Supplemental Table 1. Fidelity checklists of group education sessions

Facilitator name:	1			Session Date:					
Assessor name:			Nu	mber of patient	s:				
Session title:		Sessio	n #1:	#1: Living well and breathing easy					
Content covered in the session	on:	1 –Not addressed	2	3- Incomplete or poorly explained	4	5- Mostly complete with minor omissions	6	7- All aspects covered clearly and in depth	
Facilitator introduces p	Facilitator introduces participants to the program structure, facilities and					0		_	
Achieving and maintaining good health: Facilitator introduced the concept of good health and what it might look like in the context of chronic lung disease.				_		0			
 Healthy behaviors: Facilitator introduces the healthy behaviors and between maintaining health. 	the link ealthy	0		0		0			
 Goal setting: Facilitator discusses he realistic achievable gos explains the link between goals, maintaining heal behaviors, and achievinhealth. 	als. Facilitator en setting thy			0	_				
5) Take home objectives Facilitator introduces a goal for patients to atte the next education sess	n activity or mpt before			0					
How the content was deliver	ed (process):	1 – Not at all	2	3- Rarely or inconsistently	4	5- Regularly with a few exception	6	7- Consistently throughout session	
 Open ended question Facilitator engaged the open-ended questions closed questions. 	group with								
 Active listening: Facilitator used reflective express empathy and experiences 	encourage								
 Group discussion: Facilitator encouraged group discussion and a for their input and feedl appropriate. 	sked patients								

Facilitator name:			Ses	ssion Date:					
Assessor name:				Number of patients:					
Session title:	Session title: Session								
				2_		5. Mostly		7. All senants	

Content covered in	n the session:	1 -Not addressed	2	3- Incomplete or poorly explained	4	5- Mostly complete with minor omissions	6	7- All aspects covered clearly and in depth
exercise pr Facilitator e components routine (end strengthenir	ts of a complete ogram: xplains the four s of a complete exercise lurance activities, ng activities, flexibility ng exercises).							
	exercise: iscusses the benefits of chronic lung disease.			0				
(Frequency, Emphasizes program she	rinciple: xplains the FITT principle Intensity, Time, Type). s that an exercise ould be individualized ed slowly over time.							
Facilitator d symptoms o sweating, m well as warr seek medica	of normal exercise: iscusses the expected of exercise (SOB, uscle fatigue etc.) as ning signs to stop and al attention (chest pain, xtreme SOB etc.)	0		0		0		
Facilitator re home activit activity or go	objectives: eviewed last weeks take by and introduced a new oal for patients to attempt ext education session.			0		0		
How the content w	vas delivered (process):	1 – Not at all	2	3- Rarely or inconsistently	4	5- Regularly with a few exception	6	7- Consistently throughout session
	ngaged the group with I questions and avoided			0				
	sed reflective listening to pathy and encourage							
group discu	ncouraged productive ssion and asked patients ut and feedback when							

Facilitator name:			Session Date:	
Assessor name:			Number of patients:	
Session title:		Session	n #3 Living well with o	chronic lung disease:

5- Mostly All aspects 1 -Not Incomplete covered complete Content covered in the session: 2 addressed or poorly with minor clearly and in omissions depth explained 1) Anatomy and Physiology of the lung: Facilitator explains the anatomy. cleaning mechanisms, and method of gas exchange of the normal lung. Physiology of breathing: Facilitator explains the mechanism of inspiration and expirations, including the role of the muscles, chest wall, airways, and lung tissue. Changes caused by Chronic lung disease: Facilitator discusses emphysema and chronic bronchitis in COPD. Discusses mechanisms of other chronic lung conditions as relevant to the group. 4) Symptoms of chronic lung disease: Facilitator discuses local symptoms such as cough and shortness of breathe as well as generalized symptoms such as anxiety and fatigue. Take home objectives: Facilitator reviews last weeks take home activity and introduces a new activity or goal for patients to attempt before the next education session. 5-7- Consistently Regularly 3- Rarely or 1 - Not at 2 How the content was delivered (process): 4 6 throughout all inconsistently with a few session exception 1) Open ended questions: Facilitator engaged the group with open-ended questions and avoided closed questions 2) Active listening: Facilitator used reflective listening to express empathy and encourage sharing of experiences 3) Group discussion Facilitator encouraged productive group discussion and asked patients for their input and feedback when appropriate.

