

Multi-Site Implementation of an American College of Surgeons Geriatric Surgery Quality Improvement Initiative

Meixi Ma MD MS,^{a,b} Xane D Peters MD,^{a, c} Lindsey M Zhang MD MS,^{a,d} Melissa Hornor MD MS,^c Kataryna Christensen BS,^a JoAnn Coleman DNP ANP ACNP AOCN,^e Emily Finlayson MD MS, FACS,^f Kellie L Flood MD,^g Mark Katlic MD MMM FACS,^e Sandhya Lagoo-Deenadayalan MD PhD FACS,^h Thomas N Robinson MD MS FACS,ⁱ Ronnie A Rosenthal MD MS FACS,^j Victoria L Tang MD MAS,^k Clifford Y Ko MD MS MSHS FACS FASCRS,^{a,l} Marcia M Russell MD FACS^l

^aAmerican College of Surgeons, Division of Research and Optimal Patient Care, Chicago, IL

^bUniversity of Alabama at Birmingham Medical Center, Department of Surgery, Birmingham, AL

^cLoyola University Medical Center, Department of Surgery, Maywood, IL

^dUniversity of Chicago Medical Center, Department of Surgery, Chicago, IL

^eSinai Hospital, Sinai Center for Geriatric Surgery, Baltimore, MD

^fUniversity of California San Francisco, Department of Surgery, San Francisco, CA

^gUniversity of Alabama at Birmingham Medical Center; Department of Medicine, Division of Geriatrics, Hospice, and Palliative Medicine; Birmingham, AL

^hDuke University, Department of Surgery, Durham, NC

ⁱUniversity of Colorado Denver, Department of Surgery, Aurora, CO

^jYale University, Department of Surgery, New Haven, CT

^k University of California San Francisco, Division of Geriatrics, Department of Medicine,
San Francisco, CA

^l University of California, Los Angeles, Department of Surgery, Los Angeles, CA

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Corresponding Author: Xane Peters MD American College of Surgeons 633 N St. Clair St
Chicago, IL 60611 Email: xpeters@facs.org Phone: (618) 535-6032

Brief Title: Geriatric Surgery Program Implementation

Background The American College of Surgeons (ACS) Coalition for Quality in Geriatric Surgery (CQGS) identified standards of surgical care for the growing, vulnerable population of aging adults in the United States. The aims of this study were to 1) determine implementation feasibility for 30 selected standards, 2) identify barriers and best practices in their implementation, and 3) further refine these geriatric standards and verification process.

Study Design

The CQGS requested participation from hospitals involved in the ACS National Surgical Quality Improvement Project (NSQIP) Geriatric Surgery Pilot Project, prior CQGS feasibility analyses, and hospitals affiliated with a core development team member. 30 standards were selected for implementation. Following implementation, site visits were conducted, and post-visit surveys were distributed.

Results

Eight hospitals were chosen to participate. Program management (55%), immediate preoperative and intraoperative clinical care (62.5%), and postoperative clinical care (58%) had the highest mean percentage of “Fully Compliant” standards. Goals and decision making (30%), preoperative optimization (28%), and transitions of care (12.5%) had the lowest mean percentage of “Fully Compliant” standards. Best practices and barriers to implementation were identified across 13 of the 30 standards. Over 80% of the institutions reported that participation changed the surgical care provided for older adults.

Conclusion

This study represents the first national implementation assessment undertaken by the ACS for one of its quality programs. The CQGS pilot testing was able to demonstrate implementation feasibility for 30 standards, identify challenges and best practices, and further inform dissemination of the ACS Geriatric Surgery Verification Program.

KEYWORDS: Geriatric, Surgery, Quality, Improvement, Standards, Implementation

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INTRODUCTION

The aging population in the United States is expanding. By the year 2030, 20% of Americans are predicted to be of retirement age, and those 65 years and older comprise over 40% of all surgical procedures performed.¹⁻³ The physiologic stress of surgery negatively impacts older adults more than their younger counterparts leading to an increased risk of adverse outcomes.⁴⁻⁷ Older adults are a vulnerable surgical population owing to their diminished physiologic reserve, higher comorbidity burden, and increased likelihood of social isolation and need for support at home.⁸⁻¹⁰

