PILOTING A DIGITAL HEALTH RESPIRATORY MONITORING INTERVENTION TO REDUCE DRUG RELATED DEATHS – THE 'RESCU' PROJECT

Authors:
Hnízdilová K[1], Stephens BP[2], Ahmad F[2], Sharkey C[2], Qumsieh J[2], Henderson B[3], Meredith O[3], Trueman C[3], Lewis Beer[1], Radley A[2], Dillon JF[1,2]

[1]University of Dundee, [2]Ninewells Hospital and Medical School, NHS Tayside, [3]PneumoWave Limited

Background:

In 2020, Scotland experienced 1339 drug-related deaths, the highest number since records began in 1996. Most drug related deaths are caused by opioid-induced respiratory depression. RESCU is an ongoing mixed-methods observational cohort study aiming to investigate whether an accelerometer sensor attached to the chest can accurately and reliably capture respiratory patterns of people who use drugs to determine trigger points for an emergency response during an overdose.

The study aims to assess the acceptability of the device to people who use drugs and stakeholder groups from the third sector support groups and first responders to create an intervention pathway. The planned study duration is 12 months, from January 2022 to January 2023.

Methods:

Participants are recruited on a rolling basis from a needle exchange in the city centre of Dundee (planned n=100). Participants receive a sensor and a gateway device to passively monitor their breathing when in range of the device. Participants record their drug use and are monitored over a period of four weeks, returning to the exchange weekly for data download.

Semi-structured interviews and focus groups are being conducted with participants who have completed the study protocol (planned n=20) and stakeholder groups about the acceptability of the device.

Results:

During February - April 2022, 36 participants had either completed or partially completed the study protocol. Data was reviewed after running prototype apnoea detection and movement artefact algorithms. 4,483 sleep apnoea episodes of >10s duration were detected at the highest level of probability in 1,748 hours of respiratory data. Thematic analysis is ongoing. Further data and results of the qualitative data analysis will be available by the time of the conference.

Conclusion:

Current data suggests that the device successfully captures respiratory anomalies. The future study aim is to identify trigger points for an emergency response.