The Impact of Clinician-to-Patient Deployment of Remote Monitoring Technology on Wearable Activation and Adherence

current health
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Background

- Vital sign monitoring using wearable technology is a cornerstone of virtual care
- Patients must be comfortable receiving, activating and wearing the technology
- Remote monitoring technology can be delivered:
  1. In-person in the clinic or home by healthcare practitioners (HCPs)
  2. Delivery to the home by third-party courier.

Methods

We compared data from patients who received their kit 'In Person' from their HCP to data from those who received the kit by 'Courier.' Current Health technical support attempted to contact those in the Courier group within 24 hours of receiving their kit to offer additional support.

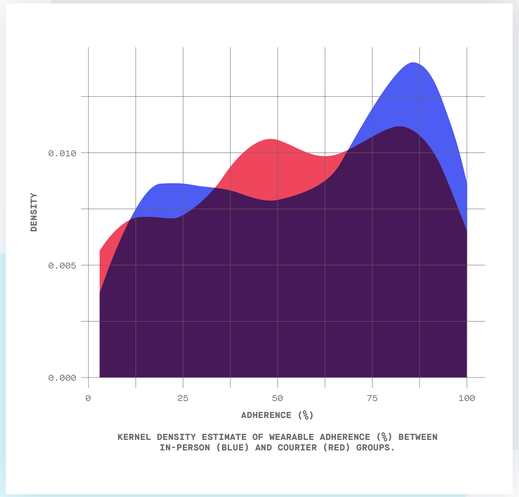
The Current Health kit (Current Health Inc., Boston, USA) consists of a lightweight wearable measuring vital signs from the upper arm, a home hub for data transmission, a tablet for telehealth and patient reported outcomes, and a selection of peripheral vital signs devices depending on the use case.

Data were downloaded on 15 July 2022. Metrics were calculated on length of monitoring, hours of data received, time to first datapoint received from kit receipt ('Activation'), and 'Adherence' (hours of data received / total length of monitoring).

Patients who were repeat Current Health admissions, those who didn't activate their device within 7 days, and those who transmitted less than 24 hours of data were excluded.

Results were assessed for normality (visual inspection/ Shapiro-Wilk test) and were non-parametric, so are expressed as median (IQR) and the Wilcoxon Rank Sum test was used for significance ($p < 0.05$).

Results



KERNEL DENSITY ESTIMATE OF WEARABLE ADHERENCE (%) BETWEEN IN-PERSON (BLUE) AND COURIER (RED) GROUPS.

1. 276 patients were monitored between Mar 2021 and Jul 2022: 220 (80%) in the In-Person group and 56 (20%) in the Courier group. Delivery dates were available for 27 of the 56 patients in the Courier group for the activation time calculations.
2. Patients were a mixed cohort of COVID-19 (66%) and post-discharge (34%) patients.
3. Both In-person and Courier groups were monitored for a similar length of time (15 (10-23) vs 14 (8-20) days, $p > 0.05$).
4. In-Person group was significantly younger (63 (52-76) vs. 73 (64-84) years, $p = 0.0006$), with a higher proportion of COVID positive patients (75 vs. 34 %, $p < 0.0001$).
5. Activation was significantly faster for the In-person group (Day 0 (0-1) vs. 1 (0-1) following receipt, $p = 0.02$), where 160 (73%) patients activated their device on the day of receipt, compared to 13 (48%) in the Courier group.
6. There was no overall significant difference in wearable adherence between In-person and Courier groups (64 (33-85) vs. 52 (35-78%), $p = 0.2$). However, the distributions illustrate that amongst the most adherent patients, those in the In-Person group had a higher percentage of wear time.

Conclusion

Third-party delivery of equipment can be an appealing strategy for virtual care programs. However, in our cohort, patients given their kit in person by the HCP were more likely to activate their kit on the day of receipt and had a more desirable distribution of adherence.

While both groups contained a mixed cohort of largely older adults, there may have been other differences that impacted the results, including COVID status.

For prompt activation and to maximize adherence, programs should consider delivering their devices in person, or adding additional support (such as special training for couriers) for those receiving their kit from a third party.

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