Improving Surgical Care in Ontario

The Ontario Surgical Quality Improvement Network

Health Quality Ontario

Let's make our health system healthier

Ontario
Health Quality Ontario

About Us

Health Quality Ontario is the provincial advisor on the quality of health care. We are motivated by a single-minded purpose: **Better health for all Ontarians**.

Who We Are.

We are a scientifically rigorous group with diverse areas of expertise. We strive for complete objectivity, and look at things from a vantage point that allows us to see the forest and the trees. We work in partnership with health care providers and organizations across the system, and engage with patients themselves, to help initiate substantial and sustainable change to the province's complex health system.

What We Do.

We define the meaning of quality as it pertains to health care, and provide strategic advice so all the parts of the system can improve. We also analyze virtually all aspects of Ontario's health care. This includes looking at the overall health of Ontarians, how well different areas of the system are working together, and most importantly, patient experience. We then produce comprehensive, objective reports based on data, facts and the voices of patients, caregivers and those who work each day in the health system. As well, we make recommendations on how to improve care using the best evidence. Finally, we support large scale quality improvements by working with our partners to facilitate ways for health care providers to learn from each other and share innovative approaches.

Why It Matters.

We recognize that, as a system, there is much to be proud of, but also that it often falls short of being the best it can be. Plus, certain vulnerable segments of the population are not receiving acceptable levels of attention. Our intent at Health Quality Ontario is to continuously improve the quality of health care in this province regardless of who you are or where you live. We are driven by the desire to make the system better, and by the inarguable fact that better has no limit.

Table of Contents

Introduction

Initiated by surgical leaders and driven by members, the Ontario Surgical Quality Improvement Network (the Surgical Network) was designed to bring together surgical teams from all specialties and hospital types from across the province to form a community dedicated to quality improvement in surgery for better patient outcomes. Using high-quality clinical data collected through the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP), members of the Surgical Network identify opportunities to improve the quality of surgical care for their patients. Fifty-eight percent of adults who have surgery in Ontario are now discharged from a hospital participating in ACS NSQIP.

The Surgical Network hopes to accelerate improvements by sharing and learning how to use ACS NSQIP data through a Community of Practice.

The full impact of the Surgical Network, including its effect on improving patient experiences and clinical outcomes, cannot be definitively assessed until July 2018. This report reflects the progress of the Ontario Surgical Quality Improvement Network over its first 18 months, including early indicator results, member experiences, and early provincial spread of the program.

The Ontario Surgical Quality Improvement Network

The Ontario Surgical Quality Improvement Network (the Surgical Network) is a community of surgical teams and hospitals across Ontario who share a commitment to surgical quality and improved outcomes for patients requiring surgery in Ontario. With significant investment from the Ministry of Health and Long-Term Care, Health Quality Ontario launched the Surgical Network in January 2015 to support a group of hospitals invested in surgical quality improvement.

One of the most invaluable benefits of joining the Surgical Network is membership to the Ontario collaborative of ACS NSQIP (NSQIP-ON).

For the first time in Ontario, surgical teams participating in NSQIP-ON have access to high-quality clinical data that can be accurately compared against data at the local, provincial, national, and international levels. This allows providers to benchmark top performers, and can be used to identify areas for improvement and track progress.

With the vision of improving surgical outcomes for patients, the key component of the Surgical Network Implementation Strategy (Figure 1) was to bring together independent surgical teams from across Ontario to drive improvement by providing access to and support for the following: high-quality clinical data from ACS NSQIP; the best evidence in surgical care; and proven quality improvement methodology.

The Surgical Network strives to build relationships that foster collective learning, sharing, and the opportunity to innovate in a Community of Practice.

FIGURE 1
Surgical Network Implementation Strategy

Introducing the American College of Surgeons National Surgical Quality Improvement Program to Ontario

> *While there is a definite need and value for administrative data, the clinical data available through ACS NSQIP provides a much richer picture of the patient experience and more clearly defines areas requiring improvement.*
>
> — **Dr. Timothy Jackson**, Provincial Surgical Lead, Health Quality Ontario, and Surgeon Champion, University Health Network

The American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) provides a standardized approach and online platform for participating hospitals to capture high-quality clinical data. ACS NSQIP is a proven methodology, with several studies demonstrating that clinical outcomes data are more meaningful than traditional administrative databases for surgical quality improvement. Already well-established in the United States, ACS NSQIP also has the capacity to be delivered at scale across Ontario.

ACS NSQIP AT A GLANCE

By joining ACS NSQIP, hospitals are committing to collect and share non-personal health information from randomly assigned surgical patients. The *Surgeon Champion* acts as the main spokesperson, advocating for participation in the Surgical Network and use of ACS NSQIP in their hospital. The *Surgical Clinical Reviewer* collects data for the hospital's surgical quality improvement indicators.

Types of ACS NSQIP data available:

- Unadjusted ("raw") data for participating hospitals, which can be accessed anytime through the ACS NSQIP online platform
- Statistically analyzed, risk-adjusted data reports, which are provided twice a year for the entire NSQIP-ON collaborative, and individual hospital reports for each hospital site in the collaborative

JANUARY 2015

Four early-adopter organizations (five hospital sites) implement ACS NSQIP: Hamilton Health Sciences Centre, Sunnybrook Health Sciences Centre, The Ottawa Hospital, and the University Health Network

MARCH 2015

Surgical Network launch: 13 new hospitals join, for a total of 18 hospital sites in NSQIP-ON

Members begin to collect and review their data and identify opportunities for improvement

MAY 2015

JULY 2015

SEPTEMBER 2015

Members establish their quality improvement teams and begin to plan quality improvement initiatives using the Surgical Quality Improvement Plan as a template

NOVEMBER 2015

THE ONTARIO COLLABORATIVE OF ACS NSQIP (NSQIP-ON)

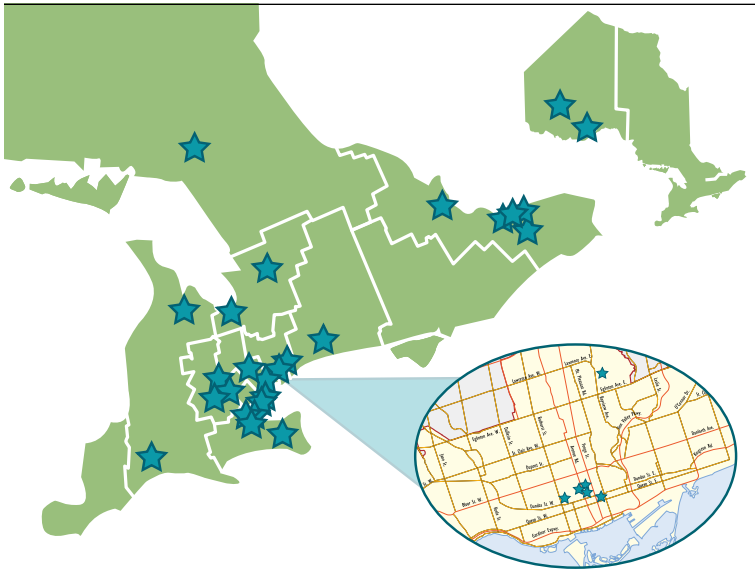
Ontario hospitals who participate in ACS NSQIP through the Surgical Network are part of the Ontario collaborative of ACS NSQIP called "NSQIP-ON." NSQIP-ON members can use their data to:

- Identify opportunities for improvement at the hospital and provincial levels
- Inform quality improvement strategies and activities
- Track changes in their surgical outcomes based on quality improvement initiatives
- Share results with other members of the NSQIP-ON collaborative
- Establish a mechanism for continuous quality improvement in surgery

Historically, it has taken 3 years for the average hospital participating in ACS NSQIP to realize improvement. Members of Ontario's Surgical Network hope to accelerate their own progress through this collaborative approach.

In less than 2 years, Surgical Network members have made impressive progress in the preliminary spread of ACS NSQIP across Ontario (Figure 2). The enthusiasm for the program has been obvious, and the originally anticipated demand for the Surgical Network doubled within the first 18 months.

FIGURE 2
Geographic spread of NSQIP-ON hospitals



White lines demarcate Local Health Integration Networks in the province.

> *"Our top priority is to make sure our patients receive the best surgical care possible. By voluntarily participating in this program, our hospital is joining forces with other leading hospitals to uncover new ways to help our patients get the best results from surgical treatment."*
>
> — **Dr. Michael Lisi**, Surgeon Champion and Chief of Staff, Collingwood General and Marine Hospital

JANUARY 2016
Members test, review, and adjust their quality improvement initiatives (as needed) and capture these changes in their Surgical Quality Improvement Plans

MARCH 2016
15 additional hospital sites join NSQIP-ON between March 2016 and July 2016

MAY 2016

JULY 2016

SEPTEMBER 2016
Members begin to spread their early wins and plan for year 2 of the program through the creation of their annual Surgical Quality Improvement Plan

JANUARY 2017
Begin to spread and sustain the Surgical Network

WHAT HAVE WE LEARNED FROM THE ACS NSQIP DATA FOR ONTARIO?

Figure 3 highlights lessons learned from NSQIP-ON data. For example, compared to all other ACS NSQIP hospitals, the Ontario collaborative is performing relatively well in many areas, including the prevention of:

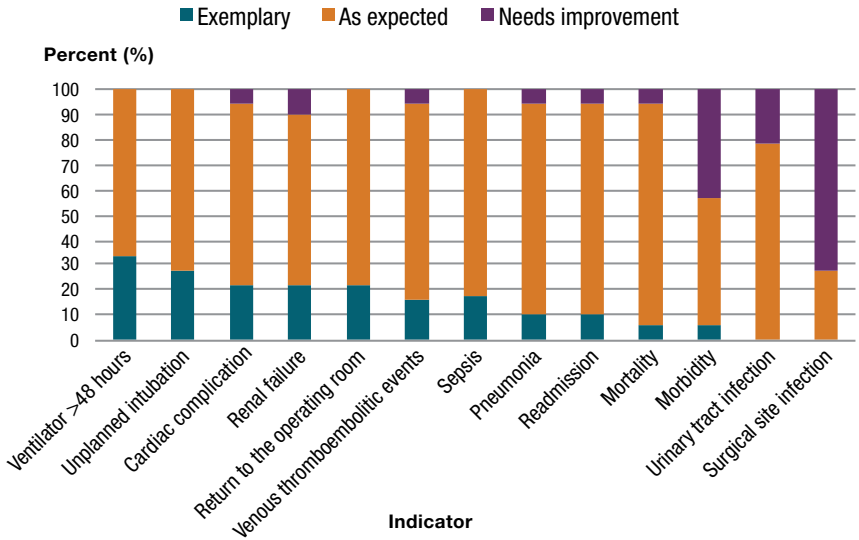
- Prolonged ventilation (ventilator > 48 hours)
- Unplanned intubation
- Return to operating room
- Sepsis after surgery

It is also clear that there is room for improvement for some post-surgery morbidity indicators, specifically surgical site infection (SSI) and urinary tract infection (UTI).

"The difference between the NSQIP data and the data we have access to in our system is that NSQIP gives the full picture. For example, there are really good systems in place to measure wait times. But knowing how well we can process people doesn't tell us about the quality of the care. Now, with NSQIP, we have that ability to look at the quality of surgical care."

— **Lisa MacDuff**,
Surgical Clinical Reviewer,
North Bay Regional
Health Centre

FIGURE 3
Ontario Surgical Quality Improvement Network (NSQIP-ON) performance between January and December 2015



Data source: July 2016 NSQIP-ON Semi-Annual Report.

22,437
Ontario surgical cases analyzed in the July 2016 Semi-Annual Report from ACS NSQIP

58%
of adults who have surgery in Ontario will be discharged from a hospital participating in ACS NSQIP

THE SURGICAL NETWORK BY THE NUMBERS

12 LHINs are currently represented (geographic spread shown in Figure 2)

50 member hospitals

337 individuals

33 hospitals engaged in the NSQIP-ON collaborative (31 successfully joined and 2 are currently joining)

- **14** academic hospitals
- **13** community hospitals
- **6** small/rural hospitals

27 NSQIP-ON hospitals have created a Surgical Quality Improvement Plan

24 NSQIP-ON hospitals engaged in the Implementing Enhanced Recovery After Surgery (iERAS) program

20 NSQIP-ON hospitals have enrolled in the Institute for Healthcare Improvement Open School

13 NSQIP-ON hospitals have participated in the Improving and Driving Excellence Across Sectors (IDEAS) program

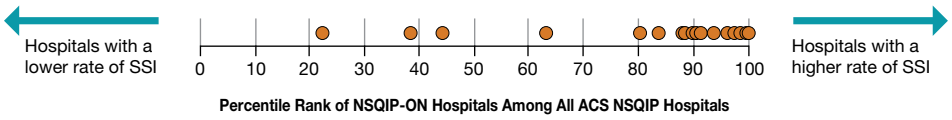
**Data as of December 31, 2016.*

Improving Surgical Quality: Surgical Site Infection

OPPORTUNITY FOR IMPROVEMENT IN ONTARIO

Ontario hospitals participating in ACS NSQIP (NSQIP-ON) have an opportunity for improvement in the area of surgical site infection (SSI) rates. Looking closer at data from ACS NSQIP we can see that post-operative SSI rates vary greatly across the province. While some hospitals are performing relatively well, the majority have the opportunity to improve (Figure 4).

