Final Report for VHCIP Provider Sub-grant Program
Vermont Health Care Innovation Project
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State Innovation Models:
Funding for Model Design

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Vermont Statewide Surgical Services Collaborative

Vermont Program for Quality in Health Care, Inc.

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Executive Summary

The concept of this project started as a surgeon-led grass roots effort to improve surgical performance and patient safety, and correspondingly result in decreased health care costs. The surgeons' initiative gained traction and cooperation when multiple health care organizations supported their efforts. These organizations included Vermont Association of Hospitals and Health Systems, Vermont Chapter of the American College of Surgeons, and Vermont Program for Quality in Health Care, Inc. (VPQHC). VPQHC wrote a grant proposal on behalf of surgeons and grant funding was awarded. VPQHC became the coordinating entity for the surgical group charged with the task of enrolling 12 hospitals in the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP).

The overall goal of this project was to collect and submit surgical clinical data to the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database for the purpose of improving surgical outcomes and performance through data analysis and comparative performance monitoring. The project established four phases: a). program introduction, b). ACS NSQIP enrollment, c). program implementation, and d). analysis and best practice dissemination. While the project timelines needed to be adjusted, the project was successful in meeting three of the four phases, with the exception of best practice dissemination.

1. Phase 1 - Program Introduction	Initiate Vermont's Statewide Surgical Services Collaborative activities under the VHCIP Award program
2. Phase 2 - ACS-NSQIP Enrollment Process	Complete enrollment checklist activities upon payment of enrollment fees for participating hospitals
3. Phase 3- Program Implementation	Begin data collection cycles with all Vermont Surgical Services Collaborative members

4. Phase 4 - Analysis and Best Practice Dissemination	Utilize ACS-NSQIP comparative performance reports and continuing collaborative analyses to support improvement activities

Political Climate

This project was initiated at a time when other health care initiatives were being introduced and rolled out to hospitals. Hospital administrators were already allocating scarce resources. In addition, hospitals were in the process of preparing the next fiscal year budget. Despite surgeon interest in participating in ACS NSQIP, hospital administration had little incentive to participate under the fee for service model.

ACS NSQIP Requirements

ACS NSQIP requires every hospital to have a surgeon champion and a surgical clinical reviewer. The surgical clinical reviewer is trained by ACS NSQIP once the hospital enrolls in the program. At the time of the grant proposal submission, all hospitals had a surgeon champion and expressed enthusiasm to participate in the initiative. In the interim, two hospitals had surgeons retire or relocate. Despite an active and ongoing process to recruit other surgeons and persuade hospitals to learn about ACS NSQIP, not all of the hospitals responded to the efforts.

Hospital Integration

Nine out of twelve (75%) hospitals attended the informational webinar hosted by ACS NSQIP. Ten out of twelve hospitals attended an informational session outlining available grant funding presented by the project coordinator. At one point, eight hospitals were positioned to enroll and participate, but in the end, several of these could not commit to investing resources and time to the project. One hospital has extremely low surgical volumes and despite wanting to enroll, the benefit of enrolling was outweighed by the extended time required to collect reliable

data and the additional resources that would require. Currently, five hospitals are enrolled in ACS NSQIP with a sixth hospital contemplating enrolling.

Results

The Vermont Statewide Surgical Services Collaborative (VSSSC) was established. The collaborative members include an interdisciplinary team of surgeons, surgical clinical reviewers, quality department personnel, chief medical officers, and staff of VPQHC. The VSSSC is exploring an opportunity to develop and implement a surgical project surrounding patient safety and opioid use prescription in the post-operative period. The VSSSC is committed to engaging surgeons from all hospitals to participate in activities leading to surgical improvement.

Not only does ACS NSQIP provide surgical outcomes data, but the program provides insight into the pre-operative risk factors of patients and risk of complications based on their risk factors. It is too early for hospitals to begin quality improvement projects since reliable data may take at least a year or more to collect. However, some hospitals have started to notice a trend and drill down on cases to explore root causes.

Discussion

The Vermont Program for Quality in Health Care, Inc. (VPQHC) in conjunction with surgeons established two overarching goals. The first goal focused on the process of data collection, comparative analysis, and performance monitoring prescribed through the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP). The second goal was to develop an infrastructure for the implementation of a clinical management system designed to improve quality, patient safety and reduce costs of surgical care across the State of Vermont. The goal from day one was to enroll 12 hospitals in ACS NSQIP and establish

a statewide collaborative. A Vermont Statewide Surgical Services Collaborative was established even though only five hospitals enrolled. Hospitals within the collaborative collect and submit surgical clinical data into the ACS NSQIP database for the purpose of improving surgical outcomes and performance. Data analysis and comparative performance monitoring afford hospitals an opportunity to compare surgical outcomes through VPQHC project management. VPQHC operates as a peer protected coordinating entity.