Recognizing this, the American College of Surgeons (ACS) assembled the Coalition for Quality in Geriatric Surgery (CQGS) with the goal of improving care and outcomes for older adults undergoing surgery. The CQGS engaged 58 stakeholder organizations committed to optimizing geriatric surgical care (e.g. professional organizations for surgical and medical subspecialties, intensive care, geriatrics and palliative care, care transitions, nursing, physical and occupational therapy, pharmacy, patient advocacy, third party payers, etc.) with the ultimate goal of identifying standards for hospitals to provide optimal care in geriatric surgery.¹¹

The effects of surgical care standards and accreditation have been studied in surgical care for specific conditions or disease processes (e.g. trauma, cancer). Various quality benefits have been reported in structure (e.g. staff and facility requirements), process (e.g. screening protocols), and outcome measures (e.g. mortality) in cancer,^{12, 13} bariatrics,^{14, 15} and trauma care.¹⁶ However, condition-specific quality programs may have variable value based on differences in specialized services offered between hospitals. The development and implementation of a population based geriatric surgical quality program offers an opportunity for improving patient care through the application of evidence based surgical standards regardless of

the condition being treated. The geriatric surgery quality program, therefore, has the potential to improve care at any hospital treating older adults. Given the proportion of surgical care received by older adults and the growth of this vulnerable population, the geriatric surgical quality standards are applicable to all hospitals providing surgical care to older adults. The current work focuses on implementation of the standards at 8 pilot sites, which is the first national implementation of ACS quality standards for older adults undergoing surgery. The aims of the current study were to 1) determine implementation feasibility of the standards in various hospital environments, 2) understand barriers to implementation and identify clinical “best practices,” and 3) further refine these geriatric standards and verification processes such that any hospital, regardless of resources, can successfully implement these standards to achieve better outcomes.

METHODS

Selection of Pilot-Site Hospitals

Prior work by the CQGS in both the identification and feasibility of geriatric surgical standards is discussed elsewhere and was used to inform the methods of this study.^{17,18} The CQGS core development team (CDT) requested participation from hospitals involved in the ACS National Surgical Quality Improvement Project (NSQIP) Geriatric Surgery Pilot Project, prior CQGS feasibility analysis,¹⁸ or affiliated with a CQGS core development team (CDT) member. A regulatory exemption was obtained via the University of Colorado Institutional Review Board (COMIRB 17-0057).

Selection of Standards for Pilot Testing

In 2016, the CQGS drafted 308 preliminary standards based on rigorous literature review and clinical expertise of which 306 were subsequently rated as valid and 290 rated as feasible.¹¹ These valid and feasible standards were reorganized into 108 standards (by collapsing

individually rated items into larger groups) for assessment of the feasibility of implementation.¹⁸ A total of 49 standards were identified as potentially feasible for pilot testing. These were internally reviewed by the CQGS team, and 30 final standards were identified for implementation at the pilot site hospitals.

These 30 standards were grouped into 6 chapters: 1) Program management (N=8 standards), 2) Goals and Decision-Making (N=9), 3) Preoperative Optimization (N=4), 4) Immediate Preoperative and Intraoperative Clinical Care (N=3), 5) Postoperative Clinical Care (N=3), and 6) Transitions of Care (N=3) (Table 1).

Implementation Timeline

The Pilot Site Implementation Manual which included supporting rationale and literature was released in November 2017, followed by the launch of the pilot site implementation in December 2017. Each pilot hospital participated in an orientation phone call during which the pilot site standards, implementation expectations, and timelines were reviewed. Each hospital had a 4–6-month period for implementation, and group calls with pilot hospitals were performed throughout this period to address questions regarding standard clarification and implementation. Each site submitted a Program Compliance Assessment (PCA) which was an online portal for the submission of data and documents supporting site adherence to the standards in advance of the site visit for review by the CQGS CDT. The PCA listed each standard and asked for self-reported compliance. For standards where the site reported compliance, sites were asked to: “briefly explain the process, how you measure compliance, and be prepared to provide an example at the site visit.” For standards where the site reported non-compliance, sites were asked to: “Please identify the barrier(s) to fulfilling the standard, and a plan of action to put the standard in place.” In addition, each site was asked to upload relevant documents to demonstrate

standard compliance (e.g. letter of support, curriculum vitae of geriatric surgery director, summary of community outreach project, etc). In-person site visits were performed from June through August of 2018.

