

CAN WE CHANGE THE ACTIVITY BEHAVIOUR OF PATIENTS WITH COPD USING A TELEMEDICINE FEEDBACK INTERVENTION?

M Tabak, MSc¹; MMR Vollenbroek-Hutten, PhD^{1,2}; PDLPM van der Valk, PhD, MD³; J van der Palen, PhD^{3,4}; HJ Hermens, PhD^{1,2}

¹ Roessingh Research and Development, Enschede, The Netherlands

² Faculty of Electrical Engineering, Mathematics and Computer Sciences, University of Twente, Enschede, The Netherlands

³ Medisch Spectrum Twente, Enschede, The Netherlands

⁴ Faculty of Behavioural sciences, University of Twente, Enschede, The Netherlands

INTRODUCTION

Better insight in activity behaviour of COPD patients is needed as a first step to enable more effective tailoring of their treatment. Our objective was (1) to get insight in the daily activity pattern of COPD patients and (2) to investigate whether this can be altered by providing ambulant personalized feedback via a PDA on the activity level during the day. We hypothesize that the amount of activity will increase and that the daily activity pattern will be more balanced.

METHODS

Thirty-seven COPD patients (66.3 years; FEV₁%: 46.5%) were monitored for four days in their own environment to get insight in their activity pattern, using triaxial accelerometry, expressed in activity counts per minute (cpm). Of these 37, 9 patients participated in the feedback intervention. During this intervention, a treatment goal was set for the patients which was presented to them in the form of a reference line on the PDA. Patients were asked to try to deploy the same activity pattern as displayed, for 3 weeks. In addition to this, patients received feedback text messages every two hours with advice on how to improve their activity level.

RESULTS

The mean activity level of COPD patients (n=37) was 829±219 cpm and showed a continuous decline in activity level during the day. Also a pronounced dip in activity pattern was found in the afternoon. In the intervention group (n=9), activity levels slightly increased during the feedback period (baseline 870±175, 1 week 898±207, 2 week 883±229, 3 week 922±213 cpm). This was especially visible in the afternoon, where the dip in activity seemed to disappear (week 3, figure 2).



Figure 1: The telemedicine feedback intervention: triaxial accelerometer for measuring activity (in counts per minute) and PDA for providing feedback to the patient.

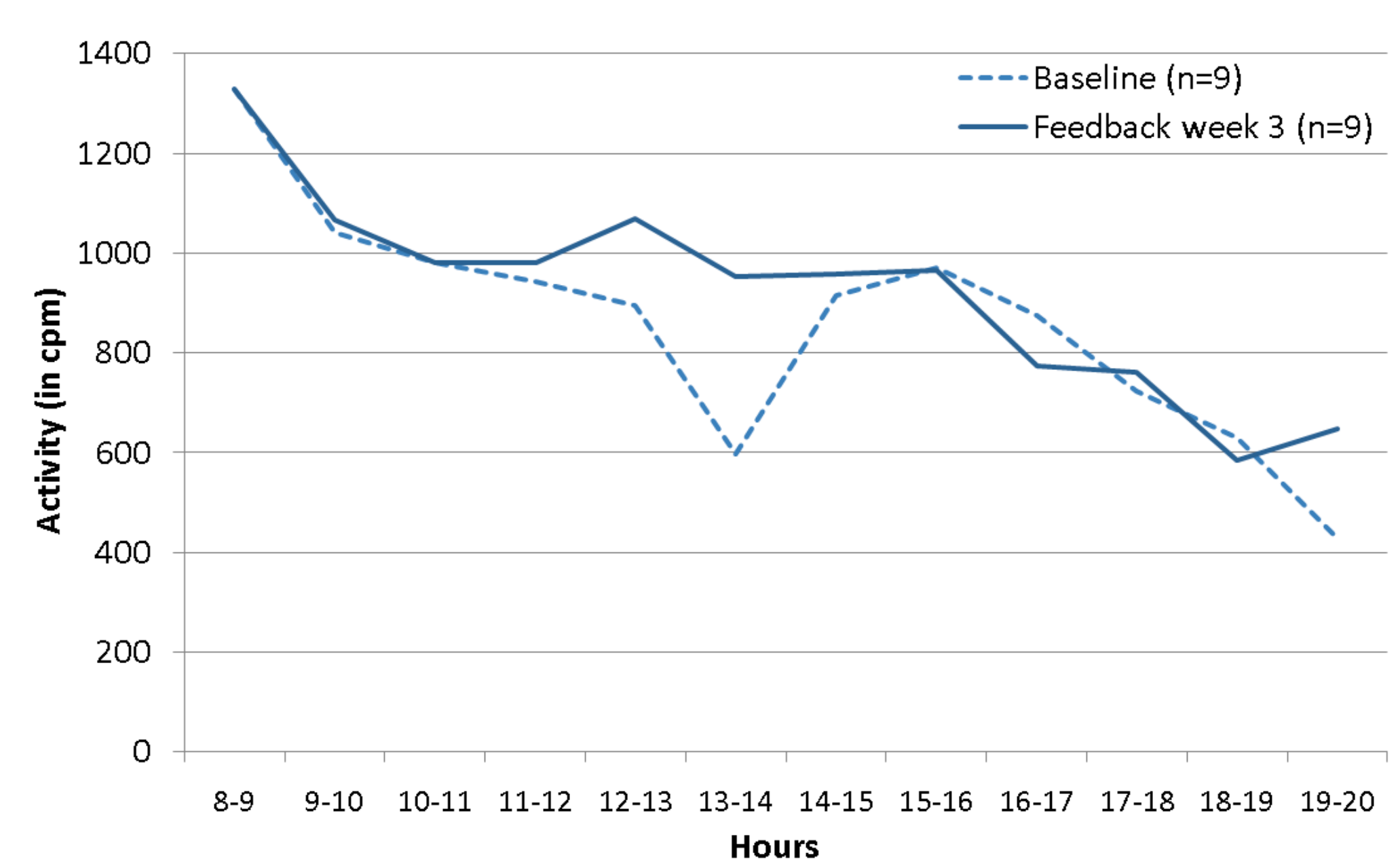


Figure 2: Daily activity pattern of COPD patients (n=9) at baseline (dotted line) and in feedback week 3 (solid line).

CONCLUSION

The study showed a low activity pattern of COPD patients, with a sharp decrease in activity in the early afternoon. Our preliminary results indicate that our telemedicine feedback intervention is able to increase activity levels and balance activity patterns over the day.



Monique Tabak
+ 31 (0)53 487 57 32
m.tabak@rrd.nl