Surgical clinical data was collected and submitted into the ACS NSQIP database by five participating hospitals. The collaborative was not able to demonstrate cost savings or improvement in surgical outcomes during the grant period. Hospitals enrolled in ACS NSQIP will not be able to implement quality improvement projects until enough reliable data is collected which takes a minimum of one to two years. However, the surgical clinical reviewers are noticing trends and working with the surgeon champions to develop quality improvement projects. In addition, the surgical clinical reviewers have been presenting data to surgical groups to keep surgeons informed of the project. Moreover, the Vermont Statewide Surgical Services Collaborative is identifying a surgical project that all hospitals within the state can participate in regardless of their involvement with ACS NSQIP.

It is too early to measure the full impact of this project. However, a peripheral impact was the discovery of a relatively new quality improvement educational program for surgical residents offered by the American College of Surgeons. When this information was learned, it was passed on to the academic leadership of University of Vermont Medical Center for consideration. Educating the future generation of surgeons to quality improvement methods and programs like ACS NSQIP can position the surgeons to become leaders in quality improvement efforts with the goal of making surgery safer.

The collaborative has afforded the surgeons an opportunity to share with insurers the group's plans to improve surgical care using ACS NSQIP. At the November 2016 collaborative meeting, a surgeon champion presented a potential opportunity for the VSSSC to develop and implement a surgical project. The VSSSC will explore this opportunity and invite surgeons from other hospitals to join their efforts.

The ACS NSQIP collects preoperative, intraoperative, and post –operative data. Preoperative data collection provides insight into the demographic of the surgical patient including their risk factors. It also supports the concept of a surgical home.

A direct impact of this project is practice changes resulting in cadult surgical patients being contacted at least 30 days after surgery to collect surgical outcome data. The SCR patient follow-up rate has been an impressive 93%. Prior to ACS NSQIP, hospitals were only contacting patients immediately after discharge, missing potential post-operative occurrences, and giving hospitals a false sense of surgical quality based on administrative data and not clinical data.

Challenges

The project encountered several challenges. Surgical clinical reviewers (SCR) at two hospitals resigned their positions during data collection. One surgical clinical reviewer relocated and the other SCR resigned when the hospital was facing financial challenges. Without an SCR, the hospitals were unable to proceed with data collection until a new SCR was hired and trained. Replacing the SCR was a slow process and required hospital administrative approval operating under tight budgets. As an organization external to hospitals, VPQHC could only provide hospitals lacking an SCR with possible solutions. One of the potential solutions was to contract

with an organization that provides remote abstraction and partially meets the requirements of ACS NSQIP. However, even in they used this option, hospitals would still need to hire a trained SCR to complete some part of the ACS NSQIP requirements. The rigorous nature of data abstraction coupled with the lack of a system wide hospital EMR adds additional strain to hospital resources and data collection processes.

Hospitals declined participation in ACS-NSQIP for various reasons: (1) lack of resources to support the program, (2) lack of a collaborative sustainability plan, (3) lack of surgeon champions, (4) very low annual surgical case volumes, (5) non-uniform electronic medical records, and (6) the inability to share SCRs among hospitals. Despite these challenges, VPQHC provided ongoing education of ACS NSQIP benefits to hospital administration, surgeons, and surgical clinical reviewers, extended an open invitation to all surgeon champions to attend the monthly meetings, communicated ACS NSQIP success at quality director's meetings and symposiums, and scheduled meetings with insurers to secure additional funding to sustain the program beyond the grant period.

Lessons Learned: Implementing and Executing

In 2013, surgeon champions were part of a grass roots effort to bring ACS NSQIP to all the hospitals in Vermont. Over a year later, VPQHC was awarded $900,000 to implement the project. Even though the timeframe from conception to implementation was relatively short, the surgeon champion leading the initiative relocated to another state and some of the hospitals lost surgeon champions to retirement or relocation. Accountable Care Organizations (ACO) did not exist at the start of this project, but over the past year ACOs developed and hospital resources and commitments were extended to ACOs and not ACS NSQIP. Compounding this situation was

the additional allotted Net Patient Revenue (NPR - .8%), which was insufficient to cover ALL health care reform initiatives.

