

COPD and Asthma Patient's Chart Review: Diagnosis and Treatment

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Introduction

Chronic Obstructive Pulmonary Disorder (COPD) is a respiratory ailment due to airflow limitation.¹ COPD is a combination of small airway disease and emphysema causing chronic inflammation leading to structural changes, airway narrowing and destruction of lung parenchyma.¹ These changes can result in airflow limitation and mucociliary dysfunction. There are two subtypes of COPD: emphysema and chronic bronchitis.¹ Emphysema is characterized by structural changes including abnormal enlargement of airspaces distal to terminal bronchioles as well as destruction of airspace walls with no visible fibrosis, but fibrosis can be a part of emphysema.¹ Chronic bronchitis is the presence of chronic productive cough for three months in two successive years and where other causes of chronic cough are excluded.¹ Asthma is a chronic inflammatory disease of the airways associated with airway responsiveness leading to recurrent wheezing, breathlessness, chest tightness and coughing.² Airflow obstruction in asthma is reversible whereas in COPD it is not. The greatest risk factor for COPD is smoking since increased amount and duration results in increased severity of COPD.¹ COPD symptoms include dyspnea (most commonly exertional dyspnea), chronic cough, and sputum production.¹ Symptoms of asthma include shortness of breath, chest tightness, wheezing, and coughing (especially at night).² COPD has many comorbid diseases such as depression, anxiety, CHF, and lung cancer.¹

Diagnosis and appropriate treatment are paramount in the management of COPD and asthma. The most common method used to diagnose COPD and asthma is spirometry pre and post bronchodilator.¹ Post bronchodilator evaluation is to determine if the airflow limitation, if present, is reversible (asthma) or irreversible (COPD).³ The threshold for the FEV1/FVC ratio is 0.7, below which indicates airflow limitation.³ COPD and asthma have different management

styles. The primary treatment of asthma is pharmacological treatment dependent on severity and frequency of symptoms.² Many factors are considered in the deciding type of medication. There are four types of asthma: intermittent, mild persistent, moderate persistent, and severe persistent, all of which are managed differently.² The goal of management is to reach well-controlled asthma which means no more than twice a week of daytime symptoms and no nighttime awakening due to symptoms more than twice a month.²

COPD is primarily managed non-pharmacologically including education, smoking cessation, pulmonary rehabilitation, vaccinations, and using a COPD action plan.¹ COPD education outlines information about COPD, medications, inhaler technique and exacerbation identification and management.¹ A COPD action plan outlines negative symptoms one should look out for and specific actions to take depending on those symptoms.⁴ A significant aspect of COPD management is smoking cessation because it can reduce the rate of decline in lung function.¹ Pulmonary rehab encompasses exercise, encouragement of healthy behaviours, medication adherence and psychological support.¹ Exercise can improve dyspnea in COPD patients.¹ Infections in COPD patients are very common which can induce exacerbations and thus lead to hospitalizations.¹ And so, vaccinations, in particular pneumococcal and influenza vaccines, are very important to be kept up to date. Another non-pharmacological treatment for COPD is supplemental oxygen for patients with chronic hypoxemia dependent on severity and impact on daily functioning.¹

COPD has a significant impact on a patient's day to day life but is frequently overlooked. Patients often lack understanding of the great improvement in function that can result from proper management, and thus hospitalizations for exacerbations are high.⁵ The purpose of this

study is to analyze management of patients with COPD and asthma and what role a Certified Respiratory Educator (CRE) can play in patient care to improve disease management.

Methods

The data this project was based on was pulled from multiple physician practices in the St. James/Assiniboine South area. The focus of the research is in two parts. The first portion of data includes patients with a medical diagnosis of COPD or asthma but have not been prescribed any medication for it. The second portion includes patients with prescribed medications related to COPD or asthma but no specific diagnosis of COPD or asthma. This project focused on the first portion of patients. Firstly, patient profiles were narrowed down to patients with at least 1 of five searches mentioned anywhere in their medical history. The searches were: emphysema, COPD, asthma, asth, emph. These searches resulted in 6030 profiles. The searches were further narrowed but excluding any profiles who have been prescribed COPD or asthma medication resulting in 1694 patient profiles. Before data collection commenced, the subcategories to be investigated were established. For each profile, the specific diagnosis was identified (COPD, asthma, both), any comorbid diseases related to COPD or asthma, smoking history, marijuana use, received the influenza vaccine in the last 2 years, pneumococcal vaccine 1 and 2, had a spirometry test conducted, any hospitalizations within the last two years and if an action plan was discussed.