FIGURE 4
Bubble plot of NSQIP-ON hospitals' post-operative SSI rates,* January-December 2015.



Data source: July 2016 NSQIP-ON Semi-Annual Report.
**Individual hospitals can identify their own "bubble" on the line to see their performance relative to that of their peers.*
SSI – surgical site infection.

CHANGE IDEAS FOR IMPROVING CARE

Surgical site infection was identified as a quality improvement focus by 13 NSQIP-ON collaborative hospitals. With support from the Surgical Network, surgical teams planned, implemented, and evaluated change ideas. Change ideas are founded on best evidence in surgery, and span the full patient journey from pre-operative to post-operative care (Table 1).

TABLE 1
Quality improvement activities used by Surgical Network members to reduce SSI rates

Enhanced Recovery After Surgery (ERAS)	
• Patient education and counselling	• Early mobilization
• Reduced fasting duration before surgery	• Fluid management
• Goal-directed fluid management	• Early feeding
Canadian Patient Safety Institute National SSI Prevention Audit*	
• Appropriate glucose control	• Prophylactic antibiotic redosing according to guidelines
• Bathing	• Temperature control at end of surgery
• Prophylactic antibiotic administration	
• Hair-removal method	
Safer Healthcare Now! Surgical Site Infection Prevention Interventions	
• Appropriate use of prophylactic antibiotics	• Peri-operative normothermia
• Maintenance of peri-operative glucose control	• Appropriate hair removal
Other Change Ideas	
• Standardization, including protocols; order sets; documentation	• Building effective teams
	• Staff and patient education

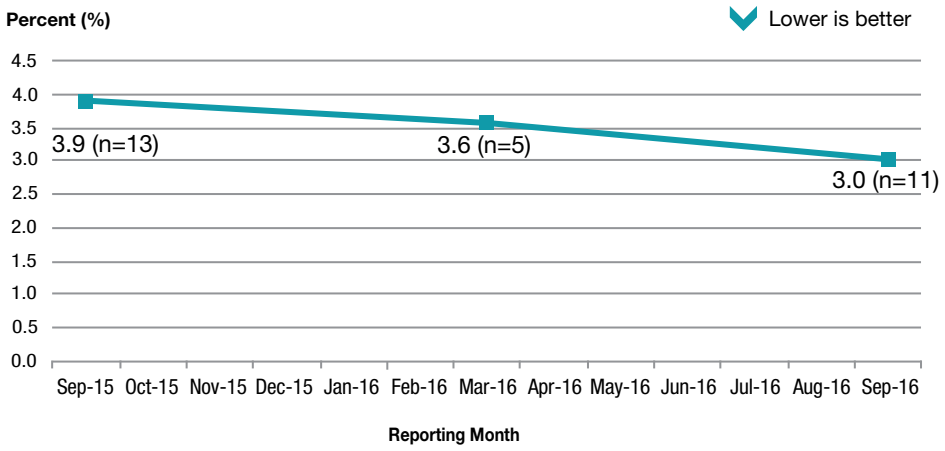
**Audit and feedback process used to improve performance.*
SSI – surgical site infection.

Figure 5 shows an overall improvement in SSI rates based on the Surgical Network's first year of Surgical Quality Improvement Plans (SQIPs). After implementing their planned change ideas to reduce SSI (September 2015 to September 2016), members noted the following successes:

- In September 2015, the average SSI rate reported in members' SQIPs was 3.9%
- At the 6-month progress period in March 2016, the average reported rate had decreased to 3.5%
- At year-end in September 2016, the average SSI rate reported had decreased to 3.0%

Overall, seven of 13 sites reported an improvement, with an average decrease in SSI rate of 10%. Four of these sites met or exceeded their targets.

FIGURE 5
Ontario Surgical Quality Improvement Network average self-reported SSI rate



Data source: September 2015-September 2016 Surgical Quality Improvement Plans, including both unadjusted and risk-adjusted data from ACS NSQIP. An n value is indicated for each data point.
SSI – surgical site infection.

CUTTING SSI RATES IN HALF (HALTON HEALTHCARE, OAKVILLE TRAFALGAR MEMORIAL HOSPITAL)

After starting their ACS NSQIP data collection in April 2015, Dr. Duncan Rozario, Surgeon Champion at Oakville Trafalgar Memorial Hospital, identified surgical site infections as a priority issue for his hospital. With SSI rates averaging 2.6% in the first 6 months of data collection, the surgical team learned that they were performing in the bottom 20% of all Ontario hospitals participating in ACS NSQIP.

Dr. Rozario and his team promptly reviewed the surgical literature for best practices and initiated a comprehensive surgical quality improvement program across the entire hospital, which included the following change ideas:

- Optimize patient preparation for surgery: decolonization, hair removal, and pre-surgical skin preparation
- Apply minimally invasive approaches wherever possible
- Standardize antibiotic prophylaxis
- Use wound protectors more broadly and implement dedicated wound closure trays
- Minimize operating room traffic

Since initiating these changes, the team has successfully cut their SSI rates in half—holding steady at 1.3% for the 6 months ending July 31, 2016. This is a dramatic improvement in a very short time frame, and Dr. Rozario credits organizational and interprofessional team support for their remarkable success:

"With multiple levels of institutional and staff support, we were able to rapidly implement these changes for our surgical patients and demonstrate a reduction in SSI rates."

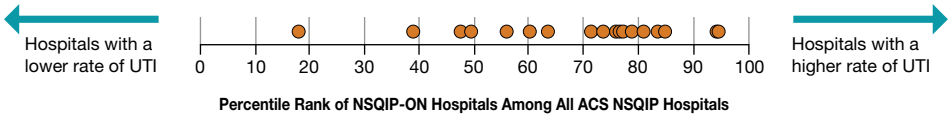
Dr. Rozario and his team are continuing to monitor their SSI rates, using ACS NSQIP data to ensure their success is maintained.

Improving Surgical Quality: Urinary Tract Infection

OPPORTUNITY FOR IMPROVEMENT IN ONTARIO

Ontario hospitals participating in ACS NSQIP (NSQIP-ON) have an opportunity for improvement in the area of urinary tract infection (UTI) rates. Similar to the occurrence of post-operative SSIs, a closer look at the ACS NSQIP data for post-operative UTI rates reveals variation across the province. While some hospitals are performing relatively well, the majority have the opportunity to improve (Figure 6).