Facilitator name:			Session Date:	
Assessor name:			Number of patients:	
Session title:			#4 Breathing Manage	ement

Content covered in the session:	1 –Not addressed	2	3- Incomplete or poorly explained	4	5- Mostly complete with minor omissions	6	7- All aspects covered clearly and in depth
The anxiety breathlessness cycle: Facilitator explains the anxiety- breathlessness cycle and that, strategies to break this cycle exist.		_					
Breathing with lung disease: Facilitator discusses how chronic lung diseases lead to shortness of breath. (Ex: Obstruction and air trapping for COPD versus small stiff lungs in restriction)							
 Managing shortness of breath: Facilitator discusses strategies for reducing or managing shortness of breath including breathing techniques, body position, strategies for exertion, and dealing with sudden shortness of breath. 							
4) Coughing and secretion management: Facilitator discusses the importance of keeping lungs clear of mucous and secretion, reviews coughing techniques and other strategies for secretion clearance							
 Take home objectives: Facilitator reviewed last weeks take home activity and introduced a new activity or goal for patients to attempt before the next education session. 							
How the content was delivered (process):	1 – Not at all	2	3- Rarely or inconsistently	4	5- Regularly with a few exception	6	7- Consistently throughout session
Open ended questions: Facilitator engaged the group with open-ended questions and avoided closed questions							
 Active listening: Facilitator used reflective listening to express empathy and encourage sharing of experiences. 							
 Group discussion: Facilitator encouraged productive group discussion and asked patients for their input and feedback when appropriate. 							

Facilitator name:			Ses	ssion Date:						
Assessor name:			Nu	Number of patients:						
Session title:		Sessi	on#	5: Conservin	ıg En	ergy				
Content covered in the session:		-Not ressed	2	3- Incomplete or poorly explained	4	5- Mostly complete with minor omissions	6	7- All aspects covered clearly and in depth		
 The problem of fatigue in chror lung disease: Facilitator discuses impact of fatigon patients with chronic lung diseand the benefit of strategies which minimize the limitation in function caused by fatigue. 	ue sse			0						
 Daily activities that cause fatige Facilitator discusses activates when cause or contribute to fatigue in chronic lung disease. Encourages patients to consider the everyday activities that cause them fatigue. 	ich	0		0				_		
 Energy Conservation principles Facilitator discusses energy		0		0		0		0		
4) Take home objectives: Facilitator reviewed last weeks ta home activity and introduced a ne activity or goal for patients to atte before the next education session	w npt	_		0				0		
How the content was delivered (proce	ss): 1 -	Not at all	2	3- Rarely or inconsistently	4	5- Regularly with a few exception	6	7- Consistently throughout session		
Open ended questions: Facilitator engaged the group with open-ended questions and avoided closed questions				0						
 Active listening: Facilitator used reflective listening express empathy and encourage sharing of experiences. 	to	0		0						
 Group discussion: Facilitator encouraged productive group discussion and asked patie for their input and feedback when appropriate. 				0						

Facilitator name:		Se	ssion Date:				
Assessor name:		Nu	mber of patient	ts:			
Session title:	Sessio	n #6	Medications fo	or Ch	ronic Lung E)iseas	e
Content covered in the session:	1 –Not addressed	2	3- Incomplete or poorly explained	4	5- Mostly complete with minor omissions	6	7- All aspects covered clearly and in depth
Benefits of medications for chronic lung disease: Facilitator discusses the importance of understanding your medications and explores patient's beliefs and concerns about their medications.		0		0		0	
Actions and side effects of pulmonary medications: Facilitator reviews the role, mechanism and potential side effects of pulmonary medications.							
3) Use of antibiotics in chronic lung disease: Facilitator addresses the role of antibiotics in respiratory infections including that antibiotics are only effective for bacterial infections and the importance of completing the course of prescribed antibiotics		0		0		0	
Vaccinations: Facilitator explains the benefits of fl and pneumonia vaccination in chronic lung disease. Addresses patients' questions and concerns	u 🗆						
5) Take home objectives: Facilitator reviewed last weeks take home activity and introduced a new activity or goal for patients to attem before the next education session.		0		0			
How the content was delivered (process): 1 – Not at all	2	3- Rarely or inconsistently	4	5- Regularly with a few exception	6	7- Consistently throughout session
Open ended questions: Facilitator engaged the group with open-ended questions and avoided closed questions		0		0		0	
 Active listening: Facilitator used reflective listening texpress empathy and encourage sharing of experiences. 	• -	0		0	0		
 Group discussion: Facilitator encouraged productive group discussion and asked patient for their input and feedback when appropriate. 	s 🗆	0					

Assessor name:			Nu	mber of patient	s:		
Facilitator name:			Se	ssion Date:			
Session title:			1#7]	Inhaler device	s		
				2		5. Mostly	7. All aspects

Content covered in the session:	1 –Not addressed	2	3- Incomplete or poorly explained	4	5- Mostly complete with minor omissions	6	7- All aspects covered clearly and in depth
Importance of Inhaler technique: Facilitator explains how inhalers work to get medication into the airways and the importance of proper inhaler technique							
2) Inhaler techniques: Facilitator covers the use of all relevant inhaler devices and demonstrates technique (trainer device or video).		_	0				
3) Maintenance and cleaning of inhaler devices: Facilitator discuses the importance of maintenance and cleaning of inhaler devices and reviews how to do so (in person or through a video).		_	0				
4) Take home objectives: Facilitator reviewed last weeks take home activity and introduced a new activity or goal for patients to attempt before the next education session.		_	0				
How the content was delivered (process):	1 – Not at all	2	3- Rarely or inconsistently	4	5- Regularly with a few exception	6	7- Consistently throughout session
Open ended questions: Facilitator engaged the group with open-ended questions and avoided closed questions							
Active listening: Facilitator used reflective listening to express empathy and encourage sharing of experiences.							
Group discussion: Facilitator encouraged productive group discussion and asked patients for their input and feedback when appropriate.		_	0				0

