Safe and Effective Prescription of Exercise in Acute Exacerbations of Chronic Obstructive Pulmonary Disease: A Consensus of Experts

An Interim Report

Debbie Kan, Paolo Macapagal, Tae Il Yoon, Param Bakshi, Colin Beattie
Co-supervisors: Dr. Darlene Reid and Dr. Pat Camp
Consultant group: Alison Hoens and SAFEMOB group

Outline

- Introduction
- Purpose
- Methods
- Results to date
- Discussion

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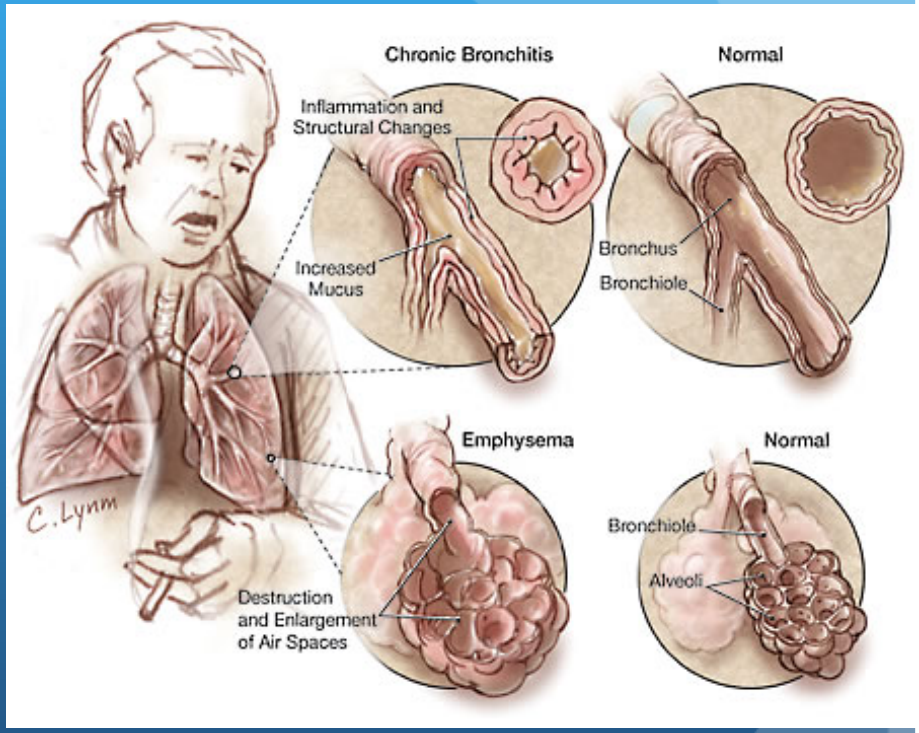
Introduction

- COPD Defⁿ - a progressive, partially reversible disease state characterized by airflow limitation, shortness of breath and frequent exacerbations
  - Includes emphysema, chronic bronchitis, and may also include elements of asthma (American Thoracic Society, 1995; O'Donell, 2007)



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Introduction

- COPD is predicted to rise from the 4th to the 3rd leading cause of death by 2030 (World Health Organization, 2008)

- Each acute exacerbation further accelerates the decline in pulmonary function (Lawati & FitzGerald, 2008)

Purpose

Areas of controversy:

Researchers	Study Design	Sample Size	Type of Physical Activity	Initiation of Physical Activity
Eaton et al., 2008	RCT	97	supervised walking, upper and lower limb strengthening	Mean 2.6 days post-admission
Yohannes et al., 2003	RCT	110	supervised walking three times daily with a PT or nurse	2 days post-admission
Kirsten et al., 1998	RCT	29	6-min treadmill walk tests and five walking sessions/day	6-8 days post-admission

- Inconsistency on type of physical activity and timing of interventions
- FITT?

