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Improving Healthcare Efficiency and Patient Outcomes Through Proactive Insight to Action: A Sickle Cell Disease Case Example

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Abstract

As healthcare systems grapple with simultaneous challenges of patient engagement, access for services, and growing clinician burnout, we share an approach to quality improvement focused on equipping integrated care teams with methods for proactive insight and action to manage patients. This approach offers a way to deliver outcomes that value-based care arrangements look to achieve, and which can alleviate clinician burnout and improve satisfaction across care teams. We illustrate our experience with a program managing patients with sickle cell disease in Southeast Pennsylvania that has delivered improved outcomes, including improvements around the provision of important medication therapies and completion of annual screening tests, for a population that historically faces many health inequities. These tools and workflows are still widely in use today. Improving the care of a patient longitudinally requires an approach across the continuum of care and inevitably requires a team-based model with a multidisciplinary emphasis to better engage patients outside of office visits and relieve burden on frontline clinicians.

Keywords

clinician/staff engagement, clinician-patient relationship, patient engagement, population health, quality improvement, social determinants of health, team communication, value-based care/purchasing

Introduction

A healthcare system that is increasingly saddled with challenges of patient engagement and access for services is facing simultaneous headwinds of growing clinician burnout threatening workforce participation in the future.[1–2] We share an approach to quality improvement focused on equipping integrated care teams with methods for proactive insight and action to manage patients. This approach offers a pathway to better deliver the outcomes that value-based care programs seek to achieve, and one which—through distributed workflows—may directly alleviate clinician burnout and improve satisfaction across care teams. We illustrate the experience with a program for patients with sickle cell disease in Southeast Pennsylvania that delivers enhanced outcomes for a population that has historically received inadequate resources to support care delivery.

Improving the care of a patient longitudinally requires a comprehensive approach that considers how best to engage patients and their families with consistency and quality across the continuum of care, when they are both in and away from the health system. And from the provider's perspective, it means freeing them from the administrative burden that has grown substantially during this period, and which has overwhelmed the ability to proactively and meaningfully engage patients. Engaging patients inevitably requires a team-based approach provided through nurses, social workers, medical assistants, care navigators, and others—who can better engage patients outside of office visits and relieve burden with frontline physicians.

Actionable Insights

The Importance of Integrated Care

An enhanced integrated care team approach provides a suite of services that is finely tuned to managing care at the right place (home vs. clinic) and at the right time (during periods

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of enhanced risk or preceding crises). Harnessing data across patients and time from electronic health records (EHRs) and emerging health information exchange providers can support the workflows of integrated care teams, but only if done with attention to simplicity and streamlined tasks for those involved. Those who succeed in an era of big data will be ones who can best leverage data on chronic illness, disease management, and other psychosocial risk to tailor more proactive care approaches with the patients who need engagement the most. Deploying a quality improvement methodology that meaningfully engages multiple end-user stakeholders in the design of workflows can ensure that success is sustained over the long-term. Quality improvement tools like driver diagrams and process mapping of current state and ideal state workflows support this cycle, helping to ensure that resources are invested where providers indicate they will be most helpful for process and health outcomes. The perspectives of all members of the care team are critical to embedding workflows; practice schedulers, for example, bring different and important insights about which methods of patient outreach are most effective. Ideally, all members of a multidisciplinary care team—whether social workers, dietitians, medical assistants, check-in registrars, etc.—join the design process about items relevant to their roles.

An inclusive design process, when done well, will therefore match the most effective methods of patient identification and outreach with the skillsets of all members of the care team. For example, once clinical leaders design best-practice algorithms for what constitutes "due soon/overdue" milestones in the care process, other team members can be equipped with EHR outreach reports to identify real-time care gaps. Clinical leaders also help inform the EHR data elements (e.g., lab results, recent hospital utilizations, social risk elements, etc.) that can support risk stratification tools to facilitate a triage of which patients are most at risk of experiencing care gaps or should be prioritized for outreach. When accomplished well, clinicians can largely be removed from the process of engaging overdue patients proactively, and in so doing, avoiding the inefficiencies and poor practice of requesting outreach in a very ad hoc and reactive manner.

