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The American College of Surgeons Geriatric Surgery Verification Program and the Practicing Colorectal Surgeon

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ABSTRACT

The population is aging and older adults are increasingly undergoing surgery. Colorectal surgeons need to understand the risks inherent in the care of older adults and identify concrete ways to improve the quality of care for this vulnerable population. Goals for the practicing colorectal surgeon include: 1) introduce the American College of Surgeons' (ACS) Geriatric Surgery Verification (GSV) Program and understand the intersection with colorectal surgery, 2) examine the 30 evidence-based GSV standards and how they can achieve better outcomes after colorectal surgery, and 3) outline the value and benefits for colorectal surgeons of implementing such a program.

Introduction

Surgical diseases of the colon and rectum are common in adults ages 65 years and older ranging from colorectal cancer and diverticular disease to physiologic and mechanical causes of obstruction (e.g. Ogilvie syndrome, sigmoid volvulus). Older adults are the fastest growing segment of the population, and their numbers are estimated to double by 2050.[1] With this growth, there has been a parallel increase in procedures performed on older adults. Nearly half of the operations currently performed in the United States (US) are on older adults, and it is predicted that this proportion will increase rapidly with the ongoing aging of the US population.[2] More than half of older adults will have some procedure before they die, and 32% will have that procedure within their last year of life.[3] This data illustrates that not only are older adults increasingly undergoing surgery, but that a substantial proportion of operations occur at the end of life, which raises the question as to whether or not the procedure is beneficial. In addition, even after adjusting for comorbid illnesses, the variable of "age >65 years" independently and increasingly is associated with higher rates of postoperative complications, prolonged or permanent cognitive decline, discharge to a non-home location, and death.[4–7]

Older adults may also be offered different treatment plans than younger adults. Using colorectal cancer as an example, enhanced screening protocols and advances in oncologic care have improved detection of and survival from colorectal cancer overall.[8] In fact, population-based screening has led to a decreased incidence of colorectal cancer amongst older adult patients as it is increasingly identified at a younger age.[9] However, studies suggest that older adults comparatively appreciate less survival benefit from oncologic advances.[10–12] Reasons for this may be explained by persistently poor postoperative outcomes[13] owing in part to a higher burden of malignant disease on presentation and emergent surgery.[14] These poor outcomes may also explain the decreased rates of operative intervention offered to older patients with curable colorectal cancer[15–16] but lacks the necessary differentiation between whether these decreased rates represent undertreatment or appropriate care. Better understanding of patient's treatment goals and alignment with surgical goals can help improve the appropriate delivery of surgical care to older adults with colorectal problems.

Colorectal surgeons need tools to help care for their older adult patients. The guiding principles to achieving better surgical outcomes for patients undergoing colorectal surgery should focus on minimizing non-beneficial surgery, optimizing surgical readiness, and avoiding preventable complications[17–18] all while holding in focus what matters most to the patient. The objectives of this discussion are to 1) introduce the American College of Surgeons' (ACS) Geriatric Surgery

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Verification (GSV) Program and understand the intersection with colorectal surgery, 2) examine its 30 evidence-based standards and how they achieve better care and outcomes after colorectal surgery, and 3) outline the value and benefits of implementing such a program for colorectal surgeons.

Development of the ACS Geriatric Surgery Verification Program

Outlining standards of care for a population defined by an age threshold is difficult when chronologic age fails to reflect the wide variability in frailty which includes physiologic age and social vulnerability. Frailty trends with increasing age and is a complex profile of vulnerability that diminishes a patient's ability to compensate for stressors to their health, as in the case of surgery. Frailty is influenced by cognition, nutrition, mobility, and physical function, which captures the aggregate effect that comorbidities have on the way individuals interact with their environment. Additionally, frailty and its associated surgical complications are influenced by a patient's social support, since reduced internal reserve will reciprocally demand compensatory external support for recovery. Until recently, there were no widely-accepted nor widely-implemented guidelines for geriatric surgical care that addressed the complexity of this vulnerable population.