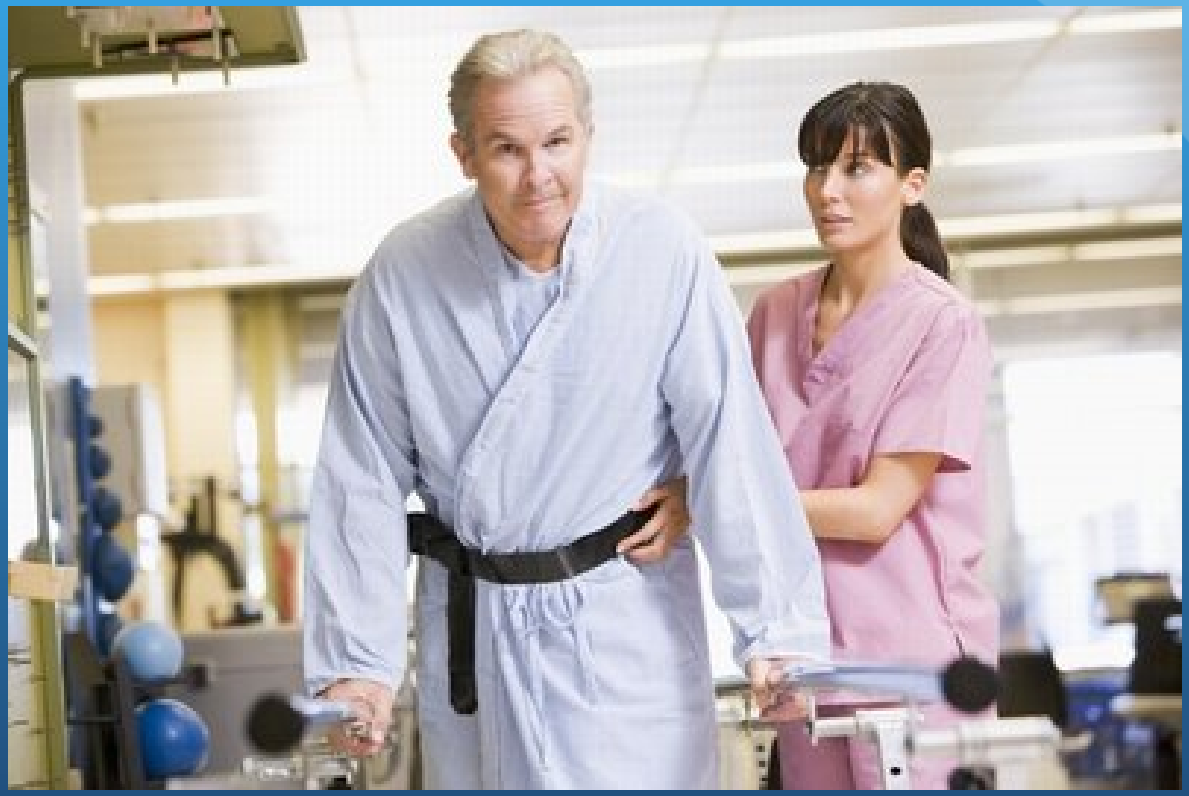
Research Question

- The Burning Question:
  - What are the parameters for prescription of safe and effective physical activity in hospitalized patients with an acute exacerbation of COPD (AECOPD)?

Objective

- Through the use of the Delphi technique, there will be a consensus among an expert panel (PTs, MDs, RTs, RNs, and COPD patients) representing clinicians, academics, and patients on parameters to prescribe safe and effective PA for AECOPD patients.

METHODS



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Methods

- Research design:
  - Use of the Delphi method to obtain a consensus among clinicians, academics, and patients with COPD
- What is the Delphi process?
  - "Systematic series of questionnaires interspersed with controlled feedback"
  - Increasing popularity in nursing and allied health care literature

Powel, C. (2003), Okoli, C. & Pawlowski, S.D. (2004).

