Ann Bartlett, RN, MSc, CRE

Ann Bartlett is the Clinical Nurse Specialist at the Firestone Institute for Respiratory Health/McMaster University St. Joseph’s Healthcare Hamilton (SJHH) Ontario. She is also a part-time Assistant Clinical Professor in the School of Nursing, Faculty of Health Sciences at McMaster. Her areas of clinical practice are in allergy, asthma, COPD, patient education and respiratory rehabilitation. Ann serves as a resource to interdisciplinary colleagues, as well as a nursing consultant to respiratory patients and their families. She has a leadership role and extensive responsibility for the development, implementation and evaluation of the comprehensive care of respiratory patients with complex health care needs. This enhanced role co-ordinates a case management model of care that facilitates the patient remaining in the community. As the Nursing Coordinator for SJHH Respiratory Rehabilitation In-patient and Out-patient programs she observed a clinical difference in the presentation of dyspnea with women, which sparked her research to evaluate the clinical utility of dyspnea measurement tools for women.

Ms. Bartlett has co-authored with the Registered Nurses’ Association of Ontario in the development and revisions of the Adult Asthma Care Guidelines for Nurses: Promoting Control of Asthma and Nursing Care of Dyspnea: The 6th Vital Sign in Individuals with Chronic Obstructive Pulmonary Disease (COPD) Best Practice Guidelines.

As a past facilitator and tutor in The Michener Institute’s Asthma Educator Program, Ann was part of the team that developed the Michener COPD Educator Program. She now facilitates and tutors RespTrec's Asthma and COPD courses. She has participated in the Canadian Network for Respiratory Care (CNRC) on many committees and is currently a member of the Board of Directors. In November of 2011, at the CNRC Conference, Ann was awarded the A. Les McDonald Award for Innovation and Excellence in Respiratory Care and Education.

During her spare time, Ann has volunteered with the ORCS on regional committees and is proud to be one of the original Executive Team members of the ORCS Respiratory Health Educators Interest Group (RHEIG). Ann has presented at various national and provincial respiratory conferences and has written numerous respiratory and education articles for The Lung Association and other media. She is grateful for the support from the ORCS Fellowship award that made her academic dream possible of being the first Canadian to graduate (second in her class) with a MSc in Respiratory Care from Oxford University U.K.

Away from work, Ann enjoys hiking, playing with her five grandchildren and searching for that perfect margarita!

**Dyspnea Measurement Tools: A Review of the Literature to Assess Effectiveness in Measuring Chronic Obstructive Pulmonary Disease in Women**

**Introduction**

Chronic obstructive pulmonary disease (COPD) is a leading cause of mortality in women (1). Women with COPD differ from men in clinical presentation (2) and in clinical behaviours such as anxiety, depression and coping (3). The measurement of dyspnea is a critical part of the evaluation of outcomes, for example, pulmonary rehabilitation, pharmacological agents and other therapies. The symptom of dyspnea and its effects have been measured using a plethora of measurement tools. Despite this trend, there is a
marked scarcity of research that recognizes the importance of sex and gender related differences in women with COPD.

**Purpose of the Study**
The specific aim of this literature review was to analyze and evaluate current knowledge regarding how gender influences the diagnosis, physiology and presentation of COPD and to integrate this knowledge to evaluate the clinical utility of measurement tools for dyspnea.

**Methods**
Using the data bases of CINAHL, OVID, MEDLINE, MRRIS, with search words of women/COPD/dyspnea, dyspnea measurement tools, sex factors, 367 articles were reviewed, and expert and research colleagues were interviewed. Many of the studies (235) did not stratify (dyspnea) scores by gender and therefore were not included in the analysis. Final appraisal was completed on 18 studies on gender differences in dyspnea measurement.

Utilizing the revised Wilson and Cleary Model (4) as the conceptual framework, major variables of clinical, psychological and functional status were examined for their influence on dyspnea in women with COPD. Sackett's (5) standards formed the basis of the criteria used for the critical appraisal of the literature specifically focusing on gender differences. Limitations were identified with the focus to assist in the development of more rigorous methodology in assessment of dyspnea in women with COPD.

**Results**
This review identified a clinically relevant difference in the measurement of dyspnea between genders. Women scored higher, indicating worse dyspnea, on MRC (Medical Research Council), UCSD SOBQ (University of California San Diego Shortness of Breath Questionnaire), and VAS (Visual Analogue Score). However, many studies' reports were not stratified by gender or included sex as a co-factor in the analysis, making it impossible to determine clinical significance. As well, some of the measurement tools over time have been modified, such as the shortened PFSDQ-M (Pulmonary Functional Status and Dyspnea Questionnaire), and the MBS (Modified Borg Scale) which was originally developed for taste perception (6).

**Clinical Relevance**
Dyspnea is a complex, multidimensional sensation and its subjectivity makes it difficult to quantify (7). Dyspnea is affected by many other factors including past experience, tolerance to discomfort, cultural norms, age and gender (8). It is difficult to measure as there are no objective comparative criteria, and dyspnea only modestly correlates with measures of pulmonary function (9). The mechanisms leading to dyspnea are still not fully understood, and while various theories have been proposed, there is not one universal theory (10). As there is no cure for COPD, most therapies and research are aimed at managing dyspnea and increasing independent functions (11). Therefore accurate assessment of all aspects of dyspnea is paramount for each gender. Research has been hindered by the subjectivity of the sensation, which is difficult to quantify and its rapid onset may influence the patient's perception more than the severity (12).

**Conclusions**
A review of the literature on dyspnea measurement tools reveals a lack of consensus and standardization (13). Since most data was retrieved from retrospective, observational and cross sectional cohort studies, definite conclusions as to why there are sex differences
cannot be drawn. It is difficult to determine the most reliable and valid measures for a given setting. Each evaluative tool must be validated to assure it truly identifies the symptom under investigation, is reproducible, is sensitive to change, and is useful in different settings. In addition, studies should follow criteria, such as Sackett's tool to ensure quality regarding the significance of responses achieved by various therapeutic interventions (14). Furthermore there are few standards for administering the measures or inducing dyspnea. No single measurement tool takes into account the different components of gender for dyspnea. Therefore, as the final choice will depend on the purpose of assessment, it is likely that more than one tool will be required.

Although established tools measure the intensity of breathlessness, newer tools that recognize the qualitative components of dyspnea, such as associated distress and anxiety would enhance the measurement process. Therefore, further research is required into the key variables and their relative importance on dyspnoeic rating. Sex and gender differences in anatomic, physiologic, biologic and psychological characteristics may explain women's differences in the symptom of dyspnea and its measurement. Future research should be case matched; for example, all COPD with similar FEV₁, adjusting for height, weight, smoking history, co-morbidities including psychological assessment such as anxiety.

References

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