

**Optimizing Patient Care: Evaluating the Impact of Text Reminders on a Healthcare Portal  
for Prostate and Breast/Cervix Screenings**

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## Introduction

The development of digital platforms, especially patient portals, which provide a method for people to take control of their own health, has significantly changed the healthcare environment. Health care providers can use patient portals to provide patients with capabilities like online appointment scheduling, medication refills, and electronic patient-physician communication (Turner et al., 2019, p. 960). Consistent with this development, the addition of text reminders to our patient portal is a critical step toward proactive patient involvement in healthcare. This project focusses on the introduction of text reminders targeting patients of appropriate age groups which is between 55 and 69 years old (*Should I Get Screened for Prostate Cancer?*, 2019) for discussion of prostate exams for those with prostate and mammograms for those of age group 50 to 74 years old with breasts and cervix (CDC, 2020). These reminders are directed primarily to patients who are of suitable age, with the goal of promoting conversations about important screenings like mammograms and prostate exams. The project spans various phases of evaluation conducted over a timeline, encompassing periods before implementation (2-6 months), immediately post-implementation (3 months), and an evaluation one year after the implementation.

To thoroughly evaluate the operation and effects of these Patient Portal modifications, the evaluation strategy will take a multifaceted approach, utilizing data analytics, theoretical frameworks, stakeholder engagement, and patient feedback. Patient engagement has become a global focus in healthcare due to evidence that it increases patient compliance and adherence to clinical practices (Marzban et al., 2022, p. 1). Hence, at the core of the evaluation are metrics centered around patient-initiated talks, appointment scheduling, engagement rates, and subsequent screening adherence. The main objective is to use digital interventions via the Patient

Portal to promote a culture of proactive healthcare management, improve patient participation, and enable early preventive screenings.

### **Evaluation plan**

Throughout the course of the project, prospective longitudinal study is performed where the same individuals are monitored over an extended period (Caruana et al., 2015, p. E537). The success of the Patient Portal improvements that have been implemented can be evaluated by creating a thorough evaluation plan. This evaluation is performed as a team that comprises of a project manager, data analysts, patient experience representative, subject matter expert, IT specialists, communications specialist, quality assurance specialist, administrator. The project manager oversees the entire evaluation process, ensuring timelines, resources, and communication channels are managed effectively. The patient experience representative gathers qualitative data through surveys, interviews, and focus groups to understand patient perspectives and concerns. The subject matter expert who is a healthcare professional provides medical expertise, validates the relevance of proposed changes, and assesses their potential impact on patient health outcomes. IT specialists ensure the technical feasibility of implementing changes to the Patient Portal, conducts usability tests, and assesses the portal's capability to support new features. The communications specialist facilitates communication between the evaluation team and stakeholders, ensuring that concerns, updates, and feedback are effectively communicated and addressed. Quality assurance specialist ensures the accuracy, reliability, and validity of collected data and evaluation methodologies. The administrator assists in logistical support, documentation, scheduling meetings, and maintaining records related to the evaluation process. The stakeholders for this project are Healthcare providers, patients, IT specialists, Data analysts and sponsors.

### **Formative evaluation: Pre- implementation Evaluation (2-6 months before implementation)**

The evaluation 2-6 months before implementing changes is essential because this phase allows for the identification of potential risks, the implementation of changes based on stakeholder feedback, and the assurance that the Patient Portal can support the anticipated improvements, such as text reminders for prostate exams and mammograms.

The target patients for prostate exams, as per *Should I Get Screened for Prostate Cancer?* (2019), comprises individuals possessing a prostate, typically falling within the age bracket of 55-69 years. However, it's noted that individuals above 70 shouldn't undergo routine screening; instead, it's recommended they consult their doctor before proceeding with screenings. For mammograms, according to the CDC (2020), the target population includes individuals with breasts and cervix, typically aged between 54-74 years. The evaluation methods integrate both qualitative and quantitative approaches in a multifaceted manner. The qualitative measures make it possible for assessors to comprehend how users engage with a novel system. Furthermore, they are accessible to a wider audience (Cusack, 2009, p. 6).

#### ***Qualitative measures***

**Surveys and interviews.** Gathering a small, representative group of patients and healthcare professionals to have in-depth conversations about their experiences and preferences regarding communication with mammograms and prostate exams is another aspect of the qualitative methods.

***Questionnaire.*** 1. How comfortable are you with receiving text reminders for health screenings such as mammograms or prostate exams through the patient portal?

2. What factors do you consider when deciding to schedule or discuss a mammogram/prostate exam with your healthcare provider?
3. In what ways do you prefer to receive reminders or information about preventive health screenings?
4. How likely are you to engage with the patient portal specifically for scheduling mammograms or discussions regarding prostate exams after receiving a text reminder?
5. What improvements or additional features would encourage you to use the patient portal more actively for scheduling or discussing these health screenings?
6. How would you prefer to receive follow-up information or support after scheduling a mammogram or discussing a prostate exam through the patient portal?