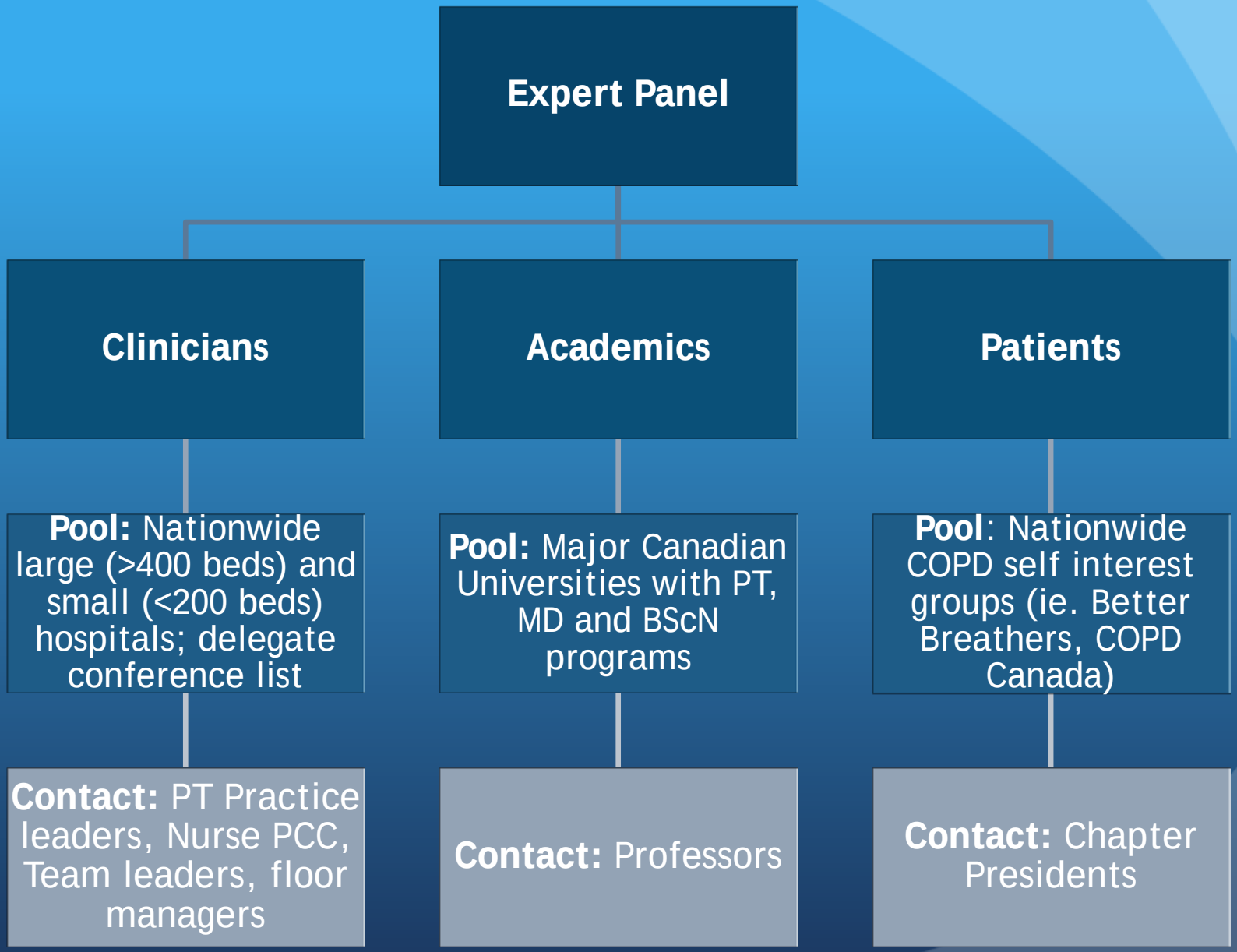
Participant Selection

- 3 stakeholder groups
  - Clinicians (RN, RT, PT, MD)
  - Academics (PT, MD, RT)
  - Patients
- No sample calculation
- Optimal size not established, range from 4 to 3000 (Campbell, 2002)

Inclusion/Exclusion Criteria

Subgroup	Inclusion Criteria	Exclusion Criteria
Clinicians	•Currently working in an acute care setting •At least 3 years experience with COPD patients •Currently practicing in Canada	•Practice leaders or administrators
Academics	•Hold a teaching or research role specializing respiratory area •Currently practicing in Canada	
Patients	•Are a member of a self-interest group •Have COPD and have had an acute exacerbation of COPD in the past	•Patients with dementia or severe cognitive impairments •Palliative patients •Patients who are medically unstable

