Abstract Preview - Step 3/4
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Topic: 6. Clinical Trials / New Therapies

Title: **Multi-professional expertise and high performance informatics infrastructure supports innovative health technology research and clinical care in CF: Project Fizzyo**

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Text: **Objectives:** Project Fizzyo is investigating how airway clearance adherence and physical activity relate to health in children and young people with CF (CYPwCF). This research is enabled through access to a high performance informatics infrastructure with linkage of multiple de-identified data sources, supporting innovative big data and machine learning methods as well as multi-professional collaborations across academia, healthcare and industry.
Methods: CYPwCF (6-16yrs) are being recruited from 3 paediatric CF centres in London. Engineers and computer scientists built electronic chips for airway clearance devices (Fizzyo sensor) to measure pressure waveforms during breathing, and designed interactive computer games to use with the chipped devices. Electronic observational data from an activity tracker (Fitbit Alta-HR) and Fizzyo sensor are captured daily over 16 months, and synchronised to a secure Azure virtual cloud, with personal output visible to patients via a portal. A new Great Ormond Street Hospital digital research and innovation platform (GOSH-DRIVE) integrates routinely collected de-identified clinical data from the hospital electronic patient record system with Fitbit and Fizzyo sensor outputs, and facilitates secure clinical data transfer from other NHS sites.
Results: 71 CYPwCF have been recruited to date, with successful data capture using this platform. Industry data scientists are collaborating with clinical experts to analyse airway clearance use, physical activity and clinical outcomes, using machine learning and data-driven approaches to explore patterns, associations and interactions between physiotherapy adherence at home and health outcomes for CYPwCF. Early examples will be presented.
Conclusion: The innovative approach taken by Project Fizzyo has the potential to make clinical research (e.g. on impact of physical activity, adherence or gaming technologies) more efficient and sustainable, and also improve personalisation of care for CYPwCF.

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