LESSONS LEARNT FROM THE DEPLOYMENT OF AN AI-ENABLED PERIPHERAL OEDEMA MONITOR IN THE COMMUNITY AND ITS USE TO INFORM THERAPY CHANGES

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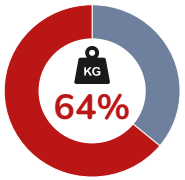
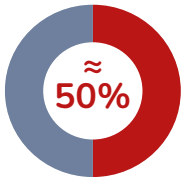
E-POSTER

BACKGROUND

Over the last two years face-to-face primary care appointments have reduced in frequency. This has been particularly challenging for elderly heart failure patients who often have comorbidities. Some of these patients are unaware of the changes in their symptoms, such as weight gain, breathlessness or foot swelling.
The use of remote monitoring technology may provide a useful solution for primary care clinicians. In this study, we have deployed an AI-driven device monitoring peripheral oedema passively in patients' homes, as well as connected weighing scales.



of patients do not weigh themselves or monitor symptoms in the 2 weeks prior to admission



of admissions are associated with peripheral oedema

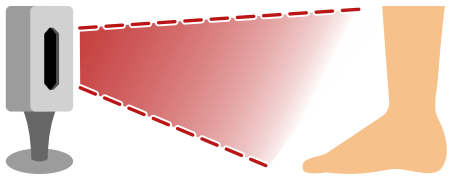
oedema is strongly associated with subsequent prognosis

OBJECTIVE

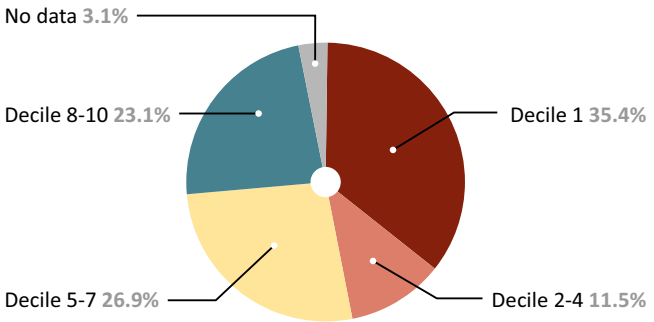
We review the findings from this telemonitoring device deployment in patients' homes.

METHODS

122 patients were provided with connected weighing scales and the AI-device (+ 4G internet dongle if required) from 11 primary care surgeries in the UK. Many patients lived in areas with high deprivation levels. We looked at the acceptability and usage of the devices as well as the burden of alerts on the GP teams.

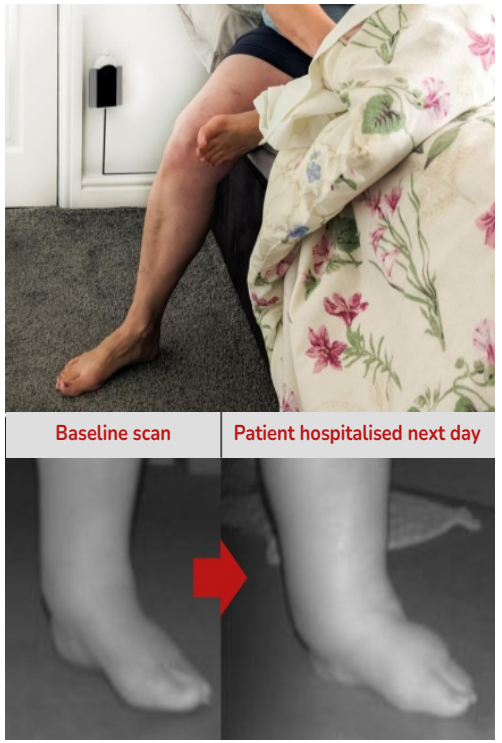


Index of health and disability deprivation



Distribution of the locations of study participants: from the 10% most deprived areas (Decile 1) to the 10% least deprived areas (Decile 10) in the UK.

RESULTS



Despite the devices being offered to patients at high risk of hospitalisation (due to complex medical presentation or to a history of non-adherence), data were available for most patients.

- Weighing scale usage: at least once = 60.7%; at least 16 days/month = 5.7%
- AI-device usage: at least once = 100%; at least 16 days/month = 71.3%

This suggests that the passive and automated nature of the AI-device may provide a solution to improve data capture for patients who may not otherwise engage with medical technology.
Patient acceptability was very good with very few patients deciding not to accept the devices in their homes. 40% of patients answered usability questionnaires:

- 92% would be likely or very likely to recommend the device to a friend if they had heart failure.

The evaluation was initially set for 6 months, but the majority of patients chose to keep the devices for longer. The average time patients used the monitor was 14 months [7,17] as of November 2022.
During the study period, we recorded the number of alerts raised either by telling the patients to contact their GP or by contacting the GP directly. This did not result in a significant burden on the medical team responding to alerts and the vast majority of these were either true heart failure-related alerts or alerts due to other conditions which also required medical attention (COPD exacerbation, Covid19 infection, lymphoedema, ...). General feedback from GP groups was particularly positive for those who had a dozen or more patients evaluating the device. Of 122 patients, 16 had (mean=1.8, max=7) therapy changes during the study period.

CONCLUSION

Despite the chosen patient group (representative of the high-risk heart failure population), data acquisition was excellent, allowing clinicians to get an overview of the patient's health status remotely.
It is important to note that our study was not an RCT, so we cannot be confident that the AI-device helped prevent hospital admissions or helped optimise medication for patients, however anecdotally, the medical teams felt that medical issues were picked up sooner and that the device did not create a significant increase in workload.
More work will be needed before this monitor can be recommended more widely within the NHS and abroad.

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