FIGURE 6
Bubble plot of NSQIP-ON hospitals' post-operative UTI rates,* January-December 2015



Data Source: July 2016 NSQIP-ON Semi-Annual Report.
**Individual hospitals can identify their own "bubble" on the line to see their performance relative to that of their peers.*
UTI – urinary tract infection.

CHANGE IDEAS FOR IMPROVING CARE

Urinary tract infection was identified as a quality improvement focus by four NSQIP-ON collaborative hospitals. With support from the Surgical Network, surgical teams planned, implemented, and evaluated change ideas to reduce post-operative UTI rates at their hospitals. Summarized in Table 2, these change ideas were founded on best evidence in surgery, and span the full patient journey from pre-operative to post-operative care.

TABLE 2
Quality improvement activities used by Surgical Network members to reduce UTI rates

Enhanced Recovery After Surgery (ERAS)
• Patient education and counselling • Reduced fasting duration before surgery • Goal-directed fluid management • Early mobilization • Fluid management • Early feeding
Choosing Wisely Canada's Lose the Tube toolkits for the appropriate use of urinary catheters in hospitals
• Restrictive insertion of urinary catheters in operating rooms • Early removal of urinary catheters on inpatient wards
Staff Education

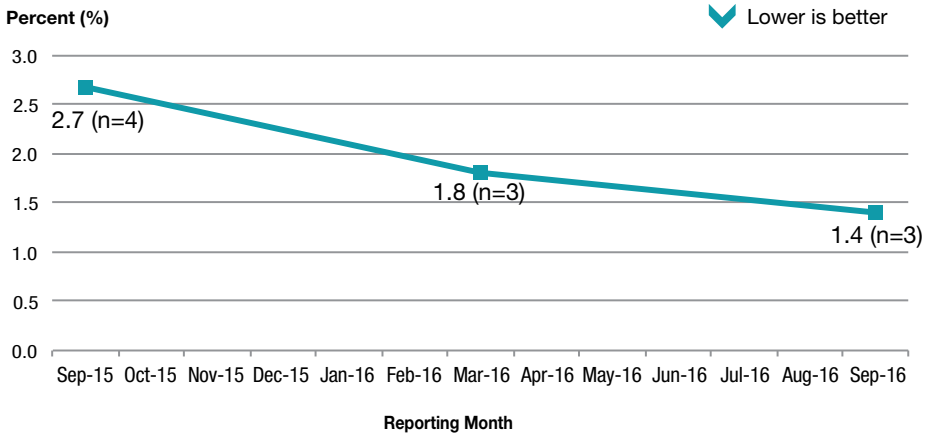
UTI – urinary tract infection.

Figure 7 shows an overall improvement in UTI rates based on the Surgical Network's first year of Surgical Quality Improvement Plans (SQIPs). After implementing their planned change ideas to reduce UTI (September 2015 to September 2016), members noted the following successes:

- In September 2015, the average UTI rate reported in members' SQIPs was 2.7%
- At the 6-month progress period in March 2016, the average reported rate had decreased to 1.8%
- At year-end in September 2016, the average UTI rate reported had decreased to 1.4%

Overall, three of four sites reported an improvement, with an average decrease in UTI rate of 51%. One of these sites exceeded its target.

FIGURE 7
Ontario Surgical Quality Improvement Network average self-reported UTI rate



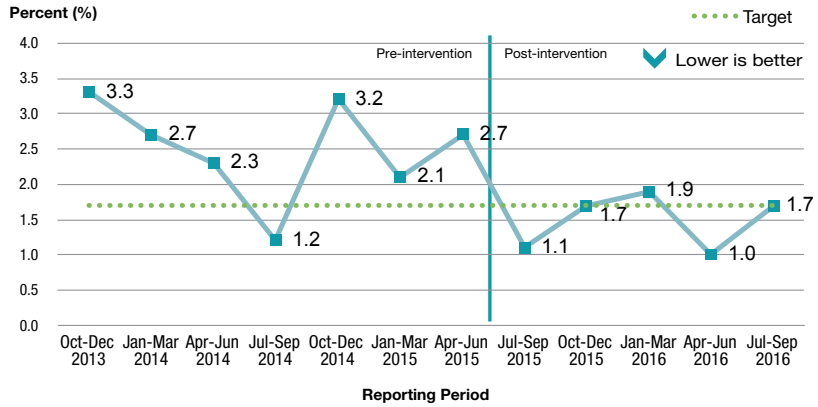
Data source: September 2015-September 2016 Surgical Quality Improvement Plans, including both unadjusted and risk-adjusted data from ACS NSQIP. An n value is indicated for each data point.
UTI – urinary tract infection.

EXCEEDING EXPECTATIONS IN UTI WITH THE SURGICAL NETWORK (SUNNYBROOK HEALTH SCIENCES CENTRE)

As a leading surgical facility in Canada and one of the early adopter hospitals of ACS NSQIP before the Surgical Network launched, Sunnybrook Health Sciences Centre in Toronto was shocked to learn that post-surgery urinary tract infection (UTI) in patients was a problem. Sunnybrook joined ACS NSQIP in 2013 and learned that their 2012/13 UTI rates were worse than those of their peers at the local (Toronto), provincial, and Canadian levels, and made this a priority area for improvement.

With strong support in quality improvement at the hospital and from Surgeon Champion Dr. Avery Nathens, they invested at least 6 months to capture and study the data and their processes to really understand the root causes of the problem, and have lowered their UTI rates from 3.3% (October to December 2013) to 1.7% (July to September 2016) (Figure 8).

FIGURE 8
Sunnybrook Health Sciences Centre post-surgical UTI rates, October 2013-September 2016



Data source: ACS NSQIP on-demand risk adjusted smoothed rate report.
UTI – urinary tract infection.

Although it began its quality improvement initiatives for UTI before the Surgical Network began, Sunnybrook Health Sciences Centre recognized the added value of the community available through the Surgical Network. Mahsa Sadeghi, Manager of Surgical Performance Improvement, was instrumental in bringing ACS NSQIP to that hospital. She had previous experience working with ACS NSQIP before joining the Surgical Network in 2015, and was enthusiastic about being able to connect with other teams targeting similar areas for improvement.

"It's amazing how things that are invented somewhere else can be shared so you don't have to reinvent the wheel; it speeds up the process for improvement a lot."

With a target rate of 1.7% and an "expected rate" from ACS NSQIP of 1.9%, the team has not only achieved its goal, but is hoping to bring down UTI rates even further. A plan is in place to start new initiatives in the coming year with the support of other teams in the Surgical Network.

