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Patient Safety Tip of the Week

July 27, 2021 Sustainability

We've all seen it. We implement a quality improvement or patient safety project and get the results we desire. But 6 months later, we've fallen back to old practices and our gains are lost. This failure to sustain improvement is frustrating, since a lot of work, people resources, and often political capital usually went into the project(s).

Silver et al. (Silver 2016) cited one study which noted about 70% of all change initiatives fail (Nohria 2000) and another which reported that 33% of QI projects are not sustained upon evaluation 1 year after completion (Maher 2010).

From our perspective, there are 5 keys to any change management project:

- The goal(s) must be meaningful
- Communication, communication, communication…
- Having enthusiastic champions
- Involvement of frontline staff
- Buy-in from those stakeholders most affected

Some might ask "Aren't the last 2 items the same?". The answer is no. In many change projects the overall intended effect is positive, but there may well be specific groups that are impacted negatively, and those groups can scuttle the whole project. We've always stressed that you must encounter "**noise**" during your planning stages prior to implementation. Silence during these stages usually means you are likely to encounter resistance and barriers once you begin roll out your project implementation. That silent resistance is also a major reason that initial success of such projects fails to be sustained.

Note also our comment about the **meaningfulness of the goals**. In our June 8, 2021 Patient Safety Tip of the Week "Cut OR Traffic to Cut Surgical Site Infections" we emphasized that point. Reduction in OR traffic is not a meaningful goal in itself. Rather, the meaningful goal is reduction of surgical site infections. (Reduction in OR traffic might also produce a desirable reduction in interruptions and distractions, but even that is an intermediary goal. The ultimate goal from that would be a reduction in errors that impact the patient.) The same reasoning may explain why hand hygiene rates are abysmally low in most facilities and why initial improvement in those rates with QI projects fails to be sustained. Handwashing rate is not itself the meaningful goal. The meaningful goal is a reduction in infections. Unless clinicians (and other healthcare workers) can visually see that infection rates are improving, they don't make the connection that their individual hand hygiene practices are important.

Add to those factors above the importance of adequate support and resources from senior leadership and a culture of safety and continuous learning.

Silver et al. (Silver 2016) used the NHS (UK) Sustainability Model (Maher 2010) in a quality improvement project aimed at increasing the number of dialysis patients on home dialysis. Silver et al. note that the NHS model has also informed several other sustainability models, including the Institute for Healthcare Improvement model (Scoville 2016).

They stress that planning for sustainability must begin early. Ten factors are considered in the NHS Sustainability model, related to process, staff, and organizational issues:

- Process factors
    - Benefits beyond helping patients
    - Credibility of the benefits
    - Adaptability of the improved process
    - Effectiveness of the system to monitor progress
- Staff factors
    - Staff involvement and training to sustain the process
    - Staff behaviors toward sustaining change
    - Senior leadership engagement and support
    - Clinical leadership engagement and support
- Organizational factors
    - Alignment with strategic aim and culture
    - Infrastructure

Recognizing when a quality improvement project is ready to be sustained or implemented can be challenging, but they point out that several signs exist, including the following:

1. The changes have been tested in different conditions with different staff, each providing feedback on performance.
2. The necessary infrastructure (personnel, supplies, equipment) exists to support the project long-term.
3. The project has achieved a high level of performance for several weeks/months, as indicated on run charts.
4. Measures have been identified to monitor performance over time, along with responsibility assigned for performance measurement and reporting.

Silver et al. note the importance of "**visual management**". While they note use of process control boards and performance boards, our take on it is that you need to make the progress toward and sustenance of your goals readily visible to all relevant stakeholders.

They also stress use of "**improvement huddles**". These are regular (daily to weekly) 10- to 15-minute meetings among all unit staff to anticipate problems and review current performance. These allow for problems to be corrected quickly, which shifts efforts from problem troubleshooting to problem prevention.

In a section "Context Eats Strategy for Breakfast", Silver et al. note that the success of the same improvement intervention may differ on the basis of the local environment in which it is applied. Contextual factors occur at all levels, including the external environment, macrosystem, mesosystem, and microsystem.

The type of interventions in your QI project are also important for ensuring sustainability. In our March 27, 2012 Patient Safety Tip of the Week "Action Plan Strength in RCA's" we discuss the hierarchy of strength of interventions. We also provide a Power Point presentation to visually show the relative strengths of various interventions. Though these were discussed in the context of root cause analyses, they also apply to interventions in any form of quality improvement process. Education and training always rank low in our hierarchy of effective interventions. The strongest actions are **forcing functions** and **constraints**. For example, educational or training sessions on avoiding CLABSI's (central line–associated bloodstream infections) will get you only so far. But, if you force staff to do a time out to complete a checklist before they can open a central line kit, you'll likely get better results.

One barrier to sustaining improvement is staff turnover. It is especially important when bringing new staff into a system that they fully understand the reasons for your project and the importance of maintaining the improvements you've made.