Recruitment Process



Study Design

QUESTIONNAIRE DEVELOPMENT AND RECRUITMENT

- Brainstorming
- Draft questionnaire produced
- Piloted with local academics for validity
- Recruitment process
- Finalized questionnaire sent

ROUND 1: Parameter Identification (7 weeks)

- Questionnaire 1: Broad open ended questions
- Analysis: Statements from panellists to be categorized and codified

ROUND 2: Agreement of Classifications (predicted 12 weeks)

- Questionnaire 2: Panel presented with results from round 1
- Analysis:
  - Review and revise if necessary

ROUND 3: Rating of Parameters (predicted 8 weeks)

- Questionnaire 3: Likert Scale of statements from round 2
- Analysis: Determination of consensus

Piloting

- Researchers developed preliminary questionnaire and operational terms
- A brief pilot of the questionnaire was sent out to 3 local PT's for review.
- Questionnaire was revised to include:
  - Case study
  - Glossary of terms
  - Generate leading questions for safe parameters

Questionnaire Development

- **Operational terms:**
- **Safe**: An exercise or physical activity intervention within your clinical setting that:
  - ***does not contribute to further deterioration of patient's health status***
  - ***does not increase risk of personal injury to attending health care professionals***.
- **Effective**: An exercise or physical activity intervention that:
  - ***can be implemented with the usual resources and practitioner experience***
  - ***maintain high patient compliance***
  - ***optimize patient health status***

Round 1

Table 1 – Part 3 of Round 1 Questionnaire

Guidelines and Measures of Effective Exercise

Keeping in mind the definition of effective exercise, what do you think this patient needs to achieve before discharge (to home)?

1. What outcomes or measures related to walking are necessary prior to discharge?
2. What outcomes or measures related to activities of daily living are necessary prior to discharge?
3. What other activities or measurements would you conduct with patients prior to discharge?

Guidelines and Measures of Safe Exercise

Keeping in mind the definition of safe exercise, please provide the guidelines and/or measures that must be considered in order to maintain safe exercise.