Recognizing the need for unified action in the context of an aging and growing population, the ACS Geriatric Surgery Task Force set out to meet the rising need in two ways: 1) identify feasible and meaningful geriatric surgery specific measures and 2) identify a systematic way to provide optimal care for older adults undergoing surgery with an emphasis on bringing stakeholders together.

ACS NSQIP Geriatric Surgery Pilot Project

The ACS National Surgical Quality Improvement Program (NSQIP) is a risk-adjusted, surgical outcomes-based quality improvement program for national hospital benchmarking centered around a robust clinical data registry. Based on information gathered from a 2010 National Quality Forum (NQF)-endorsed measure to identify major complications and death in persons over age 65, it became clear that traditional surgical variables (e.g. mortality, morbidity) may be insufficient to capture the full postoperative experience for vulnerable older adults.[19]

Therefore, the ACS Geriatric Surgery Task Force in collaboration with ACS NSQIP created the Geriatric Surgery Pilot Project with the following three objectives: 1) determine collection feasibility of geriatric-specific variables, 2) assess whether the inclusion of geriatric-specific risk factors and outcomes into existing ACS NSQIP models afford improved predictive performance, and 3) establish a mechanism for the development of clinical interventions based on geriatric-specific variables to improve care and outcomes. This multi-institutional, data registry pilot project enrolled 23 volunteer ACS NSQIP hospitals to collect 14–20 unique geriatric variables between 2014–2019 specific to older adult surgical patients, which have iteratively evolved over time. (Table 1) Using data collected from the Geriatric Surgery Pilot Project, the ACS NSQIP Surgical Risk Calculator, which uses risk-adjusted models to predict traditional surgical outcomes, was refined to additionally include geriatric risk predictors and outcomes to better arm clinicians for patient-centered and goal-directed preoperative discussions.[7] These geriatric-specific outcomes are more patient-centered than the traditional outcome of mortality, for example, and include outcomes more relevant to older adults such as postoperative pressure ulcer, delirium, new mobility aid use, and functional decline. In addition, data from the Geriatric Surgery Pilot Project has been used to inform studies on postoperative delirium as a quality improvement target,[20] loss of independence and readmission in older adult surgical patients,[21] and optimization of surgical quality datasets for older adults.[22]

Table 1
American College of Surgeons (ACS) National Surgical Quality Improvement Program (NSQIP) Geriatric Surgery Pilot Project Variables

Variable Name	Intent of Variable (options)
PREOPERATIVE	
Origin Status	Capture living location and support on admission (lives alone at home/lives at home with support/not from home)
Fall History	Identify fall history 1-year prior to surgery (yes/no)
Use of Mobility Aid	Understand baseline mobility and patients' need for aid (yes/no)
History of Dementia or Cognitive Impairment	Presence of cognitive impairment (yes/no)
Surrogate-Signed Consent	Presence of significant cognitive impairment (yes/no)
Evidence of Advance Care Planning*	Presence of documented healthcare proxy, living will, advance directives, or Do Not Resuscitate (DNR) status (yes/no)
Palliative Care on Admission	Identify patients receiving palliative or hospice care on admission (yes/no)
POSTOPERATIVE	
Postoperative Delirium	Presence of any episodes of delirium (yes/no)
New/Worsening Pressure Ulcer*	New incidence or worsening of existing pressure ulcer during hospitalization (yes/no)
DNR Order During Hospitalization	New DNR status during hospitalization (yes/no)
Setting of DNR Order	Setting in which DNR order was placed (intensive care unit/acute care bed/emergency department/other or unknown)
Palliative Care Consult	Palliative care consult or comfort care orders during hospitalization (yes/no)
New Postoperative Use of Mobility Aid	New use of mobility at discharge (yes/no)
Social or Spiritual Support at Time of Death*	Documentation of social work or spiritual support offered to family/caregiver around patient's time of death (yes/no)
Discharge Destination*	To what location is a patient discharged (home/skilled care not home/unskilled facility not home/facility which was home/rehab/multi-level senior community/hospice/Against Medical Advice (AMA)/expired, unknown)
Discharge to Home with/without Services	Capture care needs at home on discharge (home alone with self-care/home alone with skilled care/home with support and self-care/home with support and skilled care)
Fall Risk on Discharge	Define fall risk at time of discharge (high/low)
Functional Status on Discharge	Ability to perform Activities of Daily Living (ADLs) (independent/partially dependent/totally dependent)
30-DAY POSTOPERATIVE	
30-Day Living Location*	Living location 30-days postoperatively (skilled care facility not home/unskilled facility not home/facility which was home/home/still in hospital/separate acute care/expired/unknown)
30-Day Functional Health Status*	Ability to perform ADLs 30-days postoperatively (independent/partially dependent/totally dependent)
30-Day Perceptions of Physical Function*	Determine change in patients' perceived physical function 30-days postoperative compared to preoperative baseline (diminished/similar/improved/expired/unknown)