Case Study: Sickle Cell Center at Internationally Recognized Academic Health System

Sickle cell disease (SCD) primarily affects African American and Hispanic American patients, and can lead to long-term, costly health complications that impact quality of life and disease outcomes. Complications of SCD can include stroke, chronic kidney disease, and lung disease, as well as a significant reduction in average life expectancy compared to the general US population. Care challenges are compounded by well-documented disparities in receiving healthcare that are experienced by African Americans and other racial/ethnic minority groups; that most patients with SCD are Medicaid-enrolled and have insufficient access to care adds additional barriers to treatment.[3]

In that context, the Comprehensive Sickle Cell Center historically faced barriers coordinating care across many specialties in a large health system and variable consistency of clinical providers adhering to best practice recommendations for care. Challenges were compounded by a very manual and paper-based process to track the care of nearly 1000 patients with medical and psychosocial complexity. Despite a mix of multidisciplinary providers, the care team struggled to track care outside of clinic visits, such as which patients were due soon or overdue for return care, labs, therapies, and screenings necessary to prevent disease complications. The medical director lacked an easy method to monitor provider adherence to best practice recommendations such as hydroxyurea prescriptions and annual transcranial Doppler ultrasounds (TCDs) that can reduce the risk of stroke and other complications (e.g., anemia, acute chest syndrome, pain crises) for their patients with the most severe disease.[4–6]

Starting in 2015, through a proactive insight to action workflow design initiative, the integrated care team prioritized the improvement in consistent hydroxyurea prescriptions and completion of annual TCDs for patients with the most severe disease, who comprise nearly half of their clinic population. The team generally followed the Model for Improvement approach from the Institute for Healthcare Improvement and relied on planning tools such as driver diagrams and Plan-Do-Study-Act (PDSA) cycles for implementation.[7] Project leadership included the sickle cell center's medical director, lead nurse, and clinic coordinator. The design process began with the construction of an EHR registry that dynamically updates the active cohort of patients with SCD. Subsequently, each group of multidisciplinary care team members identified drivers of change for their workflows and designed patient outreach tools that would allow them to proactively schedule and attend to care gaps. Through the process, providers, and particularly scheduling coordinators, could quickly flag when eligible patients were due soon or overdue for their annual TCDs; when eligible patients had not yet initiated hydroxyurea but were eligible for counseling and initiation; and when patients needed active monitoring of labs or refills for therapies like hydroxyurea. Providers were also able to visualize a real-time risk score that summed current variables like a patient's number of recent no shows, additional medical complexity, and other factors that may require enhanced triage and proactive outreach by the care team. New workflows were tested and adapted using a PDSA approach until they were seamlessly embedded into care team processes.

Upon initiation of the new workflows, the integrated care team realized improvements in identified goals within the first year, and that improvement continued and has been sustained through 2023. Pre-intervention (pre-summer 2016), 55% of eligible patients were prescribed hydroxyurea as recommended; post-intervention, and through present day, that proportion has grown and has eclipsed 80% in many months (78% on average). Similarly, completion of annual

Table 1. Demonstrates Annual Transcranial Doppler Ultrasounds (TCDs) Completed.

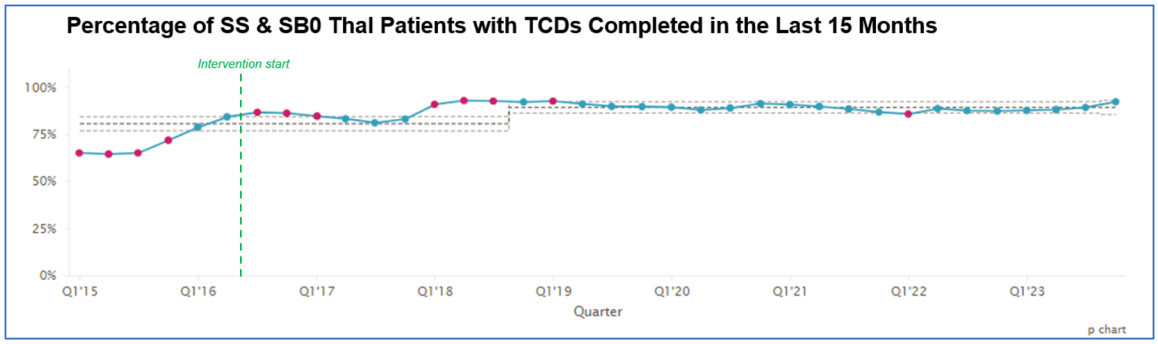
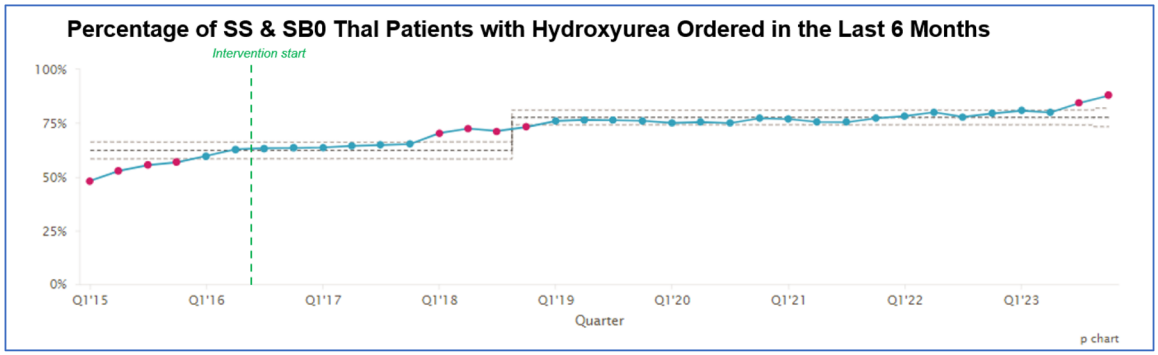