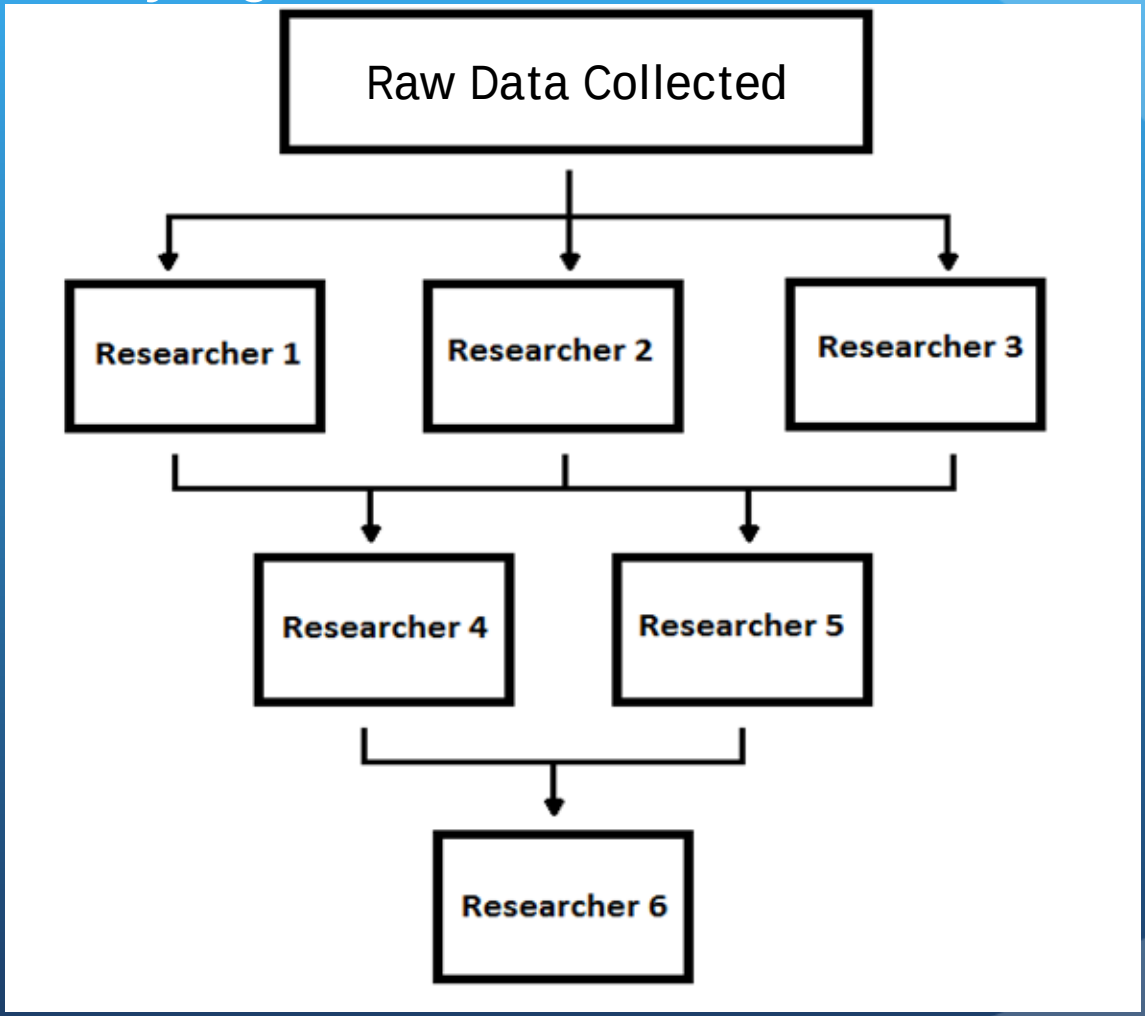
1. Cardiac status (e.g. minimum/maximum blood pressure value to participate in exercise)
2. Respiratory status (e.g. minimum SpO2 value to participate in exercise)
3. Patient-related safety issues (general or specific, not related to cardiac/respiratory status)
4. Use of lines/tubes/mobility aids/ supplemental oxygen
5. Health care/caregiver provider safety (e.g. appropriate training, appropriate personnel, patient compliance)
6. Additional relevant factors (e.g. hospital policy, professional practice issues, job responsibilities)

Resources

Please list the minimal resources that are necessary to implement effective and safe exercise in your clinical setting. This includes: personnel, training/experience/knowledge, physical environment, equipment.

Data Analysis

Round 1: codifying and classification of statements



Results/Discussion

Participant selection

- 139 people contacted
  - 57 academics, 56 clinicians, 26 patients
- 33 consent forms received
- 29 participants included post screen for inclusion/exclusion criteria

Stakeholder Group Composition

Healthcare Discipline	Stakeholder Group		
	Academics	Clinicians	Patients
MD	4	2	N/A
PT	4	4	N/A
RN	0	6	N/A
RT	1	1	N/A
Total	9	13	7

Stakeholder Group Distribution

Stakeholder Group	Western Canada (BC, AB, MB, SK)	Eastern Canada (ON, QB, NS, NB, PE, NF)
Academics	4	5
Clinicians	12	1
Patients	4	3
Total	20	9

Stakeholder Group Diversity

Academics

- Years teaching/researching
- Range: 4-30, mean = 18.6, std dev = 10.5

Clinicians

- Years of working w/ COPD
- Range: 3-32, mean = 12.1, std dev = 8.9
- # of beds
- Range: 40-780, mean = 350.0, std dev = 220.0

Patients

- Years since Dx:
- Range: 4-11, mean = 7.1, std dev = 3.1

Self-Reported Consensus

Stakeholder Group(s)	Mean Self-Report Consensus		Standard Deviation Self-Reported Consensus	
	Safe	Effective	Safe	Effective
Academic	87.2	78.3	6.7	9.0
Clinician	83.5	79.2	9.4	9.3
Patient	89.3	79.3	9.3	15.4
Academic & Clinician	85.0	78.9	8.5	9.0
Academic, Clinician & Patient	86.0	79.0	8.7	10.5

Round 1 Responses

- Over 1000 responses

QUESTION 1. What outcomes or measures related to walking are necessary prior to discharge?

