

Care4Asthma: Advancing pediatric asthma care by immune profiling and smart inhaler technology

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Asthma is one of the most common chronic non-communicable diseases; the highest prevalence is reported in children and adolescents. Many young patients do not get the full benefit of their inhaled corticosteroid (ICS) therapy because inhalers are not always used correctly or regularly. In addition, exposure to air pollution and allergens plays a crucial role in the onset of asthma exacerbation and symptom control by affecting the immune system and causing ongoing inflammation. The Care4Asthma study aims to improve pediatric asthma management by improving the technique of ICS inhalation and adherence to treatment while identifying immune signatures and risk factors associated with asthma control.

The Care4Asthma study (ClinicalTrials.gov ID NCT07500246) is a multicenter open label randomized controlled and prospective clinical trial combining academic research with industrial expertise. Children aged 5-16 years and diagnosed with asthma will be recruited in Luxembourg, Belgium and Germany. Patients will either receive a standard inhaler or a new device, the Whizz spacer, a digital device designed to improve adherence to ICS therapy and guide inhalation technique through electronic monitoring. Its efficacy will be evaluated and compared to a standard spacer. Treatment response will be longitudinally monitored using pulmonary function tests and asthma questionnaires. Biosamples will be collected to investigate immune signatures and to determine clinically applicable biomarkers associated with asthma endotypes and treatment response. Exposure to pollutants and allergens will be monitored using hair and house dust samples respectively, to identify risk factors and improve comprehension of exacerbation of asthma symptoms.

Care4Asthma will integrate multiple data layers and thereby contribute to a better understanding of factors impacting pediatric asthma, while aiming to improve medical care by advancing treatment compliance. The Care4Asthma study is supported by FNR (PPPHealthTech2021/16734157 and PRIDE23/18356118).

Biosketch – Dr. Anna-Maria Charatsi

Anna-Maria CHARATSI, MD

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CURRENT AND PAST POSITIONS

Paediatrician, specialised in Paediatric Pulmonology at the Paediatric Department, Kannerklinik, Centre Hospitalier de Luxembourg.

Dr. Charatsi has a long-standing clinical experience in the diagnosis and management of paediatric respiratory diseases, including asthma, respiratory allergies, cystic fibrosis and rare pulmonary disorders. She is actively involved in multidisciplinary patient care, medical education and clinical research activities in the field of paediatric pulmonology.

EDUCATION

Doctor of medicine (MD), Medical School, National and Kapodistrian University of Athens, Greece (2003–2009).

Master in Pediatrics, Medical School, Université Libre de Bruxelles, Belgium (2009–2014).

Diploma in Immunology and Clinical Allergology, Université Libre de Bruxelles, Belgium (2013–2014).

Inter-university diploma in Pediatric Pulmonology, Université de Bordeaux, France (2014–2015).

European Diploma in Pediatric respiratory medicine, European Respiratory Society (2019).

OTHER RELEVANT PROFESSIONAL ACTIVITIES AND ACCOMPLISHMENTS

Dr. Charatsi is actively involved in the clinical management and follow up of children with chronic respiratory diseases. She actively participates in national and international scientific meetings, continuing medical education activities and international collaborations in the field of Pediatric Pulmonology and Allergology. She is involved in clinical research collaborations and presentation of clinical work at scientific meetings, and in teaching and supervision of medical trainees. Dr. Charatsi is a member of the European Respiratory Society (ERS), European Academy of Allergy and Clinical Immunology (EAACI) and member of the Steering Group of the European Cystic Fibrosis Society Patient Registry (ECFSR).

Biosketch – Dr. Christiane Hilger

Christiane HILGER, PhD, ADR

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CURRENT AND PAST POSITIONS

Co-Group Leader and Principal Investigator of the group of Molecular & Translational Allergology within the Department of Infection & Immunity at Luxembourg Institute of Health.

Dr. Hilger has a long-standing experience in translational allergy research. For many years, the major research focus was on Molecular Allergology, investigating new allergens from different allergen sources to advance patient diagnosis and management. Allergens of respiratory and food sources were validated in national and international clinical collaborations and many of them are now available for molecular IgE-diagnosis. More recently, Dr. Hilger engaged in the investigation of mechanisms leading to allergic sensitization and triggering of symptoms in inhalant allergy and the alpha-Gal syndrome (AGS). Current clinical studies on AGS and Paediatric Asthma are supported by the Fonds National de la Recherche.

EDUCATION

PhD in virology, Department of Applied Tumorvirology, German Cancer Institute, Heidelberg. Full supervision rights (ADR) by University of Luxembourg.

OTHER RELEVANT PROFESSIONAL ACTIVITIES AND ACCOMPLISHMENTS

Dr. Hilger actively participates in international working groups and task forces such as the EAACI Interest Group of Allergy Diagnosis and Systems Medicine (IGADSM), where she was elected secretary in 2019 and chair in 2021. She is Chair of the EAACI task force 'Molecular Allergology in practice' and secretary of the EAACI task force 'AIRSENSE - Standardization of skin prick testing: sensitization patterns of inhalant allergens in Europe', and participated in several other EAACI task forces. She is an appointed board member of the WHO/IUIS Allergen Nomenclature Sub-Committee, reviewing new allergen applications. Dr. Hilger is also a member of the Comité Scientifique of the Société Française d'Allergologie (SFA) and its working group 'Allergènes Moléculaires'. She has actively participated in the organisation of international scientific conferences of EAACI and SFA, holds editing roles in several peer-reviewed journals, is author or co-author of more than 100 peer-reviewed publications, and has contributed many chapters for medical and scientific textbooks. She is Co-Editor of the Molecular Allergology User's Guide, MAUG 2.0, published in 2022 and freely available.