Structure of the Site Visit

Site visits occurred over the course of a 9-hour day, and the site visit surveyor group consisted of 3-4 members from the CQGS CDT (Figure 1). Sites were asked to provide 20 charts for patients > age 75 that met the following criteria: mortality within 30 days of a non-palliative operation, length of stay > 14 days, high risk with readmission, postoperative delirium, unexpected ICU stays > 3 days, or unexpected escalation of care. At least 80% of provided charts were required to be compliant with standards (Table 1). Compliance was further evaluated by observation of facilities and interface with frontline providers in the operating room, intensive care unit, emergency department, acute care ward, and preoperative clinic (if feasible).

Interviews were conducted in a semi-structured format to identify barriers and best practices and answer clarifying questions about answers reported in the Program Compliance Assessment (PCA). Interviewees included preidentified key team members and hospital leadership including the Geriatric Surgery Program Director and Coordinator, and a Geriatric Nursing Champion.

Following site visits, survey teams submitted data to the lead surveyor, who generated a performance report. CQGS staff members reviewed these performance reports and identified best practices and barriers through review of the PCA and the on-site visit.

Standard Compliance

Hospitals were deemed “Fully Compliant” with a standard if expectations were fully met as described in the CQGS Pilot Site Implementation Manual. A “Partially Compliant” rating was

given for standards that demonstrated evidence of significant effort towards implementation but did not fully meet all requirements. The rating of “Partially Compliant” was included to recognize the immense amount of work invested by pilot hospitals to implement the standards given the brief implementation window. A “Non-Compliant” rating was assigned to standards not adequately implemented by the time of the site visit. Critical fail standards were those identified by the CQGS where non-compliance would result in failure of program verification.

Post-Site Visit Survey

A survey was distributed to all pilot site implementation hospitals following the site visit. There were 28 survey items aimed at evaluating the meaningfulness of the site visit, the ease of standard implementation, overall experience of the pilot hospitals, and perceptions of feasibility for critical fail standards.

RESULTS

Characteristics of the Pilot Site Hospitals

Sixteen hospitals volunteered to participate in pilot testing. Eight hospitals were chosen to represent the spectrum of hospital size, type, geographic location, and patient charting technology (Table 2). These hospitals represented diverse geographic locations and size ranging from 100 to 1000 beds. The pilot sites included university-associated programs, community-based institutions, and government-affiliated hospitals.

Standard Compliance

Chapters 1 (Program Management, 55%), 4 (Immediate Preoperative and Intraoperative Care, 62.5%), and 5 (Postoperative Clinical Care, 58%) had the highest mean percentage of standards deemed “Fully Compliant” across all pilot hospitals (Table 1). Chapters 2 (Goals and Decision-Making, 30%), 3 (Preoperative Optimization, 28%), and 6 (Transitions of Care, 12.5%)

had the lowest mean percentage of standards deemed “Fully Compliant” across all sites (Table 1). However, “Partially Compliant” mean rates were 39%, 41%, and 75%, respectively for these three chapters.

The Program Management standards (Chapter 1) with the highest proportion of full compliance were soliciting a letter of support from hospital leadership (75%), the establishment of a geriatric surgery program director (87.5%) and coordinator (62.5%), and clinical data collection (62.5%). Lower mean compliance was seen within Goals and Decision-Making standards (Chapter 2) No programs reached full compliance in establishing a system to ensure treatment preferences were prioritized, though partial compliance with this standard was high (62.5%). Success in Preoperative Optimization (Chapter 3) was demonstrated in establishing a preoperative multidisciplinary conference for high-risk patients (37.5%) and communicating goals of care and decision-making discussions with the patient’s primary care provider (37.5%). All standards within Immediate Preoperative and Intraoperative Care (Chapter 4) reached the same level of full compliance (62.5%). Within Postoperative Care (Chapter 5), establishing geriatric-friendly patient rooms was the highest scoring standard (87.5%). No programs were able to reach full compliance with Transitions of Care Standards (Chapter 6) for risk reassessment at discharge or standard-specific discharge documentation, though partial compliance was high for each of these at 75% and 87.5%, respectively. Nearly all standards were fully implemented by at least one participating hospital. For those standards that did not achieve full compliance (2.9, 6.1, 6.2), a high level of partial compliance was noted (62.5, 75, and 87.5%).