Results

Table 1: Proportion of patients with COPD diagnosis, asthma diagnosis, COPD-asthma diagnosis, and proportion of total patients with no respiratory diagnosis.

Respiratory Diagnoses	Proportion of Total
COPD	365 (21.5%)
Asthma	1258 (74.3%)
COPD and asthma	17 (1%)
Wrong search	54 (3.2%)
Total	1694

Table 2: Patients with asthma diagnosis. Separated into subcategories of smokers, non-smokers, quit smoking, marijuana smokers, vapers, unknown smoking history, obtained the influenza vaccine, obtained the pneumococcal 1 and 2 vaccines, had a spirometry conducted, recent hospitalizations, and have an action plan.

Proportion of smokers	137 (10.9%)
Proportion of non-smokers	734 (58.3%)
Proportion that have quit	134 (10.7%)
Proportion of MJ smokers	17 (1.4%)
Proportion of vapers	1 (0.08%)
Unknown smoking history	252 (20.0%)
Proportion of influenza vaccination (within the last 2 years)	104 (8.3%)
Proportion of pneumococcal 1 Vaccine	150 (11.9%)
Proportion of pneumococcal 2 Vaccine	22 (1.7%)
Proportion of spirometry evaluation	171 (13.6%)
Proportion of hospitalization (within the last 2 years)	31 (2.5%)
Proportion with an action plan	269 (21.4%)
Total asthma patients	1258

Table 3: C Patients with COPD diagnosis. Separated into subcategories of smokers, non-smokers, quit smoking, marijuana smokers, unknown smoking history, obtained the influenza vaccine, obtained the pneumococcal 1 and 2 vaccines, had a spirometry conducted, recent hospitalizations, and have an action plan.

Proportion of smokers	160 (43.8%)
Proportion of non-smokers	51 (14.0%)
Proportion that have quit	117 (32.1%)
Proportion of MJ smokers	1 (0.27%)
Unknown smoking history	37 (10.1%)
Proportion of influenza vaccination (within the last year)	57 (15.6%)
Proportion of pneumococcal 1 vaccine	205 (56.2%)
Proportion of pneumococcal 2 vaccine	42 (11.5%)
Proportion of spirometry evaluation	179 (49.0%)
Proportion of hospitalization (within the last 2 years)	27 (7.4%)
Proportion with an action plan	12 (3.3%)
Total COPD patients	365

Table 4: Patients with COPD-asthma diagnosis. Separated into subcategories of smokers, non-smokers, quit smoking, unknown smoking history, obtained the influenza vaccine, obtained the pneumococcal 1 and 2 vaccines, had a spirometry conducted, recent hospitalizations, and have an action plan.

Proportion of smokers	4 (23.5%)
Proportion of non-smokers	7 (41.2%)
Proportion that have quit	2 (11.8%)
Unknown smoking history	4 (23.5%)
Proportion of influenza vaccination (within the last year)	1 (5.9%)
Proportion of pneumococcal 1 vaccine	13 (76.5%)
Proportion of pneumococcal 2 vaccine	3 (17.6%)
Proportion of spirometry evaluation	10 (58.8%)
Proportion of hospitalization (within the last 2 years)	0
Proportion with an action plan	4 (23.5%)
Total COPD-asthma patients	17

According to the results, there was a higher proportion of asthma patients as compared to COPD and COPD-asthma. Within the asthma category, the main results to focus on would be that 10.9% of the patients are smokers, 8.3% are up to date with their influenza vaccine, 1.7% are up to date with both pneumococcal vaccines and 21.4% have discussed an action plan with their physician. From the COPD category, the results show a greater proportion of smokers (43.8%) and a smaller proportion of patients with an action plan (3.3%). The results also show 15.6% of patients are up to date with their influenza vaccination and 11.5% are up to date with both pneumococcal vaccines. There's a greater proportion of COPD patient hospitalizations related to their COPD (7.4%) as compared to asthma hospitalizations (2.5%). There's a lesser proportion of patients with both COPD and asthma diagnoses in this study (1% of total patient profiles) and thus results may be less reliable.