Table 2. Demonstrates Increased Adherence with Hydroxyurea Prescriptions.



TCDs grew from 75% of eligible patients to 91% on average following implementation (Tables 1 and 2).[8] Although recent national benchmarks are difficult to come by, both rates are substantially higher than the national averages for patients with SCD (which most recently reported that only 37% of children had at least some hydroxyurea use in the past 6 months, or had received an annual TCD as of 2017).[9]

Practical Recommendations

Key drivers of success for this work, and which other systems should consider when embarking on similar initiatives, were (1) strong clinical champions who worked alongside the quality improvement team from project inception to design the new workflows and engage their colleagues during implementation, (2) proactive identification and outreach tools embedded directly in the EHR for workflow efficiency, and (3) analytic tools to easily track improvement over time and support team PDSA cycles to make adjustments as needed.

The success of this approach with the sickle cell team has quickly accelerated interest in closing other care gaps with patients, such as increasing regular retinopathy and nephropathy screening, improving attendance at hematology clinic visits, and improving vaccination rates. Analysis of Average Top Box Scores from patient satisfaction surveys collected between 2015-2023 after hematology outpatient clinic and acute care visits from the families of patients with SCD showed sustained improvement in their perception of coordination of care across providers and ease of scheduling appointments. The ongoing use of these EHR tools and the complementary workflows demonstrates the buy-in and satisfaction among providers, who are often hesitant to adopt such changes, but have recognized how this proactive care approach improves their ease of working together and can reduce administrative burden. Care team members such as nurses and scheduling coordinators have meaningfully adopted the workflows, using them multiple times a week, and frequently request, through PDSA cycles, small modifications to the tools that allow them to further consolidate their workflows more efficiently. The usage of these proactive population management tools also streamlined care team huddles and communication across the team, resulting in more time for patient care and less time spent on manual patient tracking tasks that were sometimes redundant between team members.

Conclusion

The transformation of the sickle cell program has yielded results that far surpass national outcome measures for other children and adolescents with SCD across the country. The

implementation of a proactive insight to action program that equipped an evolving integrated care team with the tools to more proactively engage patients around important care needs reversed what had been longstanding inequities in access and health outcomes with these children. This experience, and many others like it, validates the method of proactive insight to action as a formidable tool for reducing health inequities. By directly confronting the access issues that underlie many health disparities, the model is more tightly aligned to achieving the desired outcome.

Since the program's inception, the health system has extended the use of this model to over 50 primary care and specialty care programs, with registries and reporting tools reaching over 400,000 patients within the system. This has allowed their ambulatory care teams to respond proactively when patients visit the emergency department, when labs or routine procedures are due soon, or when medication refills need to be addressed, and has also enabled care management teams to prioritize regular outreach to their most complicated patients. Additional analyses, as the program has grown, revealed a significant impact in reducing hospitalizations among Medicaid-enrolled children.[10] Ultimately, the growth and appreciation of the value of these programs led to an external practice (www.wellconnex.com) that is now providing support for health systems as they seek to replicate and grow these models. Designed by clinicians for clinicians, Wellconnex solutions enable clinical teams to operate more efficiently by streamlining workflows and implementing EHR tools that simplify access to critical patient data. These capabilities empower proactive, coordinated care that improves outcomes and access.

The challenges for health systems to engage with patients continue to grow. As a result of consolidation and growing patient populations, health systems are getting larger, and navigating has become more complicated for providers, care teams, patients and their families. The future success of these health systems will require them to equip integrated care teams with the tools to prioritize patient care tasks that can be managed remotely and proactively, so patients experience a greater sense of partnership in the management of their chronic illness and feel confident they are receiving the highest quality of care.

Ethical Statement

This research did not require Institutional Review Board approval because it was completed as a quality improvement initiative.

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Informed Consent Statement

This study did not require consent for patient information to be published in this article because data were analyzed through approved quality improvement methodology.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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