Facilita	itor name:			Se	ssion Date:				
Assess	sor name:			Nu	mber of patient	s:			
Sessio	n title:		Sessio	n #8]	Integrating an	exer	cise program	into	your life
Conter	nt covered in the sessi	on:	1 –Not addressed	2	3- Incomplete or poorly explained	4	5- Mostly complete with minor omissions	6	7- All aspects covered clearly and in depth
1)	Barriers to exercise a manage them: Facilitator discuses bar regular exercise (lack of confidence, or planning illness) and reviews str overcome these barrier	rriers to of motivation, g, acute rategies to					_	0	
2)	Recognizing limits: Facilitator discuses hor limits when exercising tools to help patients ic appropriate intensity of	and provides lentify the	0				0		
3)	Customizing an exerc Facilitator explains how go about creating there customized exercise pl setting realistic, achiev and deciding on when, how to exercise.	v patients can e own an including able goals	0		0		0		0
4)	Maintaining an exerci Facilitator discuses the of maintaining an exerci and provides strategies sticking to an exercise	importance cise program s to help with			0		0		0
5)	Take home objectives Facilitator reviewed las home activity and intro activity or goal for patie before the next educati	t weeks take duced a new ents to attempt							
How th	ne content was deliver	ed (process):	1 – Not at all	2	3- Rarely or inconsistently	4	5- Regularly with a few exception	6	7- Consistently throughout session
1)	Open ended question Facilitator engaged the open-ended questions closed questions	group with	0				0		
2)	Active listening: Facilitator used reflecti express empathy and e sharing of experiences	encourage	0						
3)	Group discussion: Facilitator encouraged group discussion and a for their input and feed appropriate.	sked patients	0						

Facilitator name:			Session Date:	
Assessor name:			Number of patients:	
Session title:			#9 Management of re	spiratory infections

	Session due.						
Content covered in the session:	1 –Not addressed	2	3- Incomplete or poorly explained	4	5- Mostly complete with minor omissions	6	7- All aspects covered clearly and in depth
Action plan: Facilitator explains the purpose of an action plan, what a typical action plan looks like and the benefits of having and using it when needed.							
Signs and symptoms of an exacerbation: Facilitator discuses the symptoms of a respiratory "flair up" (exacerbation) and encourages patients to think about symptoms of previous flair ups							
Risk factors and prevention: Facilitator discuses risk factors that can lead to a respiratory infection and the actions and behaviors patients can take to reduce their risk.							
Treatment of exacerbations: Facilitator discusses how to manage flair ups including the importance of recognizing symptoms early and using an action plan. Discusses how to know when to seek assistance or go to the emergency room.		0	0		0	0	0
5) Take home objectives: Facilitator reviewed last weeks take home activity and introduced a new activity or goal for patients to attempt before the next education session.		0	0				0
How the content was delivered (process):	1 – Not at all	2	3- Rarely or inconsistently	4	5- Regularly with a few exception	6	7- Consistently throughout session
Open ended questions: Facilitator engaged the group with open-ended questions and avoided closed questions							
Active listening: Facilitator used reflective listening to express empathy and encourage sharing of experiences.		0					
Group discussion: Facilitator encouraged productive group discussion and asked patients for their input and feedback when appropriate.							

	Session title:	Session	#10 Management of Ag	gravating Environmental Factors
	Assessor name:		Number of patients:	
	Facilitator name:		Session Date:	
24				

Conter	nt covered in the session:	1 -Not addressed	2	3- Incomplete or poorly explained	4	5- Mostly complete with minor omissions	6	7- All aspects covered clearly and in depth
1)	Aggravating environmental factors: Facilitator discusses environmental factors that can aggravate chronic lung disease (indoor and outdoor pollutants, emotions, adverse weather, allergens and exposure to respiratory infections) and identifying the factors that affect you.							
2)	Avoiding or reducing aggravating environmental factors: Facilitator discuses how patients can avoid or reduce exposure to environmental factors that aggravate their lung disease.							
3)	Managing symptoms caused by environmental exposures: Facilitator discuses how patients can manage their symptoms if they cannot avoid aggravating factors (including a review of using their action plan).			0				
4)	Take home objectives: Facilitator reviewed last weeks take home activity and introduced a new activity or goal for patients to attempt before the next education session.							
How ti	ne content was delivered (process):	1 – Not at all	2	3- Rarely or inconsistently	4	5- Regularly with a few exception	6	7- Consistently throughout session
1)	Open ended questions: Facilitator engaged the group with open-ended questions and avoided closed questions							
·	Active listening: Facilitator used reflective listening to express empathy and encourage sharing of experiences.							
3)	Group discussion: Facilitator encouraged productive group discussion and asked patients for their input and feedback when appropriate.			0				