Discussion

The incorrect perception of lung diseases in society is that it is not severe or life-threatening, which in turn is detrimental to public health. Unbeknownst to the Canadian population, respiratory illnesses mainly COPD and asthma have a great burden on the healthcare system accounting for 6% of the annual healthcare costs.⁵ COPD is currently and has been for a long time the leading cause of hospitalizations nationwide.⁵ A great proportion of the population remains undiagnosed and thus is not managed appropriately.⁵

The main takeaways from the results obtained from this study is the high levels of current smokers in COPD patients and low proportion of COPD patients with an action plan. Smoking is the greatest risk factor for COPD and smoking cessation is the top priority for management of COPD in order to halt the decline in lung function.¹ An action plan is essential in COPD and asthma management because it outlines what steps a patient needs to take for self-management

of their respiratory illness.^{1,4} The action plan outlines symptoms to recognize and what action should be taken to address those symptoms.⁴ Patients without an action plan end up having to go to the hospital for symptoms that could have been managed by themselves resulting in increased healthcare related costs. Vaccinations are low in both asthma and COPD patients. Vaccinations are essential for patients with respiratory illnesses because these patients are prone to respiratory infections and thus vaccinations provide the added coverage needed for optimal patient health.¹

The limitations of this study include lack of continuous care by physicians. Many patients included in the study, although seen within the last two years, may not be regular patients of the physicians and thus there may be key pieces of data missing regarding their past medical history. Another limitation of this study is the inclusion of non-active patients in the study. A portion of the patients were not seen by a physician within the last two years and thus the past medical histories of the patients are not up to date. An important limitation to recognize is human error. While analyzing the data, information may have been interpreted incorrectly or certain information not found may be in parts of the chart not analyzed during the study. And lastly, there was an insufficient sample size analyzed of the COPD-asthma combination group to infer reliable information from the data of that group of patients.

There are many factors that contribute to suboptimal management of respiratory ailment patients including societal perception of disease severity and importance and the large number of patients under the care of individual family physicians and thus unable to provide all the time required for optimal care. A solution that can benefit all parties involved in the care of respiratory ailment patients would be the involvement of a Certified Respiratory Educator (CRE). CRE have the up to date knowledge about asthma and COPD and are able to deliver comprehensive information and chronic disease education to patients as well as self-management

of their disease through initiation of action plans.⁶ They are a great tool for family physicians and can provide the necessary continuous care to patients with respiratory illnesses. The purpose of this study is to educate family physicians on the benefits of CRE's in a clinical setting and encourage engagement between the two healthcare professionals in order to reduce hospitalizations and optimize treatment.

References

1. Ferguson GT, Make B. Definition and differential diagnosis of chronic obstructive pulmonary disease. *Management of Chronic Obstructive Pulmonary Disease*. 2006:1-6. doi:10.1183/1025448x.00038001.
2. Fanta C. An overview of asthma management. *The National Asthma Education and Prevention Program: Expert Panel Report 3, Guidelines for the Diagnosis and Management of Asthma*. 2007.
3. Rogliani P, Ora J, Puxeddu E, Cazzola M. Airflow obstruction: is it asthma or is it COPD?. *Int J Chron Obstruct Pulmon Dis*. 2016;11:3007-3013. Published 2016 Nov 30. doi:10.2147/COPD.S54927
4. Canadian Respiratory Guidelines COPD Patient's Copy ... Canadian Thoracic Society. https://cts-sct.ca/wp-content/uploads/2018/03/4915_THOR_COPDActionPlanUpdate_Editable_Eng_v006.pdf. Published 2012. Accessed August 8, 2020.
5. The Impact of Lung Disease. <https://www.lung.ca/lung-health/lung-info/impact-lung-disease>. Published December 10, 2016. Accessed August 8, 2020.
6. HOME. Certified Respiratory Educator (CRE) | Canadian Network for Respiratory Care. [http://cnrhome.net/certified-respiratory-educator-\(cre\).html](http://cnrhome.net/certified-respiratory-educator-(cre).html). Accessed August 9, 2020.