QUESTION 2. What outcomes or measures related to activities of daily living are necessary prior to discharge?

Question 4. Please provide the guidelines and measures that must be considered in order to maintain safe exercise, focusing on **CARDIAC STATUS.**

Question 1 – Outcome Measures Related to Walking

- **Answers provided by the panel that were related to outcomes of walking/functional ambulation, with or without a gait aid:**

Question	Response	Frequency
Question 1	Be able to complete a predetermined # of stairs	16
	A predetermined distance is required	7
	Substantial household ambulation is necessary	6
	Able to complete 6 minute walk test	5
	Able to maintain SpO2 during ambulation	4
	Other related to walking/ambulation	6
	Other related to signs and symptoms	16
	Other related factors	10

Question 2 – Outcome Measures Related to ADLs

- **Answers provided by the panel related to performance of ADLs (with or without adaptive aids):**

Question	Response	Frequency
Question 2	Able to bath and maintain personal hygiene	17
	Able dress independently	8
	Basic meal preparations	7
	Able to toilet independently	6
	Patient able to transfer independently from bed to chair, sit to stand	5
	Able to feed independently	5
	Make sure patient is able to manage 02 equipment and medications	4
	Other	29

Question 4 – Measures Related to Cardiac Status

- **Answers provided by the panel related to heart rate at rest:**

HR (min)	Frequency	HR (max)	Frequency
40	1	100	3
50	2	110	1
55	1	120	3
		125	1

- **Answers provided by the panel related to heart rate during activity:**

HR (min)	Frequency	HR (max)	Frequency
-	-	120	1
-	-	125	1
-	-	130	1

Question 4 – Measures Related to Cardiac Status

- **Answers provided by the panel related to blood pressure at rest:**

SBP (min)	Frequency	SBP (max)	Frequency
70	1	130	1
80	3	140	2
90	5	145	1
100	2	150	1
-	-	160	4
-	-	180	1
-	-	200	5

Question 4 – Measures Related to Cardiac Status

- **Answers provided by the panel related to blood pressure <u>at rest</u>:**

DBP (min)	Frequency	DBP (max)	Frequency
40	2	90	2
50	2	95	2
60	1	100	1
85	1	110	4
-	-	120	1

- **<u>During activity</u>: similar variability**
- **Answers provided by the panel related to cardiac precautions/contraindications**

Patient Responses

- Patients displayed significant difficulty with answering questions
- Very few numeric values
- Often deferred from answering the question with “I don’t know”

Round 2

- In Process…
  - 28 participants remain
  - 25 out of 28 responses
  - No comments on misrepresentation of answers
  - Panellists surprised with number or responses

Discussion/Implications

- Expert panel was multidisciplinary
  - 28 panellists
  - Higher n → potentially more robust results
  - ?additional recruitment
    - limited by timeline
- Over 1000 line items analysed in round one, reflecting a wide variety of practice standards and knowledge

Discussion/Implications

- Expert panel representation:
  - Western Canada : Eastern Canada = approx. 2:1
    - Representation vs. Representative
    - Clinical Practice Guidelines (CPGs) generalizable?
      - Clinician Group 12:1 (West:East)
- Providing a brief case study
  - Answers may have been general
  - Why not more elaborate?