Challenging Standards and Best Practices

Several implementation challenges as well as best practices were identified during the site visits. A lack of existing geriatric-specific community outreach without means of measuring

the success of such a project impeded complete adherence to program management standards (Chapter 1). However, multiple best practices were identified within this chapter, including comprehensive surgical quality reports generated through the electronic health record (EHR), and competency-validated nursing education on delirium and initiation of goals of care discussions. Barriers to full compliance to goals and decision-making standards (Chapter 2) included poor documentation of the contents of this discussion, resistance to change by providers, and infrastructural challenges preventing appropriate review of these documents with patients preoperatively. A preoperative screening and goals of care form was identified as a best practice to combat these challenges. Workflow constraints and lack of geriatric, faculty, and time related resources were cited as major barriers to the implementation of preoperative optimization standards (Chapter 3). The preoperative screening and goals of care form mentioned above also was identified as a best practice in mitigating these constraints. Notably, no major barriers to standard implementation were noted within the arenas of immediate preoperative, intraoperative, or postoperative care (Chapters 4 and 5). The immediate postoperative return of personal sensory equipment, facilitated by always keeping this equipment with the patient (even in the operating room), was identified as a best practice in preoperative and intraoperative care. A live virtual dashboard tracker was identified as a best practice in postoperative monitoring of mental status, mobility, and function. In the transition of care for geriatric patients (Chapter 6), specific and consistent documentation of postoperative screening was a major impediment to standard compliance. Designated advance practice providers for two-way communication between facilities following inpatient stay was identified as a best practice.

Post-Site-Visit Survey

The post-site-visit survey revealed that all participating hospitals felt the site visit provided insight into process improvement and communication within the hospital. Over 80% of these institutions reported that the site visit itself enhanced their hospitals' organization and coordination regarding the care of older adult surgical patients, and over 75% felt that the provided verification resources (e.g., Program Compliance Assessment, document upload portal, site visit agenda) were useful. The main contributing factors for hospitals not being "Fully Compliant" with standards at the time of the site visit were (1) the short implementation timeframe given the complex process changes necessary and (2) the long lead time necessary to restructure the EHR.

Sites were asked to characterize the difficulty of implementing "critical fail" standards on a five-point scale where five denoted "extremely difficult" and 1 denoted "not difficult." High-risk screening, high-risk multidisciplinary conference, and data collection were identified as critical fail by the CQGS. Nearly 40% reported a 4 out of 5 difficulty level in implementing high-risk screening, while over 30% of hospitals were on the "not difficult" end of the spectrum (1 or 2). Similarly, over 40% of sites indicated a 4 or 5 level difficulty in implementing multidisciplinary conference, while over 30% of sites reported this standard as 1 (not difficult) or 2. In contrast, over 60% of sites reported data collection as being "not difficult," though 25% of sites reported a 4 out of 5 difficulty level (Figure 2).

When hospitals were asked about the impact of pilot participation on the culture of their institutions, over 80% of hospitals stated that participation changed the surgical care provided for older adults. Over 80% of hospitals cited new multidisciplinary collaboration, with several reporting closer working relationships between nurses and physicians. Additional comments

from the site visit interviews indicated an increased awareness and engagement in caring for older adults with a “better understanding of the unique needs of the geriatric patient.” A few sites noted challenges in obtaining “buy-in” from hospital leadership and how this slowed the pace of culture change. Despite this, all sites agreed that participating in this CQGS Pilot was a worthwhile experience, and all sites expressed interest in applying for verification once the Geriatric Surgical Verification (GSV) Program officially launched.

DISCUSSION

Implementation of the CQGS standards at the eight pilot site hospitals provided insight into the barriers and successes of implementation for older adult surgical patients in a variety of hospital settings. The project resulted in a substantial amount of effort from all participating hospitals including best practices to achieve compliance in innovative and cost-conscious ways. A post-visit survey revealed that nearly all hospitals experienced positive institutional culture change, and all felt that it was a worthwhile experience to participate in the pilot testing of the CQGS standards.

