Physical Activity in COPD: how can Technology Help?

NIHR Collaboration for Leadership In Applied Health Research & Care Yorkshire & Humber (CLAHRC YH)
http://clahrc-yh.nihr.ac.uk/

Telehealth and Care Technologies (TaCT) theme
Impact of COPD

Person Perspective

- Worsening lung function
- Reduced quality of life
- Breathlessness
- Social Isolation

Service Perspective

- UK’s 2nd largest cause of emergency admissions
- UK’s 5th biggest killer
- Cost impact

British Lung Foundation 2007
Potential of Technology
Legacy of Research

Stroke

CHF

Chronic pain

COPD

http://thesmartconsortium.org
Aims

**Overall aim:** to develop and evaluate a **holistic** Personalised Self Management System (PSMS) to help people with COPD self-manage their condition

**Phase One aim:** to explore the views of potential users of the technology to inform requirements for a prototype PSMS
Methodology

Phase One Interviews to gain user requirements

- Recruited through BLF Breathe Easy support groups
- HCPs recruited through Breathing Space facility in Rotherham

Qualitative individual semi-structured interviews
Sample

People with COPD N=15

Family Members N=5

Healthcare Professionals (HCPs) N=7
Participant Demographics

**Age** – 52-89yrs
**Gender** – 11 M; 4 F
**Severity** – range of severities and abilities
**Living Circumstances** – 12 with spouse, 3 living alone
**Co-morbidities** – numerous
**Caring responsibilities** – 3

**Gender** – 1 M; 4 F
Interviewed jointly with spouse

**Senior Respiratory Nurse** n=1
**Occupational Therapist** n=1
**Respiratory Specialist Physiotherapist** n=3
**Rehabilitation Support Worker** n=2
Self-Management Targets

- Increasing exercise
- Pulmonary rehab
- Depression / anxiety
- Management of flare-ups
- Improving sleep
- Relationships with others
- Breathlessness management
- Clearing airways
- Weather / environmental factors
- Stopping smoking
- Stopping smoking
- Increasing knowledge
- Psychological factors
- Nutrition

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Goals

“You don't necessarily have to feel that you are doing formal exercise, you know step ups on a bike at home that type of thing...we would say...doing anything that makes you out of breath is fine. So it could be you know dusting...but it has got to make you breathless” 
Respiratory Physiotherapist

“I do feel fairly good about myself, especially because I feel physically better you know all this exercising has had quite an effect on the way that I am thinking. I feel as though I can handle things a lot better and I don’t very often let things bother me for too long” COPD patient, male, 76

“The difficulty is sometimes you think to yourself because I have got this disease I won’t set myself a goal I will just keep within my comfort zone...you are making me think about myself here now...maybe like where I said that you know I don’t have goals, maybe it’s because I am keeping within my own comfort zones things that I know that I can do, so maybe I should set myself goals” COPD patient, male, 52
Functioning & Physical Activity

Over-arching Functional Goal

Daily walk
  Phone
  Feedback

Videos
  Comp.
  Feedback

Step count
  Pedometer
  Feedback

Smaller physical activity & functioning goals (with HCP)
Functioning & Physical Activity

Over-arching Functional Goal

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Smaller physical activity & functioning goals (with HCP)
Video

https://www.youtube.com/watch?v=iPiRqWdZ2yc
Walking module

Walk 5 Minutes
Steps: 703
Total Time: 00:06:28
Active Time: 00:05:00
Completed

Well Done!
You have reached your activity goal for today. Was this activity:

Too Much
Just Right
Too Easy

Increase your walking time:

+ Ok
6 Undo
Walking Time = 6 minutes

You rated your activity:

Too Easy

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Functioning & Physical Activity

Over-arching Functional Goal

Daily walk
Phone
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Step count
Pedometer

Smaller physical activity & functioning goals (with HCP)

Feedback
Feedback
Feedback
Functioning & Physical Activity

Over-arching Functional Goal

Daily walk
- Phone
- Feedback

Videos
- Comp.
- Feedback

Step count
- Pedometer
- Feedback

Smaller physical activity & functioning goals (with HCP)
Fitbit® for General Walking

“I would feel better with a pedometer because then...you could put a challenge up to yourself, but you are in your environment where you are safe and then gradually you may feel better going outside...doing number of steps, yes because then you could increase on that, you could increase on your steps rather than increasing on your 5 minutes, you could think oh why didn’t I do that many yesterday maybe tomorrow if I don’t sit down as much and walk around a little bit more...you can do it within a small area...especially on days that I am not going out and I don’t want to go out, I think if I thought I have to do a bit more I have only done so many steps today that is not good so it would encourage me to get up and walk about” COPD patient, female, 63
HCP Involvement

- Setting goals in conjunction with HCP
- Clear instruction on how to work towards goals
- Taking co-morbidities into account
Advice

- What to do if walking is difficult, e.g. bad weather
- Reason for incomplete activity
- ‘Inspirational’ videos

“You could probably put something, put another box of not done or something like that and then a reason weather, too hot or too cold or too damp or whatever option they want to pick as to why they haven’t done it and then if you are looking at results then you can see well they have been doing this 5 minutes walk, why haven’t they done it oh weather” Family member

“Well on days where I didn’t go exercising, I have got a long hall there and I used to walk up, in winter when it was bad weather” COPD patient, female, 71
Yorkshire and Humber

Forecast Summary

Today
Any early patchy mist or fog quickly clearing to leave a dry morning with some sunny spells. Increasing cloud during the afternoon will bring rain to all parts from around mid or late afternoon, and becoming occasionally heavy. Increasingly windy.

Tonight
Rain moving away northwards during the evening to leave a mainly dry night with clearing skies. Later in the night increasing cloud may bring a little rain to the Pennines.

Environmental Summary

UV: 3
UK Range: 1-7

Pollen: Moderate
UK Range: Low to Very High

Forecast Video

BBC Look North
UK

Done
“And eventually, like we said before, that generation will disappear and the people who are coming along will just accept it as part of the business” COPD patient, male, 76

“They say ‘oh and I go on the Wii and it's brilliant’…and I think well good for you at least you are trying and doing something and you are trying to, ‘I go on with my granddaughter’, so you know there have been some patients that have come or they have said to me you know my daughter has got a Wii would that be any good and I have said absolutely, if you find a programme that you like, anything is better than nothing isn’t it, anything you can do to…and again there will be some patients that get it and some patients that don’t” Respiratory Physiotherapist
The Future

Both targeted and general activity
Development of prototype - symptom monitoring & education
User-Centred Design for usability testing of prototype
THANK YOU!
WE WOULD LIKE TO THANK THE OTHER ORGANISATIONS INVOLVED WITH THE PROJECT, AND WE WOULD ESPECIALLY LIKE TO THANK THE PARTICIPANTS!
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References

• British Lung Foundation (2007). Invisible Lives: Chronic Obstructive Pulmonary Disease (COPD) – finding the missing millions