Facilitator name:		Session Date:	
Assessor name:		Number of patients:	
Session title:	Session	#11 Management of S	Stress and Anxiety

Session title:	Sessi	on #1.	l Management	OI SI	ress and An	ciety	
	·						
Content covered in the session:	1 -Not addressed	2	3- Incomplete or poorly explained	4	5- Mostly complete with minor omissions	6	7- All aspects covered clearly and in depth
 Stress and stressors: Facilitator reviews stress including the causes of stress and the physical and mental symptoms of stress (increased heart rate, rapid breathing, anxiety, panic attacks). 	_	_			0		_
Review the anxiety- breathlessness cycle: Facilitator reviews the anxiety- breathlessness cycle and the role of stress in triggering anxiety/breathlessness.		_	0		0		
Strategies for managing stress and anxiety: Facilitator discusses strategies for breaking the anxiety-breathlessness cycle and managing stress		_	0				
 Review of the action plan Facilitator reviews the use of an action plan and how to use an action plan in managing anxiety or stress related symptoms. 		_	0				
5) Take home objectives: Facilitator reviewed last weeks take home activity and introduced a new activity or goal for patients to attempt before the next education session.		0					
How the content was delivered (process):	1 – Not at all	2	3- Rarely or inconsistently	4	5- Regularly with a few exception	6	7- Consisten throughout session
Open ended questions: Facilitator engaged the group with open-ended questions and avoided closed questions		_					
 Active listening: Facilitator used reflective listening to express empathy and encourage sharing of experiences. 		_	0				
Group discussion: Facilitator encouraged productive group discussion and asked patients for their input and feedback when							

1			
Facilitator name:		Session Date:	
Assessor name:		Number of patients:	
Session title:	Sessi	on #12 Nutrition and lui	ng health

٠								
	Content covered in the session:	1 –Not addressed	2	3- Incomplete or poorly explained	4	5- Mostly complete with minor omissions	6	7- All aspects covered clearly and in depth
	Chronic lung disease and a healthy diet: Facilitator reviews the benefits of healthy eating for individuals with chronic lung disease.							
	 Barriers to healthy eating: Facilitator discusses barriers to healthy eating in chronic lung disease (ex: breathlessness, fatigue, bloating, low appetite, difficulty with shopping or preparing meals) and strategies for overcoming these barriers. 							
	 Balanced diet and a Healthy plate: Facilitator discusses what constitutes a balanced diet and tips for healthy diet such as the concept of a "healthy plate", healthy snacks and the importance of hydration. 	0	0					
	Take home objectives: Facilitator reviewed last weeks take home activity and introduced a new activity or goal for patients to attempt before the next education session.	0						
	How the content was delivered (process):	1 – Not at all	2	3- Rarely or inconsistently	4	5- Regularly with a few exception	6	7- Consistently throughout session
	Open ended questions: Facilitator engaged the group with open-ended questions and avoided closed questions							
	Active listening: Facilitator used reflective listening to express empathy and encourage sharing of experiences.	0						
	Group discussion: Facilitator encouraged productive group discussion and asked patients for their input and feedback when appropriate.	0				0		

Supplemental material – Surveys

Survey questions for patients in the initial implementation phase (score from 1-10)

- How satisfied were you with the amount of practical information used in the education sessions (e.g. demonstrations and practice)?
- How satisfied were you with the content of the education sessions?

- How satisfied were you with the content of the written materials given?
- How approachable was/were the healthcare professional(s) who delivered the education sessions?
- How accessible was the location of the education sessions (e.g. distance to walk, car parking facilities)?

Survey questions for HCP's in the initial implementation phase (score from 1-10)

- How satisfied were you with the introduction of the program that you received?
- How satisfied were you with the content of the education sessions that you were asked to teach
- how satisfied were you with the facilitator notes and resources provided for the education sessions
- how satisfied were you with the time allotted for your education session(s)
- How likely would you be to recommend the education program (content, resources, structure) to another pulmonary rehabilitation programs?

Surveys for patients in the sustainability phase

Satisfaction

1. In general, how satisfied are you with the **pulmonary rehabilitation program** (including lectures, group discussions, individual meetings with health care professionals and exercise sessions)? If not, please describe which part you are not satisfied with and if possible, provide some concrete suggestions for change.

Very satisfied	Satisfied	Neutral	Not satisfied	Very unsatisfied

If not, please describe which part you are not satisfied with and if possible, provide some concrete suggestions for change.