In response to the challenges identified above, VPQHC scheduled face to face meetings with surgeons to establish a steering committee and Chair of the collaborative. A Charter was established to provide structure to the group and operationalize the project. Key stakeholders for each hospital were identified and invited to schedule a webinar with ACS NSQIP. Information about the grant was shared with quality directors, surgeons, chief medical officers, and hospital administration including CFOs and CEOs. VPQHC scheduled monthly surgeon champion meetings and as SCRs were hired, they were invited to the meetings. The project coordinator scheduled monthly conference calls for the SCRs to provide a forum to share information, discuss challenges, and learn from each other. All the implementation strategies were effective in obtaining interest in NSQIP, but like any change initiative, there are early adopters and others who wait to join at a later date.

Project Evaluation

Data was collected over a 13-month period. The data includes four hospitals' cases, but only one hospital has entered cases continually since starting in October 2015. Other hospitals joined ACS NSQIP in October 2015, November 2015 and February 2016 and two hospitals did not have a SCR for the entire grant period. The SCRs manually enter patient demographic, preoperative, intraoperative, and 30 day post- operative data. Data is collected from patient charts and self-reports from patients and then entered into the ACS NSQIP workstation. Raw, not risk adjusted data is available as reports on the work station for data analysis and comparative performance. ACS NSQIP is very prescriptive in assigning the variables, so the data is valid.

Every six months the hospital receives risk adjusted data to share with surgeons and hospital administration.

Five hospitals are participating in the program. One hospital lost their SCR during training and their new SCR was hired in November 2016. Over the grant period, there were eighteen collaborative meetings (10 in 2015 and 8 in 2016). In addition, there were six SCR monthly meetings held in 2016. Six people were trained as SCRs' including the project coordinator and a seventh started training November 7th. All surgeon champions and SCRs were invited to attend the collaborative meetings. The collaborative group felt there was value in inviting everyone.

Outcomes

As of October 2015, 2,459 cases were entered into the work station by the surgical clinical reviewers.

- 93.1% of cases had a 30 day follow up
- Median hospital length of stay was 2 days
- 147 adults (6%) had a preventable surgical complication
- Rates of post-operative readmissions - 3.5%
- Complications include wound infections, or dehiscence, respiratory infections or respiratory events, urinary infections, cardiac events, central nervous system events, blood transfusions, sepsis, and mortality.

The average added cost of a complication ($11,000) is calculated by ACS NSQIP. The cost of 147 adults experiencing a surgical complication @ $11,000 = $1,617,000 in additional direct health care costs. This cost does not factor in the socioeconomic impact of an adult experiencing a complication.

ACS NSQIP has over 700 hospitals in their database allowing Vermont hospitals to benchmark their surgical outcomes with other hospitals of similar size and type. In comparison

to over 1,000,000 cases in the ACS NSQIP database, Vermont hospitals collectively perform better. However, the hospitals in the Vermont collaborative are small and rural and critical access hospitals, so the surgeries performed may be lower risk in comparison to other hospital cases included in the workstation. The table below illustrates the Vermont collaborative metrics on the left compared to the 1,032,738 cases in the ACS NSQIP work station on the right.

Number of Cases[1]	2,459		1,032,738	
Post-op Occurrence Rate	6.0%		10.6%	
30-Day Documented Follow-Up Rate	93.1%		92.7%	
I. Outcome				
Was there a readmission for any reason within 30 days of the principal procedure?	3.5%		5.3%	
Did the patient have an unplanned return to the operating room for a surgical procedure, within the 30 day postoperative period?	1.9%		2.8%	
Median Hospital LOS, Days (IQR)	0	2	1	3

Sustainability

Five hospitals will be continuing with ACS NSQIP beyond the grant period. Surgeons involved in the collaborative will share their findings with colleagues. Temporarily, VPQHC will remain involved as facilitator of meetings and coordinating center. The VSSSC is exploring an opportunity to work on a surgical project that will involve other hospitals. The collaborative group may decide to present findings and their experience at the ACS NSQIP National Conference in 2017. MVP provided hospitals with a benefit for enrolling in NSQIP. The VSSSC explored and will continue to explore partnership opportunities with other health care organizations or insurance groups with the purpose of securing additional funding.

Conclusion

ACS NSQIP provides a guide path for hospitals to transition from fee for service to pay for performance. Hospitals enrolled in ACS NSQIP are better positioned to review clinical outcomes and identify best practice to improve surgical care and improve patient safety, thereby decreasing hospital costs. The project was able to establish an infrastructure for the implementation of a clinical management system designed to improve quality and patient safety, ultimately reducing costs of surgical care across the State of Vermont. Hospitals participating in ACS NSQIP are able to collect data across specialties, perform a comparative analysis with other hospitals in the Vermont collaborative, and other hospitals nationally. While Vermont hospitals participating in ACS NSQIP perform well in many areas, there is still an opportunity to improve outcomes, decrease costs, and make surgical care safer.