Change ideas to reduce UTI at Sunnybrook from 3.3% to 1.7%:

1. Catheter Guideline: The development of a guideline based on a literature review for appropriate catheter use in surgery

2. Catheter Insertion Training: The creation of a new training program for medical students on proper catheter insertion

3. Medical Directive: The development of a new Medical Directive that empowered nurses to remove catheters without a doctor's order when certain criteria were met

INVOLVING THE PATIENT IN THE TEAM: A SPOTLIGHT ON THE PATIENT ADVISOR ROLE

David Bennitz describes himself as a "frequent flyer" at The Ottawa Hospital due to some chronic conditions and a cancer diagnosis 5 years ago when he was told he would have only 6 months to live. Thankfully, after a 24-hour surgery, 5 weeks in hospital, and chemotherapy and radiation treatments, David has been cancer-free and is currently fulfilling one of his life goals of working abroad at the World Health Organization.

After David's recovery, he was asked if he would consider becoming a Patient Advisor for the surgical department of the hospital—a volunteer, participating in various hospital committees that would seek his opinion and advice. At first, David wasn't sure what he could add to the expert panel of executives, surgeons, and nurses around the committee tables, but he soon recognized he had a unique voice and an opinion about his care as a surgical patient, which they were eager to hear. David has offered the patient's perspective on anything ranging from hospital policy to patient brochures and forms to procedural flow. One change he was involved in included the decision to have "rounding" with the surgeons and nurses at the bedside so that the patient could be involved in the discussion of his or her progress and treatment plan, ensuring everyone could be part of the same conversation.

"It has to be a team approach and the patient has to be part of the team. And I think it's great that they're bringing in family members because they're living through the treatment too."

The Ottawa Hospital has patient advisors across several programs, and David not only feels that the hospital truly values his opinion, but he also sees his input reflected in changes made throughout the surgical department.

Establishing a Surgical Community of Practice

> *I think that when taking on such an ambitious provincial project you absolutely need a central driving force such as the Surgical Network. Every hospital is at a different point in their quality improvement journey in terms of capacity and sophistication, so the resources made available are very valuable. If it weren't for this program, I don't believe the province would be where it is now in terms of the number of surgical quality improvement projects based on robust data.*
>
> — **Clare O'Connor**, Surgical Clinical Reviewer and Patient Safety Specialist, Hamilton Health Sciences Centre

The Surgical Community of Practice shares a passion for improving patient experience and outcomes. By coming together on a regular basis, members of this community develop relationships that drive collective learning, sharing, and the opportunity to innovate in surgical quality improvement (Figure 9).

The original 18 NSQIP-ON collaborative hospitals that joined in early 2015 consisted of 160 individuals, including Surgeon Champions, Surgical Clinical Reviewers, surgeons, residents, nurses, and quality improvement staff. Surgical Network membership has since grown to 50 hospitals (33 hospitals participating in NSQIP-ON) and 337 individuals.

Relationships were founded on regular touchpoints, both in person (conferences, workshops, and face-to-face meetings) and virtually (teleconferences, webinars, email, and the Surgical Network online platform) (Table 3).

FIGURE 9
Designing the Surgical Network Community of Practice

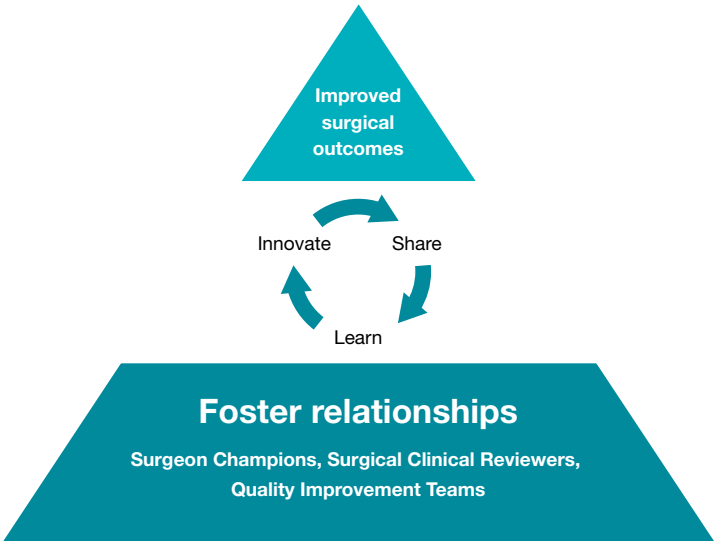


TABLE 3

Support available to the Surgical Community of Practice

In Person	
Ontario Surgical Quality Improvement Conference*	A forum for members of Ontario's surgical community to connect in person, to support the use of ACS NSQIP data to inform quality improvement strategies, and to learn from each other's experiences of how collaboration can accelerate progress. This event has elicited enthusiasm for change in Ontario. • 73 individuals from 15 member hospitals attended this event in 2015 (approximately 235 individuals from 43 hospitals and 5 associations overall) • 42 individuals from 17 member hospitals attended in 2016 (approximately 300 individuals from 70 hospitals and 13 associations overall)
Workshops*	Members from 18 hospitals met at a one-day Ontario collaborative workshop in 2016 to develop a common approach for introducing the Comprehensive Unit-based Safety Program into surgical programs across Ontario hospitals.
ACS NSQIP Annual Conference	Attended by ACS NSQIP hospitals across the United States, Canada, and abroad, this forum allows surgical professionals to discuss and apply the most recent knowledge pertaining to national and local surgical quality initiatives.
Virtual	
Webinars and teleconferences	These touchpoints allow members to connect virtually to provide education, support, and an opportunity to share change ideas with one another. • More than 50 webinars and teleconferences have been held to date, and each were well attended by members
Online platform	The online platform houses shared quality improvement tools and resources, clinical best practices in surgery, and a space for members to connect virtually. The platform will continue to evolve and there is an opportunity to create a more interactive space for users. • ~204 visits each month (average) • 66 forum discussions • 103 shared documents supporting surgical quality improvement

**Member participation reflects the original 18 Surgical Network hospitals.*

ACCELERATING PROGRESS THROUGH THE SURGICAL NETWORK (SURGEON CHAMPIONS)

Dr. Michelle Davey, Surgeon Champion and Chief of Surgery at Winchester District Memorial Hospital (WDMH), and her colleagues were thrilled to join the Surgical Network and bring ACS NSQIP to their small rural hospital in eastern Ontario. Dr. Davey describes their participation in the Surgical Network as "a very rewarding experience" for the hospital; the community has helped them to establish a framework for implementing quality improvement measures in a small centre.

For Dr. Davey, being part of the Surgeon Champion group has been a great opportunity to share ideas and to accelerate local and collective progress:

"The teleconferences were a great opportunity to exchange with like-minded people in all sorts of institutions. We don't have to feel isolated, and Dr. Jackson [Provincial Surgical Lead] was great about highlighting projects in different centres so we didn't have to reinvent the wheel. It fast-tracked some of the projects in various centres in a way that we wouldn't have been able to do if we weren't part of a collaborative."

