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Abstract Details

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Abstract

TITLE: INTERIM RESULTS FROM A PROSPECTIVE STUDY OF TABLET AND WEB-BASED AUDIOMETRY TO DETECT OTOTOXICITY IN ADULTS WITH CYSTIC FIBROSIS

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ABSTRACT BODY:

Abstract Body: Background:

Individuals with Cystic Fibrosis (CF) often receive frequent and prolonged courses of anti-infective therapy including aminoglycosides which may result in the development of ototoxicity. The reported prevalence of this is variable but may be up to ~40% in adults with CF (Garinis et al 2017). There are, however, no current national or international recommendations to screen for ototoxicity.

Although high-frequency audiometry has shown an increased sensitivity for the early detection of ototoxic drug-induced hearing loss; formal departmental hearing tests are costly and require further outpatient visits. We aim in this prospective multi-centre study to analyse the utility of a novel interactive Apple-iPad app-based high-frequency audiometer (Shoebox MD, Clearwater Medical) that can be used by non-audiologists to test hearing in a standard outpatient setting alongside a novel interactive web-based ototoxicity screening app (developed within the 3D Tune-In project - <http://3d-tune-in.eu/>) to screen for ototoxicity in an adult CF population.

Methods:

200 adults from the adult CF centre at the Royal Brompton and Harefield Foundation Trust or Kings College Hospital NHS Foundation Trust are being prospectively recruited to the study over an 8-month period. A web-based hearing test will be performed at home by study participants alongside clinic-based, tablet-based and departmental formal sound-booth high-frequency audiometry and validated ototoxicity screening questionnaire (Hearing Handicap Inventory for Adults). Genomic DNA will additionally be extracted for detection of mitochondrial mutations associated with predisposition to drug induced ototoxicity

Formal audiometry will be used to determine cohort prevalence of ototoxicity in adults with CF with multi-variable logistic regression analysis used to identify risk factors. Sensitivity, specificity, negative predictive and positive

predictive values for ototoxicity screening will be determined for web-based hearing application and questionnaires. Inter-class correlation coefficient analysis will be performed to analyse the reliability of tablet-based audiometry compared to standard sound-booth extended high-frequency audiometry performed by an audiologist. Validated questionnaires will additionally be used to analyse device usability.

Results:

The final participant activity is due to take place in August 2018 after which results and analysis will be available. We will present interim results detailing ototoxicity prevalence in our cohort, risk factors and efficacy of web and tablet-based audiometry screening in adults with CF.

References:

Garinis AC et al. The Cumulative Effects of Intravenous Antibiotic Treatments on Hearing in Patients with Cystic Fibrosis. *Journal of cystic fibrosis: official journal of the European Cystic Fibrosis Society*. 2017;16(3):401-409.

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