Analysis, modelling and sensing of both physiological and environmental factors for the customized and predictive self-management of Asthma

MY AIR COACH
PREDICTIVE SELF-MANAGEMENT OF ASTHMA

www.myaircoach.eu

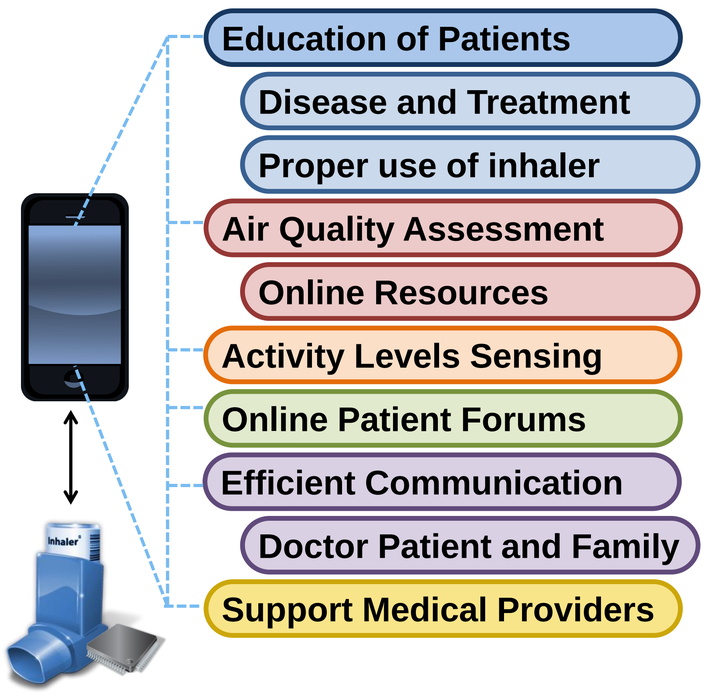
Introduction

The wave of **digital health** is continuously growing and promises to **transform the experience of patients** and **optimise the efficiency and effectiveness of the healthcare system as a whole**. Respiratory medicine is in the centre of these developments, especially due to the fundamental importance of **self-management** for the control of chronic respiratory diseases. Modern Information and Communication Technologies (ICT) promise to **overcome significant barriers of self-management approaches** such as their difficult deployment and reduced adherence[1].

Respiratory Healthcare in the Digital Age

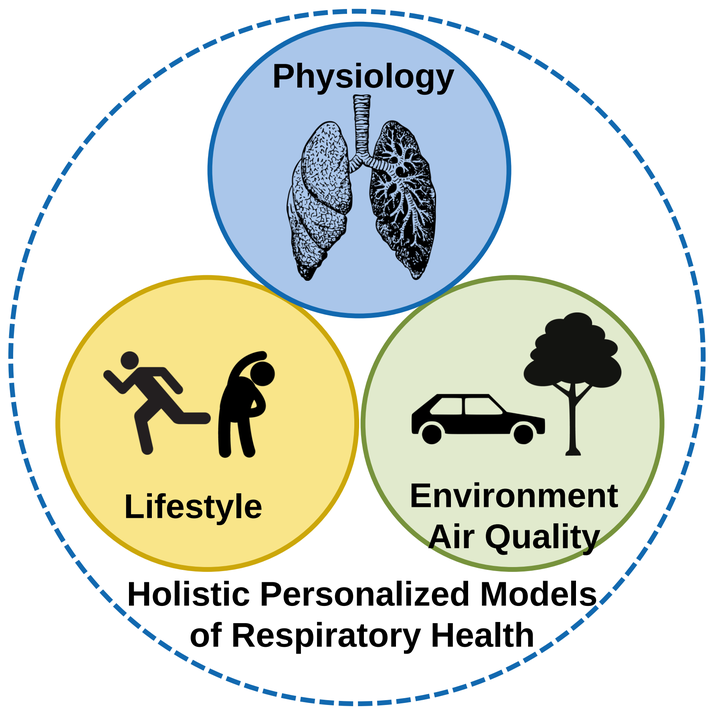
Self-Management mHealth Apps

Mobile Health is promising to formulate an **easy, reliable and cost effective approach for the management of chronic diseases** through specialised apps for smart devices[2,3]. According to the WHO, **nearly 90% of the world population could benefit from the mobile health technologies**[4].



Personalized & Holistic Patient Models

A **digital patient profile** is considered as a modern approach for the patients' health records[5,6]. The next step towards the **in-depth understanding of the patients health condition** is the introduction of **personalised patient models** that will encapsulate **environmental**, **behavioural** and **physiological** parameters.

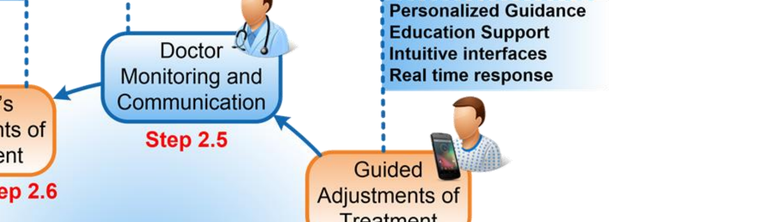


Prediction and Decision Support

The adoption of **personalised models** will not only contribute to the **optimization of treatments** but also allow the **prediction of patients' clinical state** offering a fundamental tool for **medical research** and **novel treatments in the respiratory Health**. Thus, It is expected to form the basis of novel **decision support tools** that may be used **a)** to increase the **adherence and effectiveness of treatments** but also **b)** to **facilitate their diagnosis processes**.