Discussion/Implications

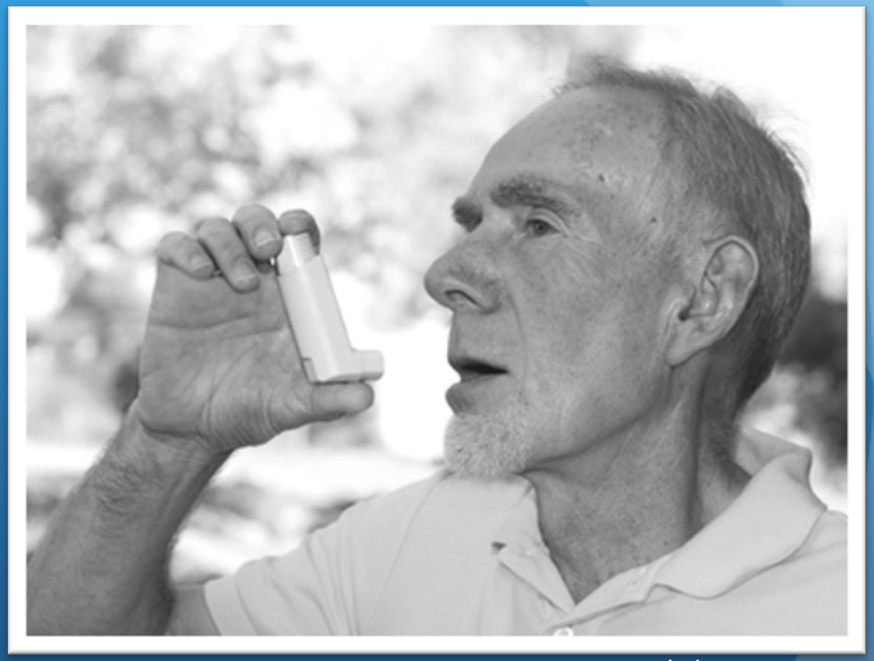
- Although we are unable to make conclusions on consensus at this point, some trends did emerge which potentially show some consistency within the panellists
  - E.g., more overlap in answers for outcome measures regarding functional ambulation and ADLs

- Consensus on parameters
  - Levels of consensus - 86.0% (SAFE) & 79.0% (EFFECTIVE)
  - Results so far: increased variability in safe responses and more overlap for effective responses
  - We suspect we may gain consensus on effective parameters more easily than safe

Discussion/Implications

- Will be interesting to see how panellists rate items in round 3 now that they have seen other's responses.

- Patient stakeholder group had difficulty answering Round 1 Questions. We expect them to make a greater contribution in subsequent round 3.



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Discussion/Implications

- Ultimate Goal: establish CPGs for a decision making tool to help guide safe and effective prescription of exercise with hospitalized patients suffering from acute exacerbations of COPD.

- Not to be substitute for clinical decision making
  - Help guide interventions with greater confidence

Areas of Improvement

- Higher sample size. Recruitment was limited by deadlines.
- Establish a more geographically representative panel.
- Inclusion of disciplines that were too few (e.g., academic RN) or not included at all in this research study (e.g., OT).
- Add questions relating to appropriate type of physical activity for patients with AECOPD.

QUESTIONS?

Thank you!

- Dr. Pat Camp and Dr. Darlene Reid – Research Supervisors
- Andrea Neufeld – Research Assistant
- Pilot and Panellist Participants

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Timeline

Key Elements	Date of Completion
August 13, 2010	Ethics submission
Mid-October 2010	Ethics re-submitted
End- November 2010	Ethics re-submitted 2nd time
Mid- December 2010	Ethics Approved
December 2010	Began recruitment and questionnaire development
February/March 2011	Round 1 distributed
April/May 2011	Round 1 Analysis
End of June 2011	Round 2 distributed
August 2011	Awaiting 3 responses from round 2

Round 3

- Purpose:
  - rank each item on Likert scale of 1-7

1	2	3	4	5	6	7
o	o	o	o	o	o	o
Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree

  - use data to calculate concensus
- 6-7 (agree and strongly agree)
- Consensus:
  - Safe: 86% (24/28)
  - Effective: 79% (22/28)

Delphi Technique Pros and Rationale

PROS	
•Achievement of consensus in an area of controversy/lack of evidence	Parameters for safe and effective exercise with AECOPD patients controversial
Anonymity allows for decrease group think phenomenon	Improvement over focus group/group interview methodology
Allows for inclusion of experts from different geographical areas and fields	Can recruit representative panel; Answers more robust and generalizable

Powel, C. (2003), Okoli, C. & Pawlowski, S.D. (2004).

Round 4

- Potential round 4
- Depends on results from round 3:
  - an excessive amount of items achieve consensus
  - panellists asked to rank their top 5-10