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BreathEasy: Digital Interventions for Self-management of Asthma

Summary

Objectives

- Provide sensor driven real-time air quality/pollen (environment) monitoring and individual lifestyle monitoring
- Determine baseline for digital interventions at population and personal level
- Integration of air quality data, lung condition data, nutrition data to provide personalized treatment plans, self-management, and medication
- Develop insight into environmental (indoor/outdoor) triggers, categorize vulnerable groups, design recommendations

Data Acquisition

- Social Media Datasets - Web Presence of Patient (Twitter)
- Open government datasets – Environmental Factors (Weather, air-quality, Geospatial)
- Local datasets about people’s behaviors, attitudes and preferences – Lifestyle Monitoring (BreathEasy App)
- U-BIOPRED (Unbiased BIOMarkers in PREDiction of respiratory disease outcomes) – History of Patient Illness
- Sensor datasets about people and environments – Physiological and Environmental Context (inhaler, patient logging)

Mobile App: BreathEasy

- A cross-platform application to deliver digital interventions for asthma patients
- Captures personal wellbeing of a patient through a questionnaire and their location
- Next steps: Analyze data in context of weather data, social media data to design novel interventions
- Integration with data about biomarkers to deliver quality healthcare

An Example Intervention

- GP Briefing
- Questionnaire Prompt
- Air Quality Prompt
- Medication prompt
- GP De-briefing

Enhanced Patient History (sensing based environment, lifestyle, exercise monitoring)

Real-time monitoring Exacerbation Warning

Daily-basis

Warnings for triggers, predictive analysis of response to prescribed treatment plan and medication

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