Health Assessment Devices

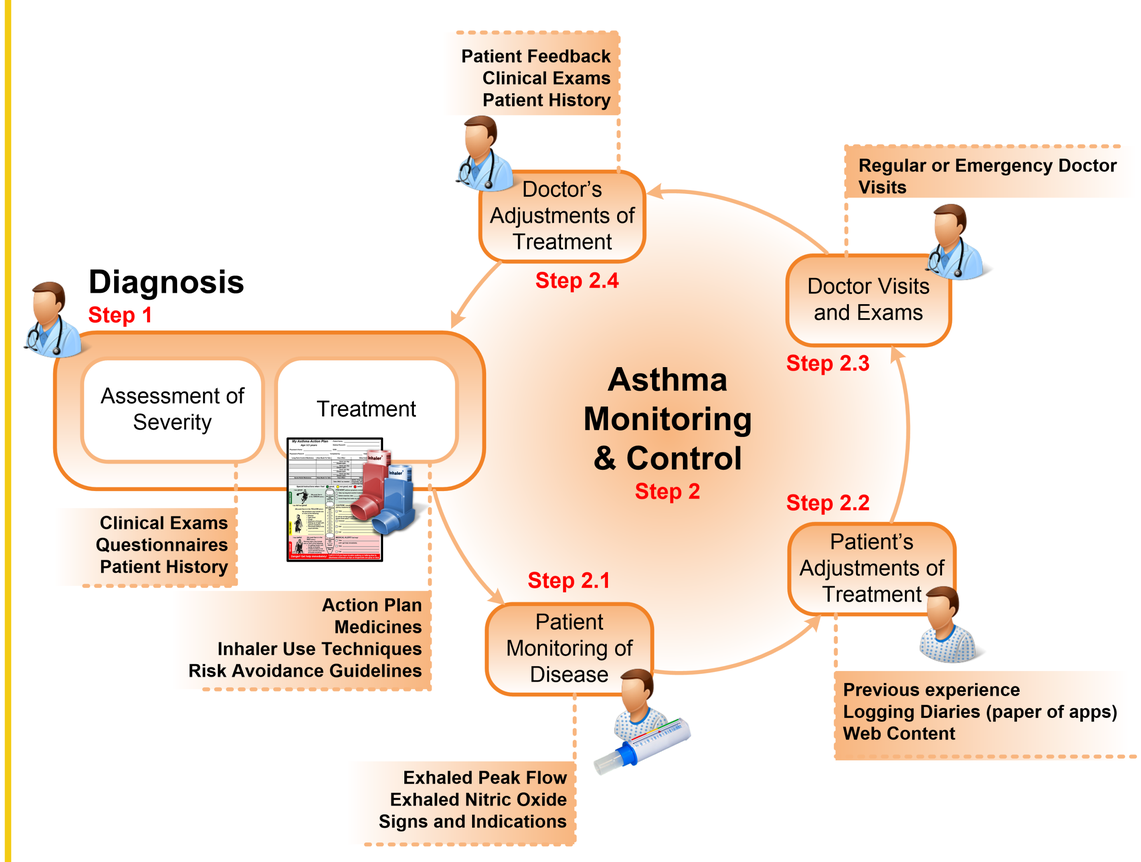
Modern **portable smart devices** will complement the role of all the aforementioned developments by allowing and improving the accurate **monitoring of the progression and treatment of respiratory diseases**.



The Vision of MyAirCoach for the Self-Management of the Asthma Disease

Despite the wide availability of asthma therapies, many people with asthma **still experience lots of symptoms** impacting significantly their quality of life. **MyAirCoach**, a leading pan-European project aims to develop a **novel sensing device** which is integrated with mobile technologies in order to help people with asthma to **take the right steps to stay on top of their condition** and **reduce their risk of an asthma attack**.
MyAirCoach aims to utilize all the above features of the **digital patient experience** and combine them in a **unified solution** that will **empower patients to control their asthma disease through personalised approaches.** MyAirCoach will use a network of sensors to collect data about a person's symptoms, inflammation inside the airways and the environment. The data will be transferred to a mobile device for analysis and will feed into personalized digital models, supporting patients to better manage their condition and optimise their treatment. In addition the foreseen **modelling framework** of MyAirCoach is expected to be used for **research purposes** and **facilitate the evaluation of new treatments**.

Traditional Asthma Treatment Approach



MyAirCoach Concept for Optimised Asthma Treatment

References:

1: Votis et al., "The digital patient: The future of mobile health for respiratory patients", 2015**, 2**: K. Huckvale, et al., "The evolution of mobile apps for asthma", 2015, **3**: A. Chen Wu, et al., "Mobile health applications for asthma", 2014 **4**:WHO, "mHealth New horizons for health through mobile technologies", 2011. **5:** T. Bonnici, et al. "The digital patient", 2013. **6:** J.H. Li, "E-Health readiness framework for Electronic Health Records perspective", 2010

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