What did you especially **like** about the **pulmonary rehabilitation program** (including lectures, group discussions, individual meetings with health care professionals and exercise sessions)? Was the program the right length for you?

Was there any part that you **disliked** about the **pulmonary rehabilitation program** (including lectures, group discussions, individual meetings with health care professionals and exercise sessions)?

2. How satisfied are you with the **group education sessions** of the program

Very satisfied	Satisfied	Neutral	Not satisfied	Very unsatisfied

If not, please describe which part you are not satisfied with and if possible, provide some concrete suggestions for change.

What did you especially like about the **group education sessions**? Were the sessions the right length?

Was there any part of the **group education sessions** that you did not like or that was not informative or helpful for you?

Did you feel encouraged by the professionals to take part in group conversations during the education sessions?

3. How satisfied were you with the individual education sessions of the program?

Very satisfied	Satisfied	Neutral	Not satisfied	Very unsatisfied

If not, please describe which part you are not satisfied with and if possible, provide some concrete suggestions for change.

4. How satisfied were you with the exercise sessions of the program?

Very satisfied	Satisfied	Neutral	Not satisfied	Very unsatisfied

If not, please describe which part you are not satisfied with and if possible, provide some concrete suggestions for change.

5. How satisfied were you with the interaction with the professionals?

Very satisfied	Satisfied	Neutral	Not satisfied	Very unsatisfied

If not, please describe which part you are not satisfied with and if possible, provide some concrete suggestions for change.

- 6. Was it easy for you to attend all scheduled appointments? If not, please tell us why.
- 7. Do you think this program will continue to attract new patients in the years to come? Why do you think it will or will not?

Patient evaluation

- 1. How long did it take for you to complete the tests and questionnaires required prior to participation in the PR program?
- 2. How long did it take for you to complete the tests and questionnaires required after participation in the PR program?
- 3. Were the questionnaires and tests easy to perform?
- 4. Did you receive proper guidance on how to complete the questionnaires and tests?
- 5. Do you think that, in general, the way the professionals evaluate the patients, is feasible and relevant? If not, please tell us why.

Action plan and home exercise plan1. Do you have an action plan?O YesO No
2. Did any of the health care professionals during the program discuss with you what to do when you have an exacerbation?
O Yes
O No (please proceed to question 4)
3. Please give a brief description of what to do when you have an exacerbation:
4. Do you have a plan for exercising at home?
O Yes
O No
5. Did any of the health care professionals during the program discuss home exercises with you?O YesO No (You may skip the last question)
6. Please give a brief description of your home exercise plan:

Surveys for HCP's in the sustainability phase

Professional qualifications and experience

What are your professional qualifications?

Did you have any additional relevant training? (adult education or other) If so, please specify. How many years of work experience do you have in pulmonary rehabilitation?

Feasibility of data collection

How long does it take for you to assess one patient in the Canadian PR program? (please give the approximate time you spend assessing one patient pre and post program).

Is this time different from the time you used to spend with the old program?

Do you think that the assessment package (tests and questionnaires) in the Canadian PR program is relevant and feasible to be administered?

Is there any particular test or questionnaire that you think is not relevant or feasible to be administered at the Montréal Chest Institute? If so, please specify if possible.

Did you face any barriers to administering the questionnaires and/or tests of the Canadian PR program?

Do you see any issues with continuing to administer these questionnaires/tests in a long term at the Montréal Chest Institute?

Do you think that the assessment package would be an issue in other centres? Why? Why not?

Other barriers for maintaining the program

Did you at any point feel like or had to deviate from the Canadian PR program? If so, please explain why.

Did you face any other barriers in working with the Canadian PR program, besides the assessment package?

Satisfaction

In general, are you satisfied with the new program?

Very satisfied	Satisfied	Neutral	Not satisfied	Very unsatisfied

If not, please describe which part you are not satisfied with and if possible, provide some concrete suggestions for change.

Supplemental Table 3. Domain Adoption: Characteristics of the HCPs.

Characteristics	Frequencies (%)
Work experience in years, mean ± SD (range)	16±10 (1-35)
Disciplines	
Nurse	3 (37.5%)
Physical therapist	1 (12.5%)
Social worker	1 (12.5%)
Nutritionist	1 (12.5%)

	Occupational therapist	1 (12.5%)
	Respiratory therapist	1 (12.5%)
Education		
	Bachelor	8 (100%)

TDF Domain	Definition	Example of statement in the	Frequencies N (%)

Master	1 (12.5%)
Attended relevant courses/ conferences	4 (50%)

