Arvind DK et al. “A sensor data collection environment for clinical trials investigating health effects of airborne pollution”, In Proc. IEEE Conf. on Biomedical and Health Informatics, March 2018, USA.

FRESHAIR 4Life

www.ipcrg.org/freshair4life

@FRESHAIRTeam

Funded by the European Union

UK Research and Innovation

FRESHAIR4Life is funded by Horizon Europe. UK participants are supported by UKRI grant numbers 10063681, 10060974, and 10064407 as part of the call for NCD prevention in adolescents. The views expressed in this publication are those of the author(s) and not necessarily those of the funders.

Title of evidence summary
Continuous monitoring of Personal PM exposure levels using wearable monitors

Who is this summary for?
Adolescents

Focus
To measure exposure to airborne particulate pollutants at the personal level during every-day activities in different micro-environments, such as at home, at school/work and during commute.

Key findings/recommendations
- The Airspeck device clipped on the person, clothing or placed next to them can collect data continuously for up to 26 hours.
- The device has been used successfully by a variety of subjects in LMIC and developed countries since 2018: (i) asthmatic adolescents in Delhi India in 2 projects; (ii) older asthmatics in London; (iii) UN employees in Delhi; (iv) environmental department employees in Guadalajara and Leon, Mexico; (v) COPD and asthma subjects in Dublin, Madrid and Liberec; (vi) COVID 19-recovered subjects in Kampala and Mbarara, Uganda; (vii) pregnant women in Delhi, India.
- The attrition rate amongst adolescents (the target for FA4LIFE) was 1 amongst 137 subjects who dropped out of data collection.
- The duration of data collection period ranged from 24 hours, 48 hours, to 2 weeks, and the number of data collection cycles for each subject varied between 1, 2, 3 and 14 cycles.

Implementation considerations
- The Airspeck device transmits data to an Android phone continuously which should be within Bluetooth radio range (around 20 meters). Subjects tended to forget to carry their phone with them especially when they went out.
- The Airspeck data is GPS-stamped and time-stamped for every sensor readings taken every 30 second. Although the data stored is anonymized, there is danger of interring personal info from GPS data
- Power supply/battery bank to charge the Airspeck/phone overnight

Who funded it?
UK MRC, UK NERC, UK EPSRC, UN WHO

Citation: Arvind DK et al. “A sensor data collection environment for clinical trials investigating health effects of airborne pollution”, In Proc. IEEE Conf. on Biomedical and Health Informatics, March 2018, USA.

Funded by the European Union
UK Research and Innovation

FRESHAIR4Life is funded by Horizon Europe. UK participants are supported by UKRI grant numbers 10063681, 10060974, and 10064407 as part of the call for NCD prevention in adolescents. The views expressed in this publication are those of the author(s) and not necessarily those of the funders.

22-5-2023
Arvind, DK