

Enhancing Patient Remote Monitoring adoption with better user experience in home setting

A. Current state

Fueled by the COVID-19 pandemic, demand for remote healthcare services had surged with many hospitals in Singapore adopting remote clinical monitoring and created virtual ward such as Mobile Inpatient Care-at-Home (MIC@Home). At the community level, more people are also taking care of their well-being by monitoring their own vital signs from home especially for homebound elderly, or patients with chronic diseases. These programmes typically leverage portable devices or wearable technology to measure vital signs and data are sent either via bluetooth or keyed in manually into the system. Although this technology has brought convenience, it also poses some challenges in the adoption and utilisation of this technology, which are cited below:

1. **Unpleasant users experience:** Certain wearables could cause discomfort to patients after wearing it for a long period of time, and that would lead to resistance to adoption.
2. **Limited technological literacy among older users:** Technology illiteracy users might have trouble pairing devices and perform product calibration, along with data entry issues.
3. **Cost:** Wearables come with hardware cost along with maintenance and replacement of wearables will come with an additional cost.
4. **Constraints:** With the need to recharge the wearable battery and some wearables may not be water-resistant, it might limit continuous monitoring, if needed.
5. **Data interoperability and security issues:** Many wearable devices use different data format which can make it difficult to integrate into existing healthcare system due to data security concern. This makes it difficult for clinicians to access data from the hospitals and creates additional steps to access users' data.

B. Challenge Statement

How might we enable remote patient monitoring and to enhance user adoption and user experience so that more patients can be cared for in home setting?

C. What are we looking for? (To-be state)

1. Join us on this discovery and collaborative journey through HealthX to explore and build newer, valuable technology-enabled solutions to:
 - a) **Improve patient experience** so that vital signs measurement can be conducted easily, safely and reducing discomfort from prolong wearing of wearables on body.
 - b) **Increase adoption rate** of remote care monitoring
 - c) **Improve data interoperability** that allows ease and safe data integration to existing healthcare system.

2. Overall performance requirements:
 - a) **Clinically Accurate:** Reading should be accurate and comparable to traditional, registered and approved medical device.
 - b) **Intuitive User Experience:** Solution should be uncomplex and user-friendly with minimal guidance and support.
 - c) **Scalable:** The proposed solutions must be easily scaled for similar use cases across other institutions.
 - d) **Secured:** Any recommended solutions must undergo regular risk assessment and adhere to the cybersecurity standards to ensure compliance with any privacy requirements.
 - e) **Cost-effective:** The proposed solutions must be cost-effective to support the solution to scale across hospitals and other potential healthcare settings. To support time motion study (if needed) to justify/ support business case and ROI.
 - f) **Integration with other health systems and applications:** If needed, the solution may need to be able to integrate with other healthcare systems and applications.