These HCPs participated in both evaluation periods

Abbreviations: SD=standard deviation

Supplemental Table 6. Outcomes of the Determinants of Implementation Behaviour

Questionnaire (DIBQ) based on the Theoretical Domains Framework (TDF)

gative notions	A complex negative reaction pattern, involving experiential, behavioral, and physiological elements, by which the individual attempts to deal with a personally significant matter or event.	When I work with Pulmonary Rehabilitation I feel nervous.	6 (85.7%)	0 (0%) Neutral*	1 (14.3%)
Knowledge	An awareness of the existence of something.	I know how to deliver Pulmonary Rehabilitation following the standards of the Enhanced PR program.	Agree* 7 (100%)	0 (0%)	Disagree 0 (0%)
Skills	An ability or proficiency acquired through practice.	I have been trained in delivering Pulmonary Rehabilitation following the standards of the Enhanced PR program.	6 (85.7%)	1 (14.3%)	0 (0%)
Social/ professional role & identity	A coherent set of behaviors and displayed personal qualities of an individual in a social or work setting.	As a health care professional in the PEP program, it is my job to deliver Pulmonary Rehabilitation following the standards of the Enhanced PR program.	7 (100%)	0 (0%)	0 (0%)
Beliefs about capabilities	Acceptance of the truth, reality, or validity about an ability, talent, or facility that a person can put to constructive use.		6 (85.7%)	1 (14.3%)	0 (0%)
Optimism	The confidence that things will happen for the best or that desired goals will be attained.	In my work as a health care professional in the PEP program, in uncertain times, I usually expect the best.	7 (100%) /	0 (0%)	0 (0%)
Beliefs about consequence		following the standards of the Enhanced PR program is. (Very worthwhile – not worthwhile at all)	7 (100%)	0 (0%)	0 (0%)
Intentions	A conscious decision to perform a behavior or a resolve to act in a certain way.	I intend to continue delivering Pulmonary Rehabilitation following the standards of the Enhanced PR program in the future.	7 (100%)	0 (0%)	0 (0%)
Goals	Mental representations of outcomes or end states that an individual wants to achieve.	How often is working on something else on your agenda a higher priority than delivering Pulmonary Rehabilitation following the standards of the Enhanced PR program? (Always – never)	2 (28.6%)	1 (14.3%)	4 (57.1%)
Innovation	Any characteristics of the innovation that discourages or encourages the development of skills and abilities, independence, social competence, and adaptive behavior.	Pulmonary Rehabilitation is compatible with daily practice.	5 (71.4%)	2 (28.6%)	0 (0%)
Socio- political context	Any characteristics of the socio-political context that discourages or encourages the developmer of skills and abilities, independence, social competence, and adaptive behavior.		1 (20%)	2 (40%)	2 (40%)
Organization		In the organization I work, all necessary resources are available to deliver Pulmonary Rehabilitation.	6 (85.7%)	1 (14.3%)	0 (0%)
Patient	Any characteristics of the patient that discourages or encourages the development of skills and abilities, independence, social competence, and adaptive behavior.	Participants of Pulmonary Rehabilitation are positive about Pulmonary Rehabilitation.	5 (71.4%)	2 (28.6%)	0 (0%)
Innovation strategies	Any characteristics of the innovation strategy that discourages or encourages the developmer of skills and abilities, independence, social competence, and adaptive behavior.	The Montréal Chest Institute provides sufficient intervention materials.	5 (71.4%)	2 (28.6%)	0 (0%)
Social influences	Those interpersonal processes that can cause individuals to change their thoughts, feelings, or behaviors.	Rehabilitation following the standards of the Enhanced PR program.		0 (0%)	0 (0%)
Positive emotions	A complex positive reaction pattern, involving experiential, behavioral, and physiological elements, by which the individual attempts to deal with a personally significant matter or even	When I work with Pulmonary Rehabilitation, feel optimistic. t.	I 7 (100%)	0 (0%)	0 (0%)

Behavioral regulation	Anything aimed at managing or changing objectively observed or measured actions.	I have a clear plan of how I will deliver Pulmonary Rehabilitation following the standards of the Enhanced PR program.	5 (71.4%)	2 (28.6%)	0 (0%)
Nature of the	The nature of the aggregate of all responses	Delivering Pulmonary Rehabilitation	5 (71.4%)	2 (28.6%)	0 (0%)
behaviors	made by an individual in any situation.	following the standards of the Enhanced PR			
		program is something I do automatically.			

^{*} disagree= 1-3.5; neutral= 3.5-4.5; agree =4.5-6.

Supplemental Table 2. Domain Effectiveness: Patient outcomes from first and second evaluation periods.