**Stakeholder engagement.** Engaging stakeholders entails soliciting feedback from healthcare providers, patient advocates, and IT specialists. Patients' viewpoints will be elicited through surveys and focus groups. These sessions will investigate communication preferences, challenges to involvement, and perspectives on the suggested text reminders.

### ***Quantitative measures***

**Baseline analysis.** Data from the Patient Portal will be collected to better understand current engagement. This contains characteristics such as login frequency, time spent on the portal, most frequently visited sections, and interactions relevant to prostate and cervical health. These statistics, when analyzed, will provide a thorough picture of current patient involvement levels. Examining how information about prostate exams and mammograms is now communicated via the portal is part of reviewing existing communication techniques.

**Usability testing.** “Usability testing refers to evaluating a product or service by testing it with representative users” (Usability.gov, 2019). To gather information about patient and

provider attitudes about technology use, communication preferences, and potential engagement barriers are delivered as part of the surveys.

**Technical infrastructure check.** The technical team will evaluate the portal's infrastructure to guarantee that text reminders can be accommodated. This entails testing the capacity to send and receive text messages safely and reliably inside the context of the portal. Usability tests will be conducted to assess the new text reminder feature's usability. Participants will interact with the reminders to evaluate their clarity, convenience of use, and efficacy. The results of these tests will be used to suggest modifications before they are implemented.

### ***Rationale***

These evaluation methods were chosen for its comprehensive approach to addressing numerous crucial areas prior to deploying modifications to the Patient Portal. It anticipates potential dangers and aligns with established prostate and cervical screening guidelines by establishing baseline patient involvement, obtaining stakeholder input, and assessing technical preparedness. Its combination of qualitative and quantitative methodologies ensures a comprehensive insight of existing involvement levels, preferences, and prospective roadblocks. Overall, it creates the framework for successful implementation by considering multiple views, adhering to guidelines, and assuring both technical readiness and user acceptance.

### ***Metrics***

The metrics are obtained by data analysts, patient experience advocates, IT specialists, project managers, administrative support, and healthcare professionals. The key metrics used are:

**Engagement rates with reminders.** Calculate the percentage of patients who respond to text reminders. This covers measures like as open rates, click-through rates, and reminder response rates. Higher rates of involvement imply a stronger reception and possible influence.

**Actionable responses.** Track the number of patients who act after getting reminders, such as scheduling prostate exams and mammograms or contacting healthcare providers. This demonstrates the effectiveness of the reminders in promoting action.

**Appointment scheduling.** Determine the increase in planned appointments for prostate exams and mammograms following the issuance of reminders. An increase in appointments implies that the reminders were effective in encouraging preventative healthcare activities.

**Patient feedback.** Collect feedback via surveys or direct patient feedback through the portal. Positive feedback suggesting enhanced awareness, clarity, or appreciation for the reminders suggests their usefulness.

### **Summative evaluation plan for 3 months after implementation**

#### ***Evaluation measures***

Assessing the Patient Portal three months after implementing text reminders for prostate exams and mammograms is crucial. This evaluation marks a vital checkpoint to measure the initial impact and effectiveness of these changes. This phase enables quick adjustments based on early observations, allowing for the identification and resolution of any issues promptly.

**Quantitative analysis.** Gather information on the number of discussions about prostate exams and mammograms started by patients or healthcare practitioners. Compare this data to the baseline data acquired prior to adoption. To assess the impact of the reminders, compute the percentage increase in talks. Examine the response rates to SMS messages sent to qualified

patients. Calculate the proportion of patients who responded to reminders by booking appointments or requesting further information.

**Technical performance.** Examine the patient portal for any technological malfunctions or problems with issuing reminders. Check whether the reminders are reaching the intended audience and are being delivered correctly.

**Stakeholder involvement.** Engage with healthcare professionals to learn about their reactions to the reminders. Examine whether the reminders had a good impact on their exam talks with patients.

**Data analysis.** Analyze quantitative and qualitative data collected to reach relevant conclusions. Analytical tests like Chi-square test, confusion matrices, regression analysis, and more can be done to get the analytical insights. Based on the results, identify patterns, trends, can be developed and hence improving vizualization. Prepare a comprehensive report outlining the three-month evaluation phase's findings. In order to improve the success of the patient portal improvements, include actionable insights and recommendations based on the review.

## **Rationale**

The evaluation methodologies chosen to offer a balanced and thorough approach to evaluate both quantitative and qualitative aspects of the intervention's effects. The quantitative analysis gives measurable data for analyzing the intervention's immediate efficacy in comparison to baselines before implementation. This numerical evaluation is supplemented by a technical performance evaluation, which ensures the smooth operation of the Patient Portal and the proper distribution of reminders. Involving stakeholders, notably healthcare professionals, also enables for the collection of qualitative insights into the influence of reminders on patient-provider discussions, which enriches the study with nuanced viewpoints. The following data analysis



provides a comprehensive knowledge of the intervention's effectiveness. This method allows for quick changes, recognizes emergent patterns, and provides practical recommendations for improving the intervention.

