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Utilizing Informatics to Collect Cardiac Surgical Patient Reported Outcomes and Implement Enhanced Recovery

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Purpose:

Patient reported outcomes (PROs) provide valuable insight into how a patient is progressing after a healthcare encounter. PROs assess patient's functional status and what is meaningful to the patient regarding their healthcare. Patient satisfaction surveys, such as Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS), assess global satisfaction with a health care encounter. In contrast, PROs assess satisfaction with caregivers, care plans, outcomes, and the institution as a whole. Completed patient satisfaction surveys are often not available for review until long after the opportunity to customize care has passed. Healthcare providers understand the importance of PROs to improve value, but often lack the methods to capture them (Lavallee et al., 2016). Allocation of resources to assess and respond to PROs can be challenging for providers. Customizing care can be a daunting task if not efficiently and seamlessly executed.

Enhanced Recovery After Surgery (ERAS) protocols and the use of PROs have been studied in several surgical specialties (Armstrong, Coyte, Brown, Beber, & Semple, 2017; Pecoreli et al., 2018; Rosner, Gottlieb, & Anderson, 2018) however, there is a paucity of literature related to ERAS protocols and PROs in the cardiac surgery population. McConnell, Woltz, Bradford, Ledford, & Williams (2018) state, "an ERAS-cardiac program is an example of value-based care applied to a specific surgical specialty with goals, including improved patient and staff satisfaction, early recovery, reduced costs, and a reduction in opioid use." Patient education and engagement are imperative for the success of an ERAS-cardiac program as well as a fundamental component of healthcare (Ellen, Shach, & Balicer, 2018). To satisfy the need for information, patients frequently utilize smart phones, tablets, and computers to seek health information. Knowledge from generic websites can be inaccurate and conflict with institutional care plans and best practice.

Methods:

A core component of our ERAS-cardiac program utilizes a novel informatics platform to enhance patient engagement, care pathway standardization, and data collection capabilities. This interactive application (App)-based platform provides caregivers with real-time accurate PROs and patients with tailored case specific-education. Patients access the App on their smartphone, tablet or computer. The App automatically reminds patients to follow established care plans, and encourages patients to report PROs. In addition to assessing length of hospital stay, readmissions and satisfaction with the App based education, daily PROs give providers insight into patient milestones such as pain scores, mobility level, and warning signs. Additional features of the App include an interactive, evidence-based education library for patients to learn what to expect before, during and after surgery. Implementation of this innovative digital platform was across the continuum of care from the pre-operative visit to thirty days post-operatively. Providers receive smart alerts for patients deviating from care pathways in real-time, which enables care to be promptly customized.

Results:

Eighty-one percent of eligible patients activated their accounts on the platform. Seventy-five patients completed the full patient engagement technology program. Forty-four patients completed a pre-op readiness PRO survey, with 96% confirming receipt of print and verbal pre-op instructions, 94% having learned what to expect during the hospital stay, and 91% confirmed picking up the pre-operative chlorhexidine soap. During recovery, the PROs demonstrated that compliance with breathing exercises started at 55% on post-operative day (POD) 1 and reached a maximum of 100% by POD 4, and compliance with early mobilization started at 0% on POD 1 and reached a maximum of 73% by POD 5. Post-discharge scores for pain while resting averaged 2.0/10 on POD 1, 1.3/10 on POD 7, and 0.7/10 on POD 30. Post-discharge scores for pain while moving had averages of 3.0/10 on POD 1, 1.9/10 on POD 7, and 0.7/10 on POD 30. The daily functional status PROs post-discharge reported 29% with no issues, 49% with issues that could be managed with self-care education, and 22% with issues for which patients were recommended to speak with a provider. Compared to a matched cohort of simultaneous non-App users, App user's had a relative reduction in hospital readmissions by 25%, relative reduction in skilled nursing facility usage by 24%, average reduction in hospital length of stay by 1.5 days, and a 8.1% decrease in overall cost of care.

Conclusion:

Utilizing an App-based platform to engage patients and collect PROs provides an ideal opportunity for real-time individualized care customization. Improving functional outcomes resulted in greater patient-centered healthcare value. This was demonstrated by improved PROs and decreased cost. Future research will consider multi-site PRO data collaboration and benchmarking by ERAS programs utilizing standardized App-based questions to drive quality improvement.

Title:
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Keywords:
Enhanced Recovery After Surgery, Informatics in healthcare and Patient reported outcomes

References:

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Abstract Summary:

Learn how an interactive application (App)-based platform as part of an Enhanced Recovery After Surgery Program provides caregivers with real-time patient reported outcomes and patients with tailored specific-education. The App automatically reminds patients to follow established care plans, and alerts caregivers when a patient is deviating from their care plan.

Content Outline:

Utilizing Informatics to Collect Cardiac Surgical Patient Reported Outcomes and Implement Enhanced Recovery

Introduction

A. Leveraging technology to enhance patient engagement and obtain patient reported outcomes (PROs)

B. Advantage of PROs compared to standard patient satisfaction surveys to impact healthcare value

1. Main Point #1 Development of a customized interactive application (App)-based platform
    1. Rationale for investment in technology
    2. Enhanced Recovery After Surgery (ERAS) protocols
    3. Opportunity to customize care with patient reported outcomes
2. Main Point #2 Challenges when implementing new technology in healthcare
    1. Financial investment
    2. Support from stakeholders
    3. Patient willingness to embrace technology
    4. Allocation of human resources for App content development and post implementation monitoring of alerts

Main Point #3 Success of enhanced patient engagement

1. Patient reported outcomes assessed from App reports
2. Length of hospital stay, readmission, discharge to home
3. Lower cost

Main Point #4 Next steps

1. Improve patient access to technology
2. Increase PROs collected
3. Allocate resources to assist patients with technology to maximize benefit

Conclusion

App-based platform to engage patients and collect PROs provides an ideal opportunity for real-time individualized care customization.

Future research will consider multi-site PRO data collaboration and benchmarking to drive quality improvement.

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