Despite the short implementation period, the pilot site hospitals collectively demonstrated that all 30 standards could be feasibly implemented across differing environments with varying resources. Standards deemed “Partially Compliant” are indicative of (1) the likelihood of a high percentage of “Fully Compliant” standards achieved by hospitals when given more time for implementation and (2) a strong level of investment by all participating hospitals towards improving the surgical care of older adults. Most hospitals were successful in establishing appropriate geriatric surgical leadership and creating processes to enhance the perioperative care of the older adults. Conversely, the combined percentage of partially compliant and non-compliant standards identified difficult standards for implementation. Where these challenges

were identified, none of the hospitals believed they were prohibitively difficult given sufficient time, and a high level of partial compliance was achieved. Therefore, these standards remained owing to their elevated importance in this surgical population. Further support efforts were applied to these standards including a targeted curriculum and sharing best practices with those sites able to achieve high partial compliance.

Our results were compared to previous work by the CQGS in evaluating the feasibility and scalability of a geriatric surgery quality improvement initiative.¹⁸ There were notable contrasts in the results of these studies. Chapter 1 (Program Management) Standards were perceived as “Very difficult” to implement in prior study but were amongst the most compliant of all the chapters in our review. An even greater contrast can be seen by the perceived implementation difficulty (0%) of Chapter 6 Standards (Transitions of Care) yet these standards demonstrated the least compliance in this study. The high “Fully Compliant” ratings for Chapters 4 (Immediate Preoperative and Intraoperative Clinical Care) and 5 (Postoperative Clinical Care) correlate with findings from prior CQGS work demonstrating the lowest perceived difficulty for implementation.¹⁸ Differences between these two studies demonstrate a discrepancy between perceived and actual difficulty in implementation, highlighting the value of pilot testing.

The results of this study helped to refine the standards and verification process. First, standards were edited to clarify ambiguous language, and condensed to improve organization. Standards 2.3, 2.4 and 2.8 were combined to minimize redundancy. High risk screening (3.1) was enhanced to include swallow function, bowel and bladder dysfunction, delirium history, and chronic pain syndromes. Standards were restructured into 9 chapters for consistency with existing ACS Quality Programs. The finalized standards and resource manual were released at the ACS Quality and Safety Conference in July 2019, marking the official launch of the ACS

GSV Program. In conjunction with the program release, successful strategies for overcoming barriers to implementation were incorporated into educational resources and tools created by the ACS GSV Program. One example of an educational resource is the ACS GSV Implementation Curriculum: an online, self-paced, module-based course to guide hospitals through the implementation process.

The current study enhanced our understanding of the barriers and facilitators to successfully implement hospital-level, quality improvement programs for older adults undergoing surgery and was also an effective way to identify best practices for future dissemination through the ACS GSV Program. Evaluating a wide variety of hospitals provided insight into issues that may impact broader implementation. As evidence continues to reinforce the value of evidence-based standards of surgical care, ongoing efforts are needed to assess successes and failures in applying these standards on the frontlines. Challenges in institutional resources and workforce have been reported as limitations to implementing other surgical standards related to enhanced recovery after surgery.¹⁹⁻²¹ This study demonstrates commonalities in challenges observed in implementation of surgical standards. Understanding shared barriers across implementation of differing standards may help to prioritize anticipated areas of need in rolling out these programs. Since the undertaking of the study, targeted support efforts guided by the GSV Education Task Force have included dissemination of podcasts, webinars, quarterly virtual question-answer sessions open to all participating centers, and quarterly newsletters.

Limitations

This study had two significant limitations. First, the small sample size of hospitals included (n=8) limits the generalizability of the findings. Second, the 4-6-month implementation timeframe proved to be an understandably challenging limitation for participating hospitals to

operationalize all the components necessary to meet the more complicated standards. Despite these limitations, the high rate of fully and partially compliant hospitals for all 30 standards suggests that, given more time, full compliance may be achieved. Although the study is limited by sample size and the timeframe, it represents the first of its kind for ACS quality programs with respect to pilot testing both implementation of the standards as well as the site visit process.

CONCLUSION

This study represents the first national implementation assessment undertaken by the ACS for one of its quality programs. In contrast to many other quality improvement programs, standards of care for the older adult surgical population have the potential to impact every US hospital operating on older adults, highlighting both the broad scope and significance of these standards. The CQGS pilot site testing was able to successfully demonstrate feasibility of implementation for all 30 standards, identify challenging standards and best practices, and further inform dissemination of the GSV Program.