Outcome	Measurement instrument	Clinical important difference	Improv ed n (%) [*]	Not improv ed N (%)**	Missi ng n (%)	Mean differenc e (SD)	Tota I n	Improv ed n (%)*	Not improv ed n(%)**	Missi ng n (%)	Mean differenc e (SD)	To tal n
					st evaluat	ion period			Second e	valuation	period	
Functional exercise capacity	6MWT	≥33m ↑	7 (64)	2 (18)	2 (18)	77.7 (46.4)	11	4 (44)	4 (44)	1 (11)	30.9 (39.7)	9
Knowledge	LINQ	≥1 point↓	7 (64)	3 (27)	1 (9)	-2.4 (4.3)	11	3 (33)	2 (22)	4 (44)	-1.0 (3.7)	9
	BCKQ, %correct	≥ 3% ↑	(- /	- ()	(-)	. ()		1 (11)	4 (44)	4 (44)	2 (10.5)	9
Functional status	CAT-score	≥ 2 points ↓	4 (36)	5 (46)	2 (18)	- 1 (3.5)	11	5 (56)	2 (22)	2 (22)	-5.4 (6.6)	9
Self- reported	FPI-SF Body care	≥ 0.5 points	0 (0)	10 (91)	1 (9)	-0.05 (0.17)	11	0 (0)	5 (56)	4 (44)	0.12 (0.18)	9
functional performance	FPI-SF Household	≥ 0.5 points	0 (0)	10 (91)	1 (9)	-0.08 (0.22)	11	1 (11)	4 (44)	4 (44)	0.23 (0.23)	9
	FPI-SF Physical exercise	≥ 0.5 points	2 (18)	8 (73)	1 (9)	-0.33 (0.26)	11	1 (11)	4 (44)	4 (44)	0.25 (0.41)	9
	FPI-SF Recreation	≥ 0.5 points	1 (9)	9 (82)	1 (9)	-0.12 (0.19)	11	0 (0)	5 (56)	4 (44)	-0.12 (0.30)	9
	FPI-SF Spiritual	≥ 0.5 points	1 (9)	9 (82)	1 (9)	-0.23 (0.99)	11	0 (0)	2 (22)	7 (78)	0 (0.25)	9
	FPI-SF Social	≥ 0.5 points	0 (0)	10 (91)	1 (9)	0.05 (0.24)	11	2 (22)	3 (33)	4 (44)	0.18 (0.23)	9
	FPI-SF Total	≥ 0.5 points	0 (0)	10 (91)	1 (9)	-0.08 (0.14)	11	0 (0)	5 (56)	4 (44)	0.12 (0.20)	9
Self-efficacy	MSEES total mean		3 (27)	6 (55)	2 (18)	13.2 (24.7)	11	3 (33)	2 (22)	4 (44)	12.1 (14.0)	9
	Task SE		2 (18)	4 (36)	5 (46)	1.4 (17.5)	11	1 (11)	4 (44)	4 (44)	0.7 (10.6)	9
	Exercise coping	≥ 10% ↑	1 (9)	5 (46)	5 (46)	-2.5 (13.9)	11	3 (33)	2 (22)	4 (44)	16.7 (23.3)	9
	Scheduling SE		1 (9)	4 (36)	6 (55)	4.0 (12.3)	11	3 (33)	2 (22)	4 (44)	21.7 (23.0)	9
	Breathing coping		4 (36)	2 (18)	5 (46)	11.1 (24.0)	11	2 (22)	3 (33)	4 (44)	9.3 (17.5)	9
	SEWS total mean	≥ 10% ↑	4 (36)	6 (55)	1 (9)	11.3 (13.0)	11	5 (56)	0 (0)	4 (44)	41.1 (21.3)	9
	SEAMS total mean	≥ 10% ↑	1 (9)	8 (73)	2 (18)	3.3 (16.6)	11	0 (0)	5 (56)	4 (44)	-4.0 (4.2)	9

↓ a decrease of clinical important difference is a positive outcome.

Abbreviations: 6MWT=6 Minute Walk Test, LINQ= Lung Information Needs Questionnaire, BCKQ=Bristol COPD Knowledge Questionnaire, CAT=COPD Assessment Test, FPI-SF=Functional Performance Inventory-Short Form, MSEES=Multidimensional Self-Efficacy for Exercise Scale, SE=Self-Efficacy, SEWS=Self-Efficacy for Walking Scale, SEAMS= Self-Efficacy for Appropriate Medication Use Scale

Supplemental Table 4. Maintenance on patient level: Patient outcomes at 3 months follow-up vs. baseline / post-program.

