# MYAIRCOACH NEWSLETTER

## Issue No. 3

Welcome to the third annual issue of the MyAirCoach Newsletter.

MyAirCoach newsletter will serve as a fully accessible communication tool for the dissemination of important project news and the description of future steps.

Please subscribe to our mailing list in order to receive notifications for the project news.

MY AIR COACH
PREDICTIVE SELF-MANAGEMENT OF ASTHMA

Horizon 2020
European Union Funding
for Research & Innovation

myaircoach.eu

## Project Update

myAirCoach is almost a reality. In this past 3rd year, the project team worked intensively to fine-tune the latest details of the mHealth system for asthma self-management. The device will be tested before the project ends, in June 30th 2018, thanks to a 6 month extension granted by the European Commission.

### myAirCoach App and online platform

On September 26-27 2017, myAirCoach consortium partners met in Stockholm to present the latest developments.

CERTH, the project coordinator, presented an updated version of the mobile application and the online platform, which has been improved to optimise how patients and doctors use it.

For example, the App now includes standard questionnaires to be filled by the patient, as well as the patient's action plan. It also produces health summaries and asthma diaries from the data collected through the device, whereas several events can be exported to the personal calendar of the patient's smartphone

The application also contains educational components, such as a virtual guidance agent with speech recognition. This is particularly useful as the virtual coach provides instructions to support the patient with their inhalation technique through the device (based on processing of audio signals), and assists the patient to use the platform.

Users will also access a prediction of the patients' clinical state and will be able to plan for an optimal and dynamic asthma treatment using decision support rules, personalized goals and notification mechanisms. The prediction feature is possible thanks to a signal processing module in conjunction with a lung modelling toolbox that includes a geometry and a simulation tool. These features are able to cover the environmental and the physiological factors monitored by myAirCoach devices.

*Project partners testing the myAirCoach app in Stockholm*

Moreover, patients can participate in myAirCoach virtual community to look for support and share stories with other

patients and doctors, in a written form or through a video chat. Finally, the Blockchain technology has been utilised to allow for enhanced levels of security for the medical data of the patients.

### myAirCoach smart inhaler adapter

The myAirCoach inhaler prototype has reached another version, developed by the research institute IHP. The smart-inhaler device integrates orientation and actuation sensors, and a microphone that controls the inhalation technique through audio recognition. Both sensing units are linked to the App via Bluetooth connectivity. Audio data taken during inhalation is further analyzed by intelligent algorithms developed by the University of Patras.


*myAirCoach smart-inhaler and indoor air monitor models designed for the evaluation campaign*

IHP has also developed a new version of the indoor air quality monitoring device that measures the environmental pollutants, NO2, SO2 and PM, in patient's homes.

45 smart-inhaler devices and air monitors will be available for the evaluation campaign, scheduled to start at the beginning of 2018, just after receipt of the approval of the ethic committees. The evaluation campaign is the final step of the project, when 90 patients will test the entire myAirCoach system in the Leiden and London clinical sites.

The myAirCoach consortium met again on January 24-25 in Thessaloniki to discuss the integration of the devices and the status of the evaluation campaign.

## Patients start testing myAirCoach

MyAirCoach is at a crucial stage of the project: the evaluation campaign. During the next 5 months, a pilot study will be executed by two of the clinical partners of the consortium, Imperial College London (UK) and Leiden University Medical Center (NL). The aims are to test the feasibility of the myAirCoach system in everyday use and to assess whether it can help to improve asthma control. The

evaluation campaign started last 16th of February in Leiden.

*Dr Sont from the Leiden University Medical Center shows the smart-inhaler adapter to Dominique Hamerlijnck, member of myAirCoach Advisory Patient Forum*

The patients involved in the project - 60 in Leiden and 30 in London – have been randomly divided into two groups. The first group will use the myAirCoach system while the second will continue to monitor their asthma in the usual way. Those using myAirCoach will have attended a demonstration of the system at the clinic before starting to use the myAirCoach kit at home. The kit includes the myAirCoach smart-inhaler adapter, the air-monitor box for measuring indoor air quality and a Fitbit device, which are all connected to the myAirCoach online platform and mobile app. Moreover, a NIOX Vero device is included for measuring FeNO.