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FIGURE LEGENDS

Figure 1. Pilot hospital site visit schedule. PCA, Program Compliance Assessment; QI, quality improvement.

Figure 2. Perceived difficulty of implementing critical fail standards. CQGS, Coalition for Quality in Geriatric Surgery.

Precis

The American College of Surgeons Coalition for Quality in Geriatric Surgery identified standards for the aging surgical population. This study demonstrates the feasibility, barriers, and best practices in the implementation of 30 standards in 8 hospitals throughout the US.

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Table 1. Pilot Standards with Implementation Compliance Rate, Barriers to Implementation and Best Practices

| Pilot standards chapter | %FC | %PC | %NC | Barriers to implementation | Best practices in implementation |
|--|------------|------------|------------|--|--|
| Chapter 1: Program Management | 55.0* | 26.0* | 19.0* | | |
| 1.1 Letter of Support | 75.0 | 0.0 | 25.0 | – | - |
| 1.2 Geriatric Surgery Program Director | 87.5 | 12.5 | 0.0 | – | - |
| 1.3 Geriatric Surgery Program Coordinator | 62.5 | 25.0 | 12.5 | – | - |
| 1.4 Clinical Data Collection | 62.5 | 37.5 | 0.0 | – | Comprehensive surgical quality reports: creation of detailed EHR-generated geriatric surgical reports for review and analysis of surgical outcomes. |
| 1.5 Geriatric Surgery Quality Committee | 50.0 | 25.0 | 25.0 | – | |
| 1.6 Community Outreach Project | 12.5 | 37.5 | 50.0 | Lack of existing community outreach project; lack of means for measuring success | Fall prevention and balance education: outreach to educate older adults on common causes of falls and strategies for minimizing risk; paired with post-event survey to trend project effectiveness |
| 1.7 All Staff Education - Geriatric Concepts | 50.0 | 25.0 | 25.0 | – | Nursing education and competency validation: creation of a delirium and goals of care curriculum coupled with a nursing competency validation form |
| 1.8 Geriatric Surgery Nurse Champion | 37.5 | 50.0 | 12.5 | – | - |

| | | | | | |
|--|-------|-------|-------|---|---|
| Chapter 2: Goals and Decision Making | 30.0* | 39.0* | 31.0* | | |
| 2.1 Decision-Making Discussion [†] | 12.5 | 50.0 | 37.5 | Nonspecific documentation of contents of decision-making discussion and patients' health goals; "resistance to change" by providers | Preoperative screening and goals-of-care form: dual-purpose form that allow patients to write their health and treatment goals in their own words and includes several geriatric-specific screening tools |
| 2.2 Family/caregiver Revisit decision making | 25.0 | 37.5 | 37.5 | - | - |
| 2.3 Healthcare representative/surrogate/proxy identified [†] | 50.0 | 37.5 | 12.5 | - | - |
| 2.4 Opportunity to establish advance directives | 50.0 | 25.0 | 25.0 | - | - |
| 2.5 Existing advance directives reviewed preoperatively [†] | 37.5 | 25.0 | 37.5 | - | - |
| 2.6 ICU Patients: life-sustaining treatments discussed [†] | 25.0 | 50.0 | 25.0 | - | - |
| 2.7 Goals-of-care revisited when unplanned postoperative admission to ICU for >3 days [†] | 37.5 | 25.0 | 37.5 | - | - |

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|---|-------|-------|-------|--|--|
| 2.8 Resources provided to support advance directives, Do Not Resuscitate decision, surrogate decision maker, and goals of care† | 37.5 | 37.5 | 25.0 | – | – |
| 2.9 System in place to ensure treatment preferences | 0.0 | 62.5 | 37.5 | Establishing infrastructure and processes to ensure providers reviewed treatment preference documentation with the patient preoperatively | – |
| Chapter 3: Preoperative Optimization | 28.0* | 41.0* | 31.0* | | |
| 3.1 Geriatric-specific screens to identify high-risk patients† | 12.5 | 62.5 | 25.0 | Workflow constraints (eg limited time between preoperative assessment and scheduled operation date), resource barriers (eg lack of consultants with geriatric expertise) | Preoperative screening and goals-of-care form: dual-purpose form that allow patients to write their health and treatment goals in their own words and includes several geriatric-specific screening tools; strong focus on nutrition: nearly all patients are evaluated by a nutritionist preoperatively and followed throughout their inpatient stay. |
| 3.2 Targeted Preoperative Geriatric Assessment for High-Risk Patients† | 25.0 | 12.5 | 62.5 | | – |