A group of dedicated front-line interprofessional and interdepartmental staff at WDMH meets regularly to discuss quality improvement. Over the past year, they have collaborated to improve patients' preparedness for the operating room, including the development of a pre-operative auditing checklist. They were able to increase self-reported patient preparedness from less than 60% to more than 90%. With these early successes, WDMH is ready to take on new and bigger challenges.

"In one of our last meetings as a group, we asked 'what are the highlights?' and without needing to prod, individuals said 'I feel like we're walking the values of our hospital'; 'I feel like we've broken down barriers between departments'; 'I feel that we've had difficult conversations that were needed to be had.' I think these are the first steps towards establishing an actual presence of quality improvement in the institution."

LEARNING FROM THE COLLECTIVE STRENGTHS OF THE COMMUNITY (SURGICAL CLINICAL REVIEWERS)

Although there are currently 47 Surgical Clinical Reviewers (SCRs) across the Surgical Network, no two SCRs will fill the role in the same way. Each SCR is armed with unique experiences, professional backgrounds, hospital teams and environments, and sets of strength that distinguish each one. However, the collective knowledge and skills of the SCR Community of Practice has proven to be much more than the sum of its parts.

Mentoring new members

Gabi Avni was one of the first SCRs in the province, starting at the Ottawa Hospital in 2010 before the Surgical Network launched, then moving to Queensway Carleton Hospital in 2015 with the support of the Surgical Network. Having implemented ACS NSQIP, both with and without the Surgical Network, Gabi provides a unique perspective on the value of the collective:

"After the network started, I knew there was a larger group I could ask questions to. I wasn't on my own looking things up for myself – I could ask about something and someone could always help, or someone knew someone who would be able to help. And I was more than happy to help anyone I could, to save them time, and to provide that reassurance and guidance as a mentor."

Enthusiastic about change and quality improvement, Gabi is eager to share her knowledge and experience with new SCRs onboarding to the program. She has created a booklet to help guide new SCRs in their role and is always available to help others.

Mentee turned mentor

Although Lisa MacDuff, SCR at the North Bay Regional Health Centre, had a strong background in quality improvement before starting in her SCR role in 2015, she recognized the value of connecting with others in the Surgical Network. Lisa made a point to network with other SCRs at conferences, and went out of her way to meet Gabi, who became an influential mentor.

Lisa describes the support of Gabi and several other members as being foundational in her success as an SCR and in her ability to support and help drive quality improvement initiatives at her hospital. Lisa has now become a mentor herself, and has presented two SCR training presentations to help onboard new members.

Lisa also emphasizes the importance of taking advantage of networking opportunities to immerse oneself in the community and to recognize that the individual work done by hospitals is part of a bigger picture:

"Sometimes we wonder, 'Are we the only hospital that's thinking about this?' and you get out there and realize there are a lot of hospitals thinking the same thing. That is the value, not just in the Ontario collaborative, but in Dr. Jackson [Provincial Surgical Lead] and the people at Health Quality Ontario who are making it possible for us to become part of this larger network. I think it's just going to push it into a whole new era of improving surgery."

Improvement Activities: Implementing Enhanced Recovery After Surgery

Enhanced Recovery After Surgery (ERAS) pathways are designed to improve recovery times and outcomes in patients having elective surgery. They were initially used in patients having elective colorectal surgery, but over time they have been adopted for a range of surgical procedures.

With the support of an Adopting Research to Improve Care (ARTIC) project grant, a tailored knowledge translation strategy – the Implementation of Enhanced Recovery After Surgery, or iERAS – was developed by the Best Practice in Surgery program at the University of Toronto. It was been successfully rolled out in 15 hospitals across Ontario.

Surgical Network members can choose to capture ERAS variables in the ACS NSQIP data and track the progress of the program in their hospitals. In combination with ACS NSQIP data, quality improvement initiatives, and the Surgical Community of Practice, iERAS is expected to decrease peri-operative stress, post-operative pain, gut dysfunction, and infection, and promote early recovery in Ontario's surgical patients. Reduced post-operative complications and accelerated recovery will lead to earlier discharge rates across hospital sites.

As a result of the Surgical Network's enthusiasm for this program, the Best Practice in Surgery group is working closely with Surgical Network members to expand the ERAS guidelines to all surgical specialties, and is exploring how to leverage the ERAS data through ACS NSQIP to support this broader application.

USING ACS NSQIP DATA TO SUPPORT THE IMPLEMENTATION OF ERAS (GRAND RIVER HOSPITAL, KITCHENER WATERLOO CAMPUS)

The surgical team at Grand River Hospital, Kitchener Waterloo campus, prepared for the implementation of ERAS by selecting ERAS champions, capturing and reporting on the NSQIP ERAS variables, and providing staff education. Still in the early stages of implementing ERAS, the team has begun to use their data to identify opportunities for improvement. These data will also be used for feedback as practice changes related to ERAS are rolled out in surgical areas, spearheaded by the hospital's new Surgeon Champion Dr. Monica Torres-Jimenez.

> *"The collaboration between Best Practice in Surgery and the Surgical Network provides a great opportunity to improve the quality of surgery in the province. We know that providing feedback to providers and identifying gaps in care is an important step. However, providers often are uncertain about what changes should be implemented. Thus, using NSQIP to audit performance and ERAS guidelines to guide changes in care lead to improved outcomes in surgical patients."*
>
> — **Dr. Robin McLeod**, Lead, Best Practice in Surgery

Improvement Activities: Creating a Surgical Quality Improvement Plan

As one of the first steps in their quality improvement journeys, Surgical Network members reviewed their ACS NSQIP data to identify areas for improvement and strategized a plan to address those issues. The development of Surgical Quality Improvement Plans (SQIPs) was one tool used to help teams use their data to create actionable ideas and goals.

Surgical Quality Improvement Plans were adapted from the provincially mandated Quality Improvement Plans (QIPs), and serve as blueprints for how a surgical team will strive to improve quality at their hospital. A SQIP is not required by law, but has been designed to help Surgical Network members:

- Identify areas for improvement (using their ACS NSQIP data)
- Implement evidence-based quality improvement initiatives and change ideas
- Track data, process measures, and outcomes to determine the effects of their quality improvement activities and change ideas

INCLUDING SURGICAL QUALITY IN HOSPITAL QUALITY IMPROVEMENT PLANS

Surgical teams are engaging with hospital leadership to advance the matter of surgical quality improvement in their organizations. In 2014/15, two hospital QIPs referenced surgical quality improvement using ACS NSQIP data for an indicator. Following the launch of the Surgical Network, this number grew to six hospitals in 2015.