Outcome	Measurement	Clinical	follo	w up vs. bas	eline	follow	Total		
	instrument	important difference	Improved N (%)*	Not improved N (%)**	Missing N (%)	Improved N (%) [*]	Not improved N (%)**	Missing N (%)	N
Knowledge	LINQ	≥1 point↓	8 (73)	3 (27)	0 (0)	6 (55)	4 (36)	1 (9)	11
Self-reported	FPI-SF Body care	≥ 0.5 points ↑	2 (18)	9 (82)	0 (0)	0 (0)	10 (91)	1 (9)	11
functional	FPI-SF Household	≥ 0.5 points ↑	2 (18)	9 (82)	0 (0)	0 (0)	10 (91)	1 (9)	11
performance	FPI-SF Physical exercise	≥ 0.5 points ↑	0 (0)	11 (100)	0 (0)	2 (18)	8 (73)	1 (9)	11
	FPI-SF Recreation	≥ 0.5 points ↑	1 (9)	10 (91)	0 (0)	0 (0)	10 (91)	1 (9)	11
	FPI-SF Spiritual	≥ 0.5 points ↑	5 (46)	6 (55)	0 (0)	0 (0)	10 (91)	1 (9)	11
	FPI-SF Social	≥ 0.5 points ↑	2 (18)	9 (82)	0 (0)	0 (0)	10 (91)	1 (9)	11
	FPI-SF Total	≥ 0.5 points ↑	1 (9)	10 (91)	0 (0)	0 (0)	10 (91)	1 (9)	11
Self-efficacy	MSEES total mean		6 (55)	3 (27)	2 (18)	1 (9)	8 (73)	2 (18)	11
	Task SE	•	2 (18)	3 (27)	6 (55)	2 (18)	6 (55)	3 (27)	11
	Exercise coping	· ≥ 10% ↑	3 (27)	3 (27)	5 (46)	5 (46)	3 (27)	3 (27)	11
	Scheduling SE		3 (27)	3 (27)	5 (46)	1 (9)	6 (55)	4 (36)	11
	Breathing coping		5 (46)	1 (9)	5 (46)	1 (9)	5 (46)	5 (46)	11
	SEWS total mean	≥ 10% ↑	5 (46)	4 (36)	2 (18)	0 (0)	8 (73)	3 (27)	11
	SEAMS total mean	≥ 10% ↑	1 (9)	8 (73)	2 (18)	0 (0)	8 (73)	3 (27)	11

This data was only obtained in the first evaluation period of the study.

†an increase of clinical important difference is a positive outcome.

 \downarrow a decrease of clinical important difference is a positive outcome.

Abbreviations: 6MWT=6 Minute Walk Test, LINQ= Lung Information Needs Questionnaire, BCKQ=Bristol COPD Knowledge Questionnaire, CAT=COPD Assessment Test, FPI-SF=Functional Performance Inventory-Short Form,

 $[^]st$ Number of patients that improved exceeding the clinical important difference.

^{**}Number of patients that did not improve or had an improvement that did not exceed the clinical important difference.

†an increase of clinical important difference is a positive outcome.

^{*} Number of patients that improved exceeding the clinical important difference.

^{**}Number of patients that did not improve or had an improvement that did not exceed the clinical important difference.

MSEES=Multidimensional Self-Efficacy for Exercise Scale, SE=Self-Efficacy, SEWS=Self-Efficacy for Walking Scale,

SEAMS = Self-Efficacy for Appropriate Medication Use Scale

Supplemental tables 5: Data from surveys for HCPs and patients

Table 5A. Results of the survey for the patients during first evaluation period

Qu	estions	Mean ± 95% CI	SD
1.	How satisfied were you with the amount of practical information used in the education sessions?	9.9 ± 0.2	0.3
2.	How satisfied were you with the content of the education sessions?	10.0 ± 0.0	0.0
3.	How satisfied were you with the content of the written materials given?	9.0 ± 2.1	3.2
4.	How approachable was/were the healthcare professional(s) who delivered the education sessions?	10.0 ± 0.0	0.0
5.	How accessible was the location of the education sessions	8.9 ± 2.0	2.9
To	tal mean	9.5	0.9

Abbreviations: CI=confidence interval, SD=standard deviation

Table 5B. Results of survey for patients during second evaluation period

Items [*]	Satisfaction ⁺							
	Very satisfied	Satisfied	Neutral	Not satisfied	Very unsatisfied	Not applicable		
1. Overall satisfaction with program	5/6 (83)	-	1/6 (17)	-	-	-		
2. Satisfaction with group education sessions	3/6 (50)	1/6 (17)	1/6 (17)	-	-	-		
3. Satisfaction with individual education sessions	3/6 (50)	-	2/6 (67)	-	-	1/6 (17)		
4. Satisfaction with exercise sessions	6/6 (100)	-	-	-	-	-		
5. Satisfaction with interaction with HCP's from the program	4/6 (67)	2/6 (33)	-	-	-	-		
Total	21/30 (67%)	3/12 (25%)	4/18 (20%					

 $[^]st$ item number of the survey as portrayed in Additional file 3.

Table 5C. Results of the survey for health care professionals during first evaluation period

Questions		Mean + 95% CI	SD
1.	How satisfied were you with the introduction of the program that you received?	6.7 ± 2.2	2.8
2.	How satisfied were you with the content of the education sessions that you were asked to teach	8.7 ± 1.0	1.4
3.	How satisfied were you with the facilitator notes and resources provided for the education sessions	6.4 ± 2.7	3.4
4.	How satisfied were you with the time allotted for your education session(s)	9.3 ± 0.6	1.0
5.	How likely would you be to recommend the education program (content, resources, structure) to another pulmonary rehabilitation programs?	9.4 ± 0.5	0.8

^{*}Proportion of N (%)

 Total mean
 8.1
 1.4

Abbreviations: CI=confidence interval, SD=standard deviation