| | | | | | |
|--|-------|-------|-------|------------------------------------|--|
| 3.3 Preoperative Multidisciplinary Conference for High-Risk Patients† | 37.5 | 37.5 | 25.0 | Lack of time and faculty resources | - |
| 3.4 Communicate goals-of-care and decision-making discussion to patient's primary care provider† | 37.5 | 50.0 | 12.5 | - | - |
| Chapter 4: Immediate Preoperative and Intraoperative Clinical Care | 62.5* | 12.5* | 25.0* | | |
| 4.1 Identify, collect, and return personal equipment | 62.5 | 12.5 | 25.0 | - | Immediate postoperative return of personal sensory equipment: process for keeping personal sensory equipment with the patient at all times, even in the operating room, to facilitate prompt return and minimize altered sensorium |
| 4.2 Avoid potentially inappropriate medications† | 62.5 | 25.0 | 12.5 | - | - |
| 4.3 Prevent peripheral nerve damage and pressure injury during surgery | 62.5 | 0.0 | 37.5 | - | - |
| Chapter 5: Postoperative Clinical Care | 58.0* | 17.0* | 25.0* | | |

| | | | | | |
|--|-------|-------|-------|--|--|
| 5.1 Pathways, bundles, or order sets for postoperative care [†] | 50.0 | 12.5 | 37.5 | – | – |
| 5.2 Multidisciplinary, postoperative care team with geriatric expertise for high-risk patients [†] | 37.5 | 37.5 | 25.0 | – | Live dashboard for inpatient monitoring: virtual ACE tracker tool was used to monitor mental status, mobility, function, and other important aspects of postoperative care. This tool automatically populated a live, easy-to-access dashboard from information collected by nursing staff (eg pain scores, opioid usage, tethers preventing mobility, mobility scores, etc) |
| 5.3 Geriatric-friendly patient rooms | 87.5 | 0.0 | 12.5 | – | – |
| Chapter 6: Transitions of Care | 12.5* | 75.0* | 12.5* | | |
| 6.1 Reassessment of high-risk patients for cognitive, functional, and nutritional risk at discharge. Results and management plans documented. [†] | 0.0 | 75.0 | 25.0 | Specific and consistent documentation were lacking for all sites | – |
| 6.2 Discharge documentation components [†] | 0.0 | 87.5 | 12.5 | | – |

| | | | | | |
|--|------|------|-----|---|---|
| 6.3 Formal communication structure with post-acute care facilities | 37.5 | 62.5 | 0.0 | – | 2-Way communication with post-acute care facilities: designated APPs to follow patients throughout their inpatient and post-acute care stays for 2-way communication and continuity of care between hospital and post-acute care facilities |
|--|------|------|-----|---|---|

*Mean compliance rate by chapter.

†Compliance was verified by chart audit.

ACE, acute care for the elderly; APP, advanced practice provider; EHR, electronic health record; FC, fully compliant; NC, noncompliant; PC, partially compliant

