Lumos! Bringing Light to Informatics Failures and Innovative Solutions

Case Study: Nursing Best Practice Advisory (BPA) for Delirium and At-risk Patients

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Purpose

Demonstrate how re-examining an informatics failure can be used to re-design, develop, and inform an improved solution to achieve desired outcomes.

Background

Fundamental maintenance for EHR vendor updates, practice improvements, health system expansion, and the constantly changing regulatory landscape leave BPA time to examine informatics failures.

Projects implement informatics solutions in a rapid-cycle approach (Plan-Do-Study-Act [PDSA]). When projects do not succeed in meeting their objectives, they are frequently abandoned, thus, halting the PDSA cycle before getting to ‘study’ and ‘act’. However, these failures are key and should be studied.

One of the many types of informatics solutions that fail in meeting their objectives are best practice advisories (BPA), which unfortunately have become the de facto, even for simply reinforcing standard work.

A nursing BPA, for patients screened to be at risk for/or having delirium was implemented in September 2017. The advisory objectives were:

1) Ensure nursing notified providers if a patient screened positive so that providers could place a delirium order set
2) Prompt nurses to initiate a nursing care plan for delirium

Plan

Four months after implementation, data was evaluated and the BPA was declared to be ineffective. Rather than retire the BPA and call it a failure, a cohort of nurse informaticists convened to assess if the BPA could be made more effective through:

- Collection and analysis of qualitative data
- Further analysis of quantitative data
- Application of human-computer interaction design principles

Interventions—Round 1

Analyze BPA1

Survey end users

N = 26

Used link in BPA to notify provider

65%

Did NOT recognize that the BPA advises two actions:
- Notify provider
- Initiate delirium care plan

Interventions—Round 2

Redesign based on survey feedback—BPA2

Survey end users

N = 19

Found redesigned BPA easier to understand

95%

Felt that automatically adding delirium care plan is a significant improvement

Discussions

Objective: Delirium Care Plan

- Increase of 49% (p-value=0.018) in the percent of positively screened patients with a delirium care plan after BPA2
- Care plan activation time was cut nearly in half for these patients
- Changes are statistically significant from BPA1 to BPA2, however only two months of data have been collected since implementing BPA2 in March 2018

Objective: Delirium Order Set

- Only a 4% (p-value=0.108) increase in the percent of positively screened patients with a delirium order set placed after the alert first appearing
- Change is not statistically significant, however we have only two months since implementing BPA2 in March 2018

BPA#1

- Only data from the BPA itself was initially analyzed to determine:
  - How many patients had the delirium care plan initiated (from the BPA)
  - How many BPA had the link clicked to notify provider
- Problematic: only told a partial story
- Users were doing appropriate actions, using workflow outside of the BPA
- Initial qualitative data also highlighted this point
- RNs were using alternate workflows outside the BPA to contact the provider and in some cases start the care plan
- Additionally, it confirmed that the BPA design was not providing RNs with clear directions or even displaying the information in an optimal way
- Two questions remained:
  - Do we only care what people are doing from within the BPA, or rather the overall effect on the objectives?
  - Is it necessary that the RN to contact the provider through the BPA?

BPA#2

- Improvements made for readability to provide clarity in the actions being advised and incorporate human-computer interaction design principles
- Advisory simplified from advising two actions to one by automating the initiation of the delirium care plan
- Removed ‘notify provider’ link to align with established operational workflow
- Transformed our priority from an actionable BPA to an informational BPA with automation
- Focused shifted to the overall effect of the BPA on objectives rather than the BPA serving as the vehicle to accomplish the actions to meet the objectives

Lessons Learned

1) Measuring your successes and failures can be challenging and should always include qualitative components. Additionally, all metrics should be identified to provide clarity in the actions being advised and incorporate human-computer interaction design principles.
2) Nursing Informatics adds undeniable value when fusing technology and clinical care (i.e. performing a technology assessment, involving end-users).
3) Examining failures can trigger growth, lessons learned, inform future work, and foster wisdom.

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