? O Yes O No
If not, what would you recommend? _____

3. Do you believe the Pulmonary Rehab Program has helped you make positive changes toward physical activity? O Yes O No

4. Do you believe the Pulmonary Rehab Program has helped you make positive changes toward healthy eating? **O** Yes **O** No

5. Do you believe the Pulmonary Rehab Program has helped improve your quality of life?

O Yes **O** No

6. On a scale of 1 to 5, how confident are you that you can maintain any lifestyle changes (healthy eating or increased physical activity) you made during the program once the weekly classes are complete?

1	2	3	4	5
Not at all Confident				extremely Confident

7. Please comment on what education topics you found to be the most helpful?

_____

_____

_____

8. Are there any changes you would recommend to the education classes?

_____

_____

_____

9. Would you recommend this program to someone else? **O** Yes **O** No

10. What did you find the most valuable?

_____

_____

11. What changes would you recommend?

_____

_____

_____

12. Additional Comments:

_____

_____

_____

Thank You

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