USING SQIPs AS A TOOL TO INFORM CHANGE (PETERBOROUGH REGIONAL HEALTH CENTRE)

Dr. Lynn Mikula, Surgeon Champion at the Peterborough Regional Health Centre (PRHC), had learned about ACS NSQIP, and was a big advocate for her hospital's participation in the Surgical Network. With tremendous organizational support for quality improvement at her hospital, and several projects on the go, Dr. Mikula already had some experience in quality improvement, but was eager to join the provincial program.

"What we really lacked was data. We didn't have any good data to inform our decisions. So one real advantage of the network and our involvement in ACS NSQIP was that we've been able to finally properly assess how we're doing, and where we're doing well, and where we have some room for improvement. So it's enabled us to really take a critical look at ourselves and redirect our energies accordingly."

In the development of the SQIP, Dr. Mikula shares that one of their biggest challenges was feeling overwhelmed with the data and not knowing where to begin. In fact, one piece of advice she has for new hospitals developing their SQIPs is to start with something small and manageable, and recognize that not everything can be fixed at once.

Based on preliminary data, the PRHC SQIP reports a 29% reduction in vascular and orthopedic superficial surgical site infection (SSI) from July 2015 to July 2016. Although Dr. Mikula is proud of the work they have put into making these changes, she also recognizes that other factors can contribute to data variation in the early stages of any project (including small sample size and the learning curve involved in capturing the data). Motivated by early results, Dr. Mikula and her team are continuing their efforts to reduce SSI and look forward to the ongoing tracking of their results to ensure the efficacy of their initiatives.

Dr. Mikula also highlights how data are just a tool to help inform quality improvement activities, and must be used in conjunction with other tools and resources, such as SQIPs. It is the members of the surgical community who facilitate true change.

"The data in isolation would be great, but it would be hard to know what to do with it. And the community in isolation would be full of ideas, but it'd be hard to know how to act on them. They are absolutely integral to each other."

Building Capacity for Quality Improvement

Members of the Surgical Network comprised a wide range of experience in quality improvement, and it was important to build the collective capacity of the entire group to ensure the success and sustainability of the network. Many members took advantage of the learning opportunities available through the Surgical Network, including the three major programs highlighted below.

IMPROVING AND DRIVING EXCELLENCE ACROSS SECTORS (IDEAS) PROGRAM

Customized for the Ontario health system, the accredited IDEAS program Foundations of Quality Improvement (formerly called the Introductory Program) is jointly run by the University of Toronto, Health Quality Ontario, the Institute for Clinical Evaluative Sciences, and six Ontario Universities. This program is delivered in partnership with Ontario's medical schools.

Surgical Network members were encouraged to participate in the IDEAS program to apply newly learned quality improvement skills to a current quality improvement project.

COMPREHENSIVE UNIT-BASED SAFETY PROGRAM (CUSP)

Created by Johns Hopkins University Hospital, CUSP is a five-step program designed to empower staff to improve safety by addressing workplace culture and communication. The program encourages teams to learn from mistakes, improve safety culture, and improve systems to make them safer.

Surgeon Champions identified CUSP as a program that would bring value to surgical teams in Ontario. At a workshop, members discussed how CUSP could be integrated in Ontario hospitals and featured the work of The Ottawa Hospital, which has already been running the program for three years (see story on page 24). The group is currently strategizing its implementation.

INSTITUTE FOR HEALTHCARE IMPROVEMENT (IHI) OPEN SCHOOL

The IHI Open School e-learning modules focus on the fundamentals of quality improvement methodology for learners of all experience levels. The modules are available online, and can be accessed anytime at the members' convenience.

Enrollment in the IHI Open School online learning environment was encouraged for all Surgical Network members to develop a solid foundation in quality improvement methodology.

The first 18 hospitals completed two quality improvement capacity assessments: an initial assessment at the start of their participation and another after 18 months of participation in the Surgical Network. The assessment included a series of nine questions answered by Surgeon Champions, Surgical Clinical Reviewers, quality improvement team members, and/or surgical administrative staff. Baseline results were compared to progress results in order to measure for change in quality improvement capacity over the first 18 months of the Surgical Network.

Figure 10 shows that members self-reported an overall increase from 0.4 to 0.7 (on a scale from 0.0-1.0) in their surgical quality improvement capacity.

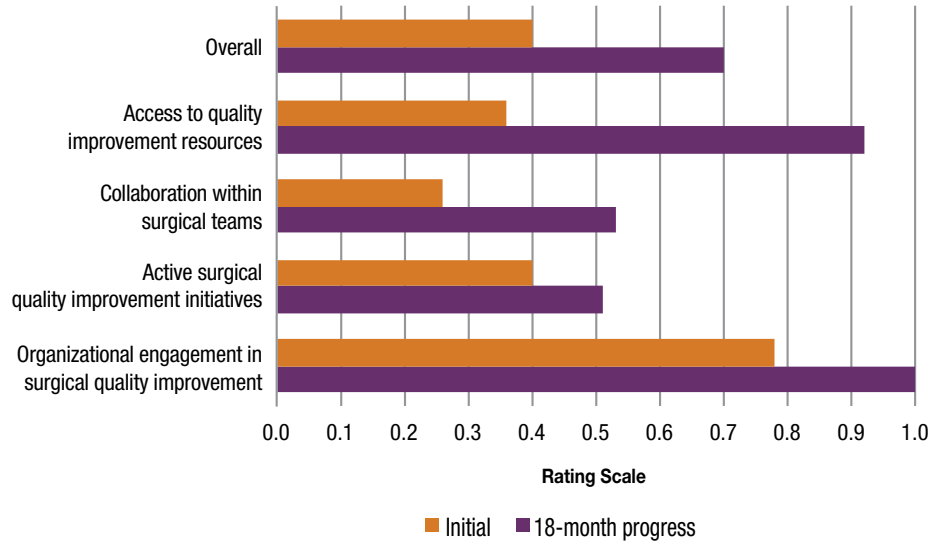
- In the area of access to quality improvement resources, this improvement represents a shift from 12 to 17 surgical teams reporting that they now have formal training in quality improvement methods, access to quality improvement resources, and/or support for their quality improvement efforts when needed

- In the area of collaboration within the surgical team, this improvement represents a shift from 8 to 13 hospitals reporting improvement in the collaboration occurring between surgical and quality improvement staff

- In the area of active surgical improvement initiatives, this improvement represents a shift from 13 to 17 surgical programs actively engaged in quality improvement work founded in the best available evidence

- In the area of organizational engagement in surgical quality improvement, this improvement represents a shift from 14 to 17 hospitals that engaged with their senior leadership in their hospital's annual QIP

FIGURE 10
Ontario Surgical Quality Improvement Network self-assessed quality improvement capacity after 18 months in the program



Data source: Health Quality Ontario quality improvement capacity assessment.