* New Geriatric Surgery Pilot Project variables added over the course of the pilot.

ACS Coalition for Quality in Geriatric Surgery (CQGS)

In 2015, with support from the John A. Hartford Foundation, the ACS Geriatric Surgery Task Force formed the Coalition for Quality in Geriatric Surgery (CQGS). This Coalition was assembled with the intent to systematically improve the surgical care of older adults by establishing a verifiable quality improvement program with standards based on best evidence and focused on what matters most to the individual patient. To this end, the CQGS outlined seven key deliverables: 1) engage key stakeholders, 2) set the standards, 3) develop measures, 4) develop a verification process, 5) pilot the program, 6) educate patients and providers, and 7) launch the Geriatric Surgery Verification Program campaign.

To ensure the standards considered all pertinent perspectives, the Coalition engaged nearly 60 professional stakeholder groups representing patients and families, payers, regulatory and advocacy agencies, nursing organizations, and a range of medical and surgical specialties.[23] In 2016, a set of 308 preliminary standards was developed using a combination of extensive and systematic literature review, stakeholder input, and hospital visits. Using a modified RAND-University of California Los Angeles (UCLA) Appropriateness Methodology, the CQGS stakeholder organizations rated these 308 preliminary standards for validity as well as feasibility.[24] Based on these results, the preliminary standards were refined to 92 alpha standards, which were then submitted by survey to 15 volunteer hospitals across a spectrum of sizes, types, and geographic locations. These hospitals were asked to identify whether standards were already widely practiced and, if not, to rate how difficult implementation of each standard would be. They were additionally asked to provide feedback and suggestions to clarify standards that were unclear or difficult to interpret.[25] Results from these hospital surveys were used to further consolidate the 92 alpha standards into 33 beta standards.

Between 2017 and 2018, the 33 beta standards were pilot tested for feasibility in eight volunteer hospitals. Formal site visits were performed, which consisted of chart reviews, protocolized interviews of frontline providers and hospital leaders, review of institutional policies and practices, and a tour of hospital facilities. The results of the site visits demonstrated the following: all 33 beta standards were feasible, all hospitals were able to implement most standards, and all hospitals agreed that participation in the beta pilot and implementation of the CQGS standards was valuable and improved interdisciplinary culture and collaboration. Based on beta pilot feedback, the 33 beta standards were further refined into 30 mandatory standards and 2 optional ones – these 32 standards form the foundation for what is now known as the ACS Geriatric Surgery Verification (GSV) Program.

The ACS GSV Program was launched in July 2019 and outlines 30 interdisciplinary, evidence-based standards of geriatric surgical care (Table 2) that address not only clinical practice but also the institutional framework for quality improvement that helps make change both sustainable and durable. The clinical standards are categorized by phases of care and built around the following 4 areas of focus: 1) goals of care and decision making, 2) cognitive function and prevention of postoperative delirium, 3) maintenance of function and mobility, and 4) nutrition and hydration optimization. Collectively, the clinical standards aim to identify frailty and manage geriatric-specific vulnerabilities with the purpose of not only getting patients through an operation but preserving functional independence and prioritizing quality of life.