## **Metrics**

To test the effectiveness and success of the three-month evaluation phase after implementing changes to the patient portal, a detailed set of metrics encompassing various aspects of the initiative can be employed. The metrics are obtained by data analysts, patient experience advocates, IT specialists, project managers, administrative support, and healthcare professionals.

**Engagement metrics.** Checking the click-through rates (CTR) and response rates. The percentage of patients who click on the links supplied in the SMS reminders is measured by CTR. It evaluates the message's efficacy in persuading patients to take action and learn more about the suggested examinations. Higher CTR shows greater engagement with the reminders, implying that patients are interested in the material and may be taking measures to schedule the examinations.

**Initial health outcome metrics.** It measures initial screening adherence and initial provider interaction. Initial screening focuses on the immediate rise in patients obtaining prostate exams and mammograms within the recommended time window when the reminders are implemented. A greater rate of initial screening adherence implies an early favorable impact on patient behavior, demonstrating the effectiveness of the reminders in encouraging timely screenings.

**Initial portal usage metrics.** The increase in the frequency of patient logins following the deployment of text reminders is tracked by the number of initial portal visits. It reflects if

patients visit the portal more frequently after being reminded to do so. Increased portal visits indicate increased involvement and interest in receiving health-related information and possibly scheduling appointments via the portal. Time spent on portal determines whether patients spend more time engaging with health-related content on the portal once reminders are delivered.

### **Summative evaluation plan for 1 year after implementation**

#### ***Evaluation measures***

The evaluation after one year of implementation is critical because it provides a thorough picture of the initiative's long-term impact and sustainability. It is an important checkpoint for determining the long-term viability of behavioral changes induced by patient portal alterations.

**Long-term impact assessment.** Increase in the percentage of patients who have booked and completed prostate examinations and mammograms among the specified patient demographic. In comparison to the baseline and intermediate statistics, compare the rates of exams planned and completed in the last year.

**Comparative analysis and reporting.** Achievement of the patient engagement initiative's yearly goals. Compare the observed results to the objectives established at the start of the project. The final evaluation report's quality and depth. Prepare a detailed report outlining the outcomes of the one-year review, including insights, suggestions, and future considerations based on the data gathered.

**Stakeholder involvement.** Changes in stakeholder satisfaction and continuous involvement in using the patient portal. Gather feedback from all stakeholders engaged regarding their continued satisfaction and engagement with the reminders.

#### ***Rationale***

This evaluation plan emphasizes a comprehensive examination of the initiative's long-term impact, which aligns with the need to examine long-term behavioral changes and the success of Patient Portal adjustments. This plan attempts to quantify the intervention's solid influence on proactive healthcare behavior by examining the rise in completed screenings within the target group over the year. Comparative analysis against baseline and intermediate data provides a thorough knowledge of the progression of patient engagement, providing insights into the initiative's efficacy in driving timely tests and perhaps affecting early detection and treatment. This comprehensive approach enables a nuanced understanding of the initiative's long-term viability and real-world influence on healthcare outcomes, laying the groundwork for informed decision-making and ongoing development.

### ***Metrics***

These metrics are obtained by data analysts, patient experience advocates, IT specialists, project managers, administrative support, and healthcare professionals.

**User engagement metrics.** Both customer effort and satisfaction scores are quantified. The first is keeping an eye on consumer preferences and learning why they are using the portal. The latter gauges the level of effort required from a client to engage (*13 Customer Engagement Metrics You Have to Measure in 2023*, n.d.).

**Long-term health outcome metrics.** Over the year following implementation, assesses the continuance of enhanced screening rates for prostate exams and mammograms within the recommended time frame. Consistently high screening adherence over time indicates that the reminders are consistently successful in promoting timely screenings.

**Behavioral metrics.** Examinations are being discussed more frequently at medical appointments. Examine whether the conversations started as a result of reminders have become a regular feature of patient-provider interactions throughout the course of the year.

**Continuous portal usage metrics.** Assesses sustained engagement over the year by monitoring the ongoing rise in patient logins to the portal after the initial three months. Increased portal visits show that patients are still interested in receiving health-related information and services through the portal.

### **Conclusion**

With a multi-faceted evaluation approach spanning different phases of the project, the metrics used effectively gauge the impact, engagement, and sustained success of changes implemented in the Patient Portal. To determine immediate success, it is first helpful to concentrate on engagement rates and actionable responses during the first three months. This is evidenced by patient interactions and planned screenings that happen after the reminders. A comprehensive evaluation is ensured by the regular monitoring and assessment of multiple metrics throughout time, which allows for modifications and enhancements through the Patient Portal. Finding and implementing sound evaluation procedures as well as analyzing and applying the data will not be without difficulties and setbacks. However, the revolution has already begun; patient portals serve as an obvious example of this profound shift. The next step is to gather and apply the information about what works best, while also comprehending the why and how (Georgiou et al., 2015, p. 157). “If the how and what are not properly planned, the generalizability of patient portal studies will continue to elude researchers and implementation teams” (Avdagovska et al., 2020).

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