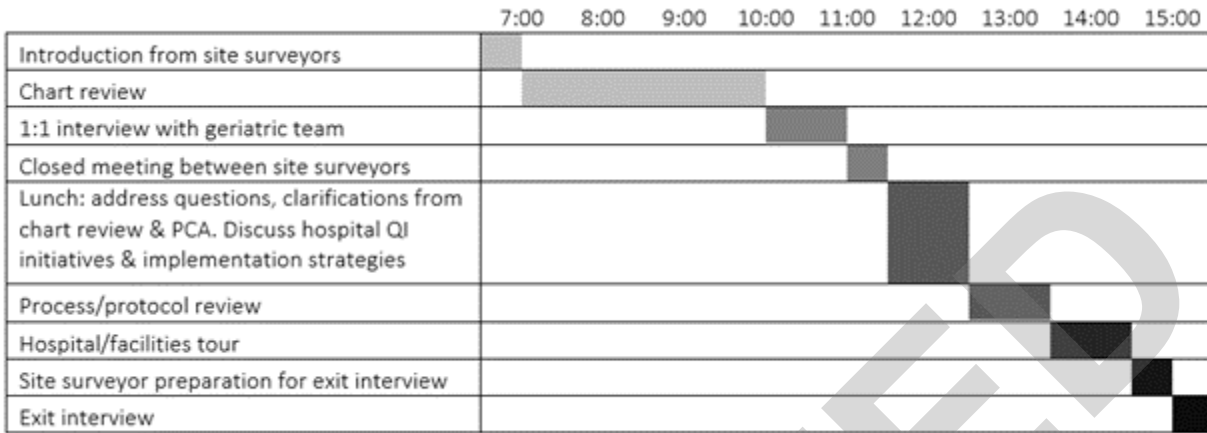
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Table 2. Pilot Site Hospital Demographics

| Site no. | Region | No. of beds | Hospital type | Other ACS quality programs | Type of electronic health record |
|-----------------|---------------|--------------------|----------------------|--|---|
| 1 | Northeast | 575 | Community | Trauma, Bariatrics, Cancer, and Breast | Transitioning to Epic within the year |
| 2 | Northeast | 571 | Community | NSQIP | Epic |
| 3 | Northeast | 442 | Academic | Bariatrics and Cancer | Epic |
| 4 | Northeast | 368 | Academic | Trauma | Epic |
| 5 | Northeast | 165 | Academic | N/A | Transitioning to Epic within the year |
| 6 | West | 169 | Hospital system | N/A | Epic |
| 7 | West | 128 | VA | N/A | CPRS |
| 8 | Southeast | 1155 | Academic | Trauma, Bariatrics, Cancer, and Breast | Cerner |

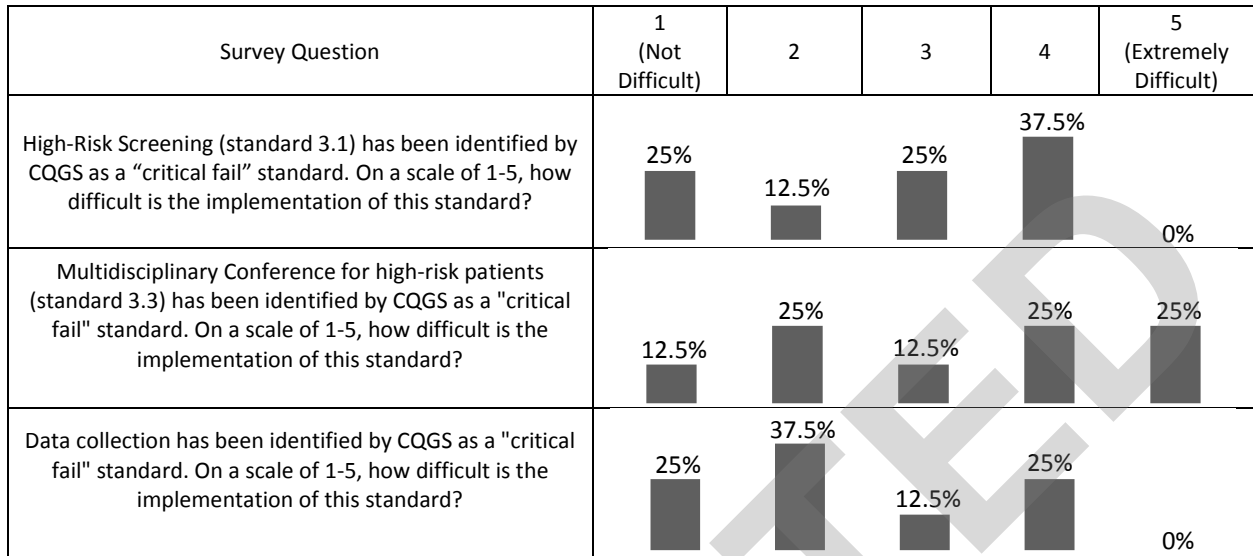
ACS, American College of Surgeons; CPRS, Computerized Patient Record System; N/A, not applicable; VA, Veterans Affairs

Figure 1



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Figure 2



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