Scaling a Patient Portal Integrated Diabetes Application Using FHIR: A Multisite Experience

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BACKGROUND

- We developed My Diabetes Care (MDC), a multi-faceted patient portal intervention designed to promote and support self-management.
- Developed at Vanderbilt University Medical Center (VUMC), we built MDC using Substitutable Medical Applications, Reusable Technologies on Fast Healthcare Interoperability Resource (SMART on FHIR).
- The implementation at Brigham and Women's Hospital (BWH) required reconfiguration, resulting in an 8-month delay in an NIH-funded study.

OBJECTIVE

- To understand the facilitators and barriers to scaling an interoperable, SMART on FHIR, portal integrated app across healthcare institutions.

METHODS

- Reviewed initial project plans and grant proposals, hundreds of emails within and across stakeholder teams, and the minutes from 72 meetings.
- Mapped themes to Consolidated Framework for Implementation Research (CFIR) domains.

RESULTS

- Implementation required the involvement of 30+ stakeholders across at least 10 teams (Figure).
- Site differences in handling of user authentication and mapping of lab data, competing operational priorities, limited staff experience with SMART on FHIR apps, and challenges identifying appropriate technical expertise (Table).

CONCLUSION

- Highlights the need for multidisciplinary teams to account for site specific technical and workflow requirements.
- Future work should standardize technical integration, address variability in EHR, and provide training to enhance familiarity with SMART on FHIR.

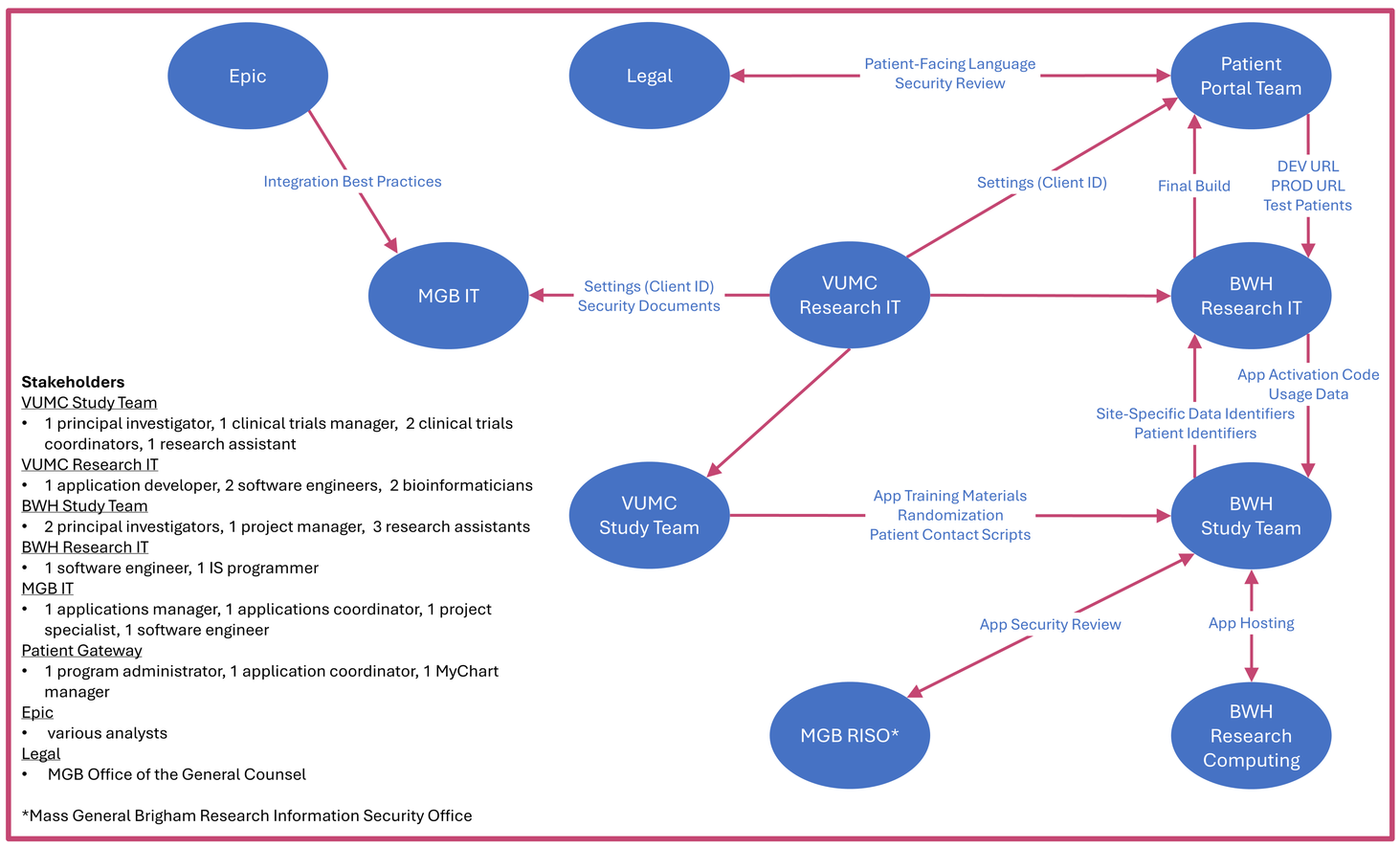

Table. Facilitators and Barriers for Scaling a SMART on FHIR, Portal-Integrated Application Across Two Sites Using CFIR Domains

Domains	Facilitators	Barriers
Intervention Characteristics	• Use of SMART on FHIR • No competing embedded digital tool for diabetes	• Handling of user authentication • Laboratory data mapping
Outer Setting	• Focus on 21st Century CURES Act • Commitment to completing grant funded aims	• Differences in site-tracking legal guidelines across sites • Lack of clarity on implementation roles
Inner Setting	• Both sites use the same EHR • Good communication and shared interests between VUMC and BWH research team • Funding was available to develop My Diabetes Care	• Differences in EHR infrastructure between both sites • Competing operational health IT priorities • Additional security layer on top of Epic's APIs and different hosting environments at BWH
Individuals	• Dedicated site-specific app developers • Experience from research leadership with multisite studies	• New site staff had less experience with FHIR apps
Process	• Multidisciplinary meetings between both sites including representatives from the research team, health IT, and office of general counsel, and EHR company	• Challenges identifying key technical representatives for each phase

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