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Geneeskunde & Farmacie

GF

PhD in Medical Sciences
2014-2015

INVITATION to the Public defence of

Eef VANDERHELST

To obtain the academic degree of **'DOCTOR IN MEDICAL SCIENCES'**

Methicillin-resistant *Staphylococcus aureus* in Cystic Fibrosis: impact, management and the use of the Multiple-Breath Washout Test in monitoring after therapeutic interventions

Wednesday 4 March 2015
Auditorium **Brouwer**, 17:00
Faculty of Medicine and Pharmacy, Laarbeeklaan 103, 1090 Brussel

How to reach the campus Jette:
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Summary of the dissertation

With increasing survival due to improvements of care, we are now faced to new challenges in the care for Cystic Fibrosis patients. An increased frequency of pulmonary infections with new and resistant pathogens like methicillin-resistant *S aureus* (MRSA) has been identified and innovative and more sensitive tools for monitoring lung function in early CF lung disease and after therapeutic interventions are under study. In this work we have indicated that chronic infection with MRSA can have a negative impact on the clinical status of CF patients with a more rapid decline of FEV_1 after acquisition of MRSA. Based on these results we conducted an eradication protocol for patients chronically colonized with MRSA leading to successful microbiological eradication in all eleven patients. With the Multiple-Breath Washout Test (MBW test) we currently have an innovative tool for monitoring pulmonary function in Cystic Fibrosis. From the MBWtest we can derive the Lung Clearance Index, a marker of global ventilation inhomogeneity, but also separate the different compounds contributing to ventilation distribution, using the normalised phase III slope analysis. In this manuscript we studied the use of this ventilation distribution test in advanced adult CF lung disease. We were able to show that in CF patients in whom an improvement in LCI was obtained after treatment for an acute infectious exacerbation, this was paralleled by a decrease of acinar ventilation heterogeneity. We also used the MBW test to monitor lung volumes and gas trapping after MRSA eradication. The ability to perform this test in all age groups makes it a true useful test for longitudinal evaluation of lung function from infancy into adulthood, and for follow-up after therapeutic interventions.

Curriculum Vitae

Eef Vanderhelst werd geboren op 5 oktober 1979 te Antwerpen. Ze studeerde Latijn-Wiskunde aan het Koninklijk Lyceum te Antwerpen en nadien Geneeskunde aan de Vrije Universiteit Brussel waar ze in 2004 afstudeerde met grootste onderscheiding. Tijdens haar opleiding tot pneumoloog ontstond haar bijzondere interesse voor Cystic Fibrosis , het onderwerp waarin ze in 2010 een klinisch doctoraat startte onder leiding van Prof. Dr. Walter Vincken en Prof. Dr. Anne Malfroot. Het onderzoek spitste zich enerzijds toe op het belang van methicillin-resistant *staphylococcus aureus* in CF, en anderzijds op het gebruik van een nieuwe longfunctie test, de multiple-breath washout test. Uit deze wetenschappelijke studies ontstonden verschillende wetenschappelijke publicaties en de resultaten werden voorgesteld op meerdere nationale en internationale congressen.