Geriatric Surgery Verification Program Standards

Goal-concordant care

Older adults undergoing surgery may prioritize outcomes differently than younger patients, for example favoring quality over

Table 2
Geriatric Surgery Verification Program Standards

Domain	Standard No.	Standard
1 Institutional Administrative Commitment	1.1	Letter of Support
2 Program Scope & Governance	2.1	Geriatric Surgery Director
	2.2	Geriatric Surgery Coordinator
	2.3	Geriatric Surgery Quality Committee
3 Facilities & Equipment Resources	3.1	Geriatric-Friendly Patient Rooms
4 Personnel & Services Resources	4.1	Geriatric Surgery Nurse Champion
5 Patient Care: Expectations & Protocols		
Goals & Decision Making	5.1	Treatment & Overall Health Goals
	5.2	Code Status & Advance Directives
	5.3	Medical Proxy
	5.4	Life-Sustaining Treatment Discussion for Patients with Planned Intensive Care Unit (ICU) Admission
	5.5	Reaffirm Surgical Decision Making
Preoperative Work-Up	5.6	Geriatric Vulnerability Screens
	5.7	Management Plan for Patients with Positive Geriatric Vulnerability Screens
	5.8	Interdisciplinary Input or Conference for Elective, High-Risk Patients
	5.9	Surgeon-Primary Care Provider (PCP) Communication for Elective, High-Risk Patients
Postoperative Management	5.10	Return of Personal Sensory Equipment
	5.11	Inpatient Medication Management
	5.12	Opioid-Sparing, Multimodality Pain Management
	5.13	Standardized Postoperative Care
	5.14	Interdisciplinary Care for High-Risk Patients
	5.15	Revisiting Goals of Care for ICU Patients
	5.16	Assessment of Geriatric Vulnerabilities at Discharge
Transitions of Care	5.17	Discharge Documentation & Hand-Off Communication
	5.18	Communication with Post-Acute Care Facilities
6 Data Surveillance & Systems	6.1	Data Collection & Review
	6.2	Data Feedback to Frontline Providers & Quality Infrastructure
7 Quality Improvement	7.1	Geriatric Surgery Quality Improvement/Process Improvement Project
	7.2	[Optional] Geriatric Surgery ACS NSQIP Collaborative
8 Professional & Community Outreach	8.1	Geriatric Surgery Community Outreach Project
	8.2	Geriatric Education of Surgeons & Advanced Practice Providers
	8.3	Geriatric Education of Nurses
9 Research	9.1	[Optional] Advancement of Knowledge in Geriatric Surgical Care

quantity of life. For most older adults, maintaining physical and cognitive function defines a successful medical treatment. In a qualitative study published by Fried and colleagues, physical or cognitive impairment were outcomes that many older adults considered unacceptable results of a medical treatment. For example, if the treatment outcome was survival but with severe functional impairment or cognitive impairment, 74% and 89% percent of these participants, respectively, would not choose treatment.[26] Understanding a patient's health goals can help the surgeon provide goal-concordant care.

Previous research has described best communication practices to facilitate goal-concordant care for seriously ill older patients with emergency surgical conditions which can also be applied to both elective and emergency colorectal surgery: 1) formulate prognosis; 2) create a personal connection; 3) disclose information regarding the acute problem (e.g. colorectal cancer, diverticulitis) in the context of the underlying illness; 4) establish a shared understanding of the patient's condition; 5) allow silence and dealing with emotion; 6) describe surgical options (may include palliative options if appropriate); 7) elicit patient's goals and priorities; 8) make a treatment recommendation; and 9) affirm ongoing support for the patient and family.[27] The GSV Program outlines standards governing goal-concordant care and encompasses topics such as understanding a patient's treatment and overall health goals, providing an opportunity to reaffirm surgical decision making, reviewing or establishing code status and advance directives should they not already exist, identifying a health care proxy, and discussing the indications and desire for life-sustaining treatment for patients with