During the first week, there will be some final tests to ensure that the system works properly and to obtain individualised baseline data for certain tests, because results can differ between individuals with asthma. After this period the study will start properly and it will consist of a three to six months follow-up period, during which the following variables will be assessed: Juniper Asthma Quality of Life Questionnaire (AQLQ) and Asthma Control Questionnaire (ACQ), medication use (average daily inhaled corticosteroid use and average daily reliever use), exacerbation rate (graded by severity), FeNO, and spirometry (forced expiratory volume in one second (FEV1) and FEV1 / forced vital capacity ratio). In addition, cost analysis and participant satisfaction with the individual components of the myAirCoach system will also be assessed.

The data resulting from the study will be analysed at the end of the evaluation campaign in order to estimate the effect that myAirCoach system has had on asthma control, exacerbations and quality of life, compared to patients in usual care. The objective is to inform the design of a future study that will assess the definitive clinical effectiveness of the

myAirCoach system in the management of asthma.

## myAirCoach featured at ERS Congress Digital symposium

At the largest meeting of respiratory professionals in the world, the European Respiratory Society (ERS) Congress, which was held in Milan in September 2017, there was a session on Digital health: transforming the respiratory landscape.

Dr. Omar Usmani from Imperial College London talked about digital health and the promise of e-health in respiratory conditions, such as asthma and chronic obstructive pulmonary disease (COPD). Also, Dr. Konstantinos Votis from CERTH presented myAirCoach as an example of good practice, not only for its innovative vision in asthma self-management which enables patients to follow a proper treatment, but also because the solution is conceived with the patients themselves.

The myAirCoach presentation at ERS was warmly welcomed. Project partners from CERTH, Imperial College of London, the University of Manchester and the patient associations EFA and Asthma UK engaged in several face-to-face meetings with stakeholders from different fields, including pharmaceutical industries, to discuss in more detail the myAirCoach potential and the opportunities for further exploitation. Moreover, information material on the project was distributed at the EFA desk located in the World Village.


*Prof Usmani (upper picture) and Dr Votis (bottom picture) during the myAirCoach presentation at ERS Congress Digital Symposium*

## myAirCoach at MEDICA Connected Healthcare Forum

In November, myAirCoach participated in the 6th M App Competition 2017 that seeks the best App-based Medical Mobile Solution. The event took place during the MEDICA Connected Healthcare Forum celebrated on November 15 2017.

*The audience at the MEDICA Forum*

myAirCoach project partner, MEDVISION, presented the myAirCoach application, focusing on the physiological, behavioural and environmental aspects which are then modelled to predict asthma. Considering that 70% of all asthma patients do not use their inhaler properly, myAirCoach smart-inhaler has been specifically conceived to respond to asthma patients' needs, and improve the use of inhalers. The smart-inhaler is connected to the app which provides feedback to the patient, and also indicates when the inhaler is being wrongly used, thus keeping track of use and misuse. This will potentially result in an improved adherence medication and consistent savings on the healthcare budget. Although this technology impressed the audience, myAirCoach did not win the first prize: MyAirCoach came 6th out of 75 participants.


*The App Competition award ceremony*

## Other events and publications

As the project comes towards its end, interest on myAirCoach outcomes has been growing among the research and mHealth community. In 2017, project partners promoted our solution for asthma self-management in some of the most important events worldwide such as CeBIT (20-24 March, Hannover), the eHealth Week (10-12 May, Malta), ISAM (3-7 June, Santa Fe), EAACI (17-21 June, Helsinki) and the eHealth Forum (19-22 October, Athens).

You can find all information on our activities at the myAirCoach website, where you can also read all available scientific publications, a lay summary

developed by the Advisory Patient Forum and the public project deliverables. We also invite you to follow us on Researchgate and social media to stay up to date on our latest research developments.

## Interested in finding out more?

**Find out more about the project at myAirCoach.eu**
**Sign up for the myAirCoach newsletter**

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