LAYING THE FOUNDATION FOR SURGICAL QUALITY IMPROVEMENT THROUGH CUSP (THE OTTAWA HOSPITAL)

As one of the largest academic hospitals in Canada, The Ottawa Hospital has been a leader in adopting innovative programs, such as ACS NSQIP and CUSP, to provide the best care and experience possible for its patients.

The Ottawa Hospital implemented the ACS NSQIP program in 2010 and had been collecting data for about a year when surgical staff saw that their SSI rates were relatively high compared to those of other hospitals in ACS NSQIP. Recognizing the need for a coordinated approach to drive change across its three hospital sites, the surgical program at the hospital decided to implement CUSP.

Emphasizing a team approach, CUSP empowers all staff to collaborate and problem-solve solutions to common issues by establishing a blame-free culture of safety in which front-line providers are encouraged to learn from mistakes. This program prompts a shift in staff attitudes, values, beliefs, and behaviours, laying the foundation for sustainable quality improvement. With the support of the surgeons, including Dr. David Schramm, Surgeon Champion and Dr. Husein Moloo, CUSP surgeon champion, and quality improvement staff, the team used their ACS NSQIP data to identify the surgical areas with the highest rates of SSI and planned a phased approach to implementing change ideas for reducing these rates.

They started with CUSP teams in just three surgical specialties in the summer and fall of 2013, and now have more than 20 CUSP teams across all three hospital sites. To date, 29 major interventions (and 89 supporting sub-interventions) related to reducing SSIs have been implemented.

An executive sponsor has powerfully described CUSP as ***"the single, most successful, large-scale improvement program that we've seen at The Ottawa Hospital."***

The Ottawa Hospital has estimated that the culture of safety driven by CUSP has led to their surgical program avoiding an impressive 256 SSIs every year.

The hospital continues to grow its CUSP teams and initiatives to improve patient care, truly living up to its vision to "provide each patient with the world-class care, exceptional service, and compassion we would want for our loved ones."

Looking Ahead

Although it is expected to take up to 3 years to realize the full benefits of the program, the Surgical Network has already shown great promise in improving the quality of surgical care for patients in Ontario. A preliminary evaluation of the first 18 months of the program has provided clear evidence that its current momentum should be maximized to further expand the Surgical Network across the province, and that continued support for both existing and new members is essential.

Focusing on the ultimate goal of improving care for people—surgical patients and their families and caregivers—the concept of bringing together the people involved in leading surgical care in Ontario has been revolutionary in the way we approach change in health care. As a collaborative, working together toward common goals, the Surgical Network has progressed to a stage where it is able to set targets as a group and implement change at the provincial level.

The Surgical Network has made impressive gains to date, and the enthusiasm of its current members and hospitals eager to join will drive the continued success of the program.

> *"As more and more surgical teams become active in the Surgical Network we are creating a pervasive culture of quality together, ultimately focused on improving patient outcomes."*
>
> — **Dr. Timothy Jackson**,
> Provincial Surgical Lead, Health Quality Ontario,
> and Surgeon Champion, University Health Network

> *"No one should feel that they're alone here. Everybody has challenges with the initial steps of getting ACS NSQIP into their hospital. Not only from the contractual aspect […] but also to get surgeon and other staff engagement. And there's lots to be learned from talking to colleagues, which is why the network is so valuable—no one should feel like they're doing this alone. They're not alone."*
>
> — **Dr. Avery Nathens**,
> Surgeon Champion and Surgeon-in-Chief,
> Sunnybrook Health Sciences Centre

Acknowledgments

Development of this report was led by an interdisciplinary team from Health Quality Ontario, including Tasleen Adatia, Tricia Beath, Tracy Lee, Pierrette Price-Arsenault, Shaon Saeed, Susan Taylor, Mina Viscardi-Johnson, Ansely Wong, and Dave Zago, with support from the Communications team.

Health Quality Ontario thanks the following individuals for their generous, voluntary contributions of time and expertise to support the Ontario Surgical Quality Improvement Network, including our Steering Committee members Lee Fairclough, Dr. Timothy Jackson, Dr. Robin McLeod, Dr. Husein Moloo, Dr. Avery Nathens, Dr. David Schramm, and Dr. Jeffrey Turnbull; our partners at the American College of Surgeons National Surgical Quality Improvement Program, the Best Practice in Surgery program, the Canadian Patient Safety Institute, and the University Health Network (including Warren Kiteley and Paul Santaguida); our colleagues at British Columbia's Surgical Quality Action Network; and Julie Bedford from BC Children's Hospital.

Health Quality Ontario also recognizes and thanks those who shared their stories and/or provided quotes for the report.

Most of all, thank you to our dedicated members, Surgeon Champions, Surgical Clinical Reviewers, and Quality Improvement teams.

NSQIP-ON COLLABORATIVE MEMBERS

Children's Hospital of Eastern Ontario
Collingwood General and Marine Hospital
Grand River Hospital, Kitchener Waterloo Campus
Grey Bruce Health Services, Owen Sound
Groves Memorial Community Hospital
Guelph General Hospital
Halton Healthcare, Oakville Trafalgar Memorial Hospital
Hamilton Health Sciences, Hamilton General Hospital
Hamilton Health Sciences, Juravinski Hospital
Health Sciences North/Horizon Santé-Nord, Ramsey Lake Health Centre
The Hospital for Sick Children (Sick Kids)
London Health Sciences Centre, University Hospital
Markham Stouffville Hospital Corporation, Markham Stouffville Hospital
McMaster Children's Hospital (Hamilton Health Sciences)
Muskoka Algonquin Healthcare, Huntsville District Memorial Hospital
Niagara Health System, St. Catharines Site
North Bay Regional Health Centre
North York General Hospital
The Ottawa Hospital
Peterborough Regional Health Centre
Queensway Carleton Hospital
Renfrew Victoria Hospital
Sioux Lookout Meno Ya Win Health Centre
Sunnybrook Health Sciences Centre
St. Michael's Hospital
Thunder Bay Regional Health Sciences Centre
University Health Network, Princess Margaret Hospital
University Health Network, Toronto General Hospital
University Health Network, Toronto Western Hospital
William Osler Health System, Brampton Civic Hospital
William Osler Health System, Etobicoke General Hospital
Winchester District Memorial Hospital

ISBN 978-1-4606-9837-2 (Print)
ISBN 978-1-4606-9838-9 (PDF)

Health Quality Ontario
130 Bloor Street West, 10th Floor
Toronto, ON M5S 1N5
Tel: 416-323-6868 | 1-866-623-6868
Fax: 416-323-9261

www.hqontario.ca