

Remote Patient Monitoring Strategies Using Patient-Reported Outcomes

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<https://www.hrsa.gov/library/telehealth-coe-musc>

What is Remote Patient Monitoring?

Remote patient monitoring refers specifically to the use of digital technology to capture and analyze patients' physiological data, such as blood pressure, glucose levels, and lung function. By contrast, remote therapeutic monitoring focuses on non-physiological data, such as patient adherence and reported pain levels. For the purposes of this review, the term "remote patient monitoring" will be used synonymously for both kinds of monitoring, referring to the extension of patient data acquisition and transmission outside of in-person care.

Developing Remote Patient Monitoring for Surgical Patients

Telehealth initiatives have high acceptance and satisfaction rates in postsurgical patients and may replace traditional in-person follow-up visits. Surgical wound evaluation and triage for SSI is possible with patient generated images facilitated by mobile health apps. While there has been a proliferation of mHealth apps and telehealth in many medical centers, there has not been widespread adoption for this use case. However, with an institutional prioritization of telehealth at MUSC, and new billing codes for telehealth encounters with established patients, the stage was set to establish mHealth-facilitated care coordination for surgical patients.

Stage 1: Draft Program Requirements and Process Mapping

Build on previous work to establish content and length of questionnaire, frequency of administration, notifications, and escalation criteria with documentation of best practice alerts. Standardize features as much as possible across other remote patient monitoring programs (e.g., pain assessment, temperature measurement). Develop embedded patient education materials for just-in-time learning and program technical support. Create a draft process map including user roles and interactions. This is particularly helpful for identification of process stakeholders who will be integral for program development and user-centered design feedback.

Stage 2: Formative Assessment

Perform a needs assessment through engagement with stakeholders and process users using qualitative methods such as individual interviews or focus groups. Establish willingness to participate and elicit user feedback with scenarios and wireframes or screenshots of preliminary tool.

Stage 3: Collaborative development of RPM UI and Heuristic Assessment

Work with health information technology team to build patient and provider-facing visualizations. Perform a heuristic evaluation, using tools such as video capture and think alouds to evaluate usability and elicit specific user-centered design feedback. Incorporated changes into final program to be tested in pilot study.

Stage 4: Feasibility Pilot

Launch a limited pilot implementation and measure feasibility through satisfaction, convenience, and usability scales. Assess compliance with use plan, completeness of data capture and consistency of data capture compared to retrospective survey after the care encounter concludes.

Lessons Learned

Stakeholder engagement throughout the process is time consuming, but necessary. It is critical not only to listen to suggestions and concerns, but also to feedback changes to users made as a result of their comments on their experience. Implementation and sustainability require ongoing commitment to iterative design and redesign. Process mapping is fluid and may require adjustment, particularly with the addition of new lines of communication and need for documentation. Take advantage of other program developments to mimic existing processes, decrease HIT development time. However, concessions to existing HIT infrastructure are short-term shortcuts that may lead to long-term sustainability problems. These must be balanced with the effect of EHR customization on developers, analysts and users.

Figure 1: Remote Wound Monitoring (RWM) Program Workflow

Surgery team, remote patient monitoring nurse and patient throughout surgical care encounter depicted here, beginning with pre-operative clinic visit, transitioning through hospitalization following surgical procedure to home discharge, and return to clinic for in-person follow up visit.