Another barrier to sustainability is failure to identify what elements in a QI project are actually important. That's particularly relevant since we often implement "bundles" containing multiple interventions at the same time. When we can't separate out the impact of individual components in those bundles, it's pretty easy for staff to begin slacking off on compliance with some of those components.

Burke and Marang-van de Mheen (Burke 2021) recently did an editorial on sustaining quality improvement efforts to accompany a study (Schechter 2021) that showed an initial improvement in pediatric asthma guideline adherence across 43 community hospitals was associated with concerning declines in guideline adherence over time.

They note that QI interventions are more likely to be sustainable if if they **simplify clinical workflows**. Alexander et al. (Alexander 2021) also note that changes in work processes must be "hard-wired" into the day-to-day work including ongoing surveillance to ensure sustained improvement.

Burke and Marang-van de Mheen also discuss a barrier we mentioned above – identifying which components of a QI project are important. They stress the importance of using PDSA cycles to allow for careful isolation and refinement of the 'active ingredient(s)' and the resources necessary for the intervention to be effective. The PDSA cycles also are important in identifying barriers. In our August 2021 What's New in the Patient Safety World column "Antibiotic Stewardship in Pediatrics" discusses a study by Frost et al. (Frost 2021) on improving delayed antibiotic prescribing for acute otitis

media. You should read the Frost study to see the multiple barriers that were encountered and identified in the reiterative PDSA cycles.

Burke and Marang-van de Mheen suggest 3 keys to sustainability:

- Leverage the role of family and caregivers to design and sustain interventions.
- Avoid 'low-value' quality improvement interventions, understanding the problem may direct to novel tools to solve it. Make it easier to do the right thing.
- If common QI tools are the best fit, make them count twice by aligning them with existing workflows and engaging additional members of the healthcare team.

The very successful Michigan Keystone ICU Project significantly reduced central line–associated bloodstream infection (CLABSI) rates and was able to sustain these improvements. Pronovost et al. (Pronovost 2016) found several factors that aided the sustainability of the project. The QI teams integrated the intervention into staff orientation, and active involvement of hospital leaders and the Keystone Center as well as ongoing monitoring and feedback of performance were important in sustaining results. And we will add another real key to the sustainability – the goal was incredibly meaningful to all.

We mentioned above that many (or most) hand hygiene improvement programs fail to produce sustained results because the "meaningful" focus should be on infections rather than on hand hygiene per se. Well, we know of at least one hand hygiene program that got sustained results when the focus was on hand hygiene itself. McLean et al at Duke University Medical Center (Mclean 2017) implemented their program on 2 inpatient pediatric units that already had quite impressive hand hygiene rates. Hand hygiene compliance rates improved from an average of 87% to ≥95% within 9 months, and this improvement has been sustained for >2 years on both pediatric inpatient units. They progressively added interventions in multiple iterations of the PDSA cycle to achieve these amazing results. Interventions included: (1) increasing awareness, (2) providing timely feedback, (3) empowering patients and families to participate in mitigation, (4) providing focused education, and (5) developing interdisciplinary HH champions. Obviously, those units already had a high culture of safety that facilitated sustainability. But the fact that each successive PDSA iteration further improved their outcomes reinforces the importance of not becoming complacent once you've achieved good results.

Sometimes you need to keep plugging away over the long haul to achieve desired goals and sustain them. Alexander et al. (Alexander 2021) conducted a quality improvement initiative over a 36-month period to improve the efficiency and reduce the variation in the patient handoff process during high-risk, low-volume transfers from the outpatient setting. The most significant improvement effect occurred in the third year with a 50% reduction in transfer time. We encourage you to read the Alexander article for details of the important components that went into their successful program. And in our August 2021 What's New in the Patient Safety World column "Antibiotic Stewardship in Pediatrics" we describe a study (Frost 2021) that required a total of 27 PDSA (plan-do-

study-act) cycles to overcome barriers and improve delayed antibiotic prescribing for acute otitis media.

Achieving an improvement in a quality improvement project is the easy part. Sustaining it is the hard part.

Some of our prior columns on RCA's, FMEA's, response to serious incidents, etc:

July 24, 2007	"Serious Incident Response Checklist"
March 30, 2010	"Publicly Released RCA's: Everyone Learns from Them"
April 2010	"RCA: Epidural Solution Infused Intravenously"
March 27, 2012	"Action Plan Strength in RCA's"
March 2014	"FMEA to Avoid Breastmilk Mixups"
July 14, 2015	"NPSF's RCA2 Guidelines"
July 12, 2016	"Forget Brexit – Brits Bash the RCA!"
May 23, 2017	"Trolling the RCA"
October 2019	"Human Error in Surgical Adverse Events"
January 2020	"ISMP Canada: Change Management to Prevent Recurrences"
October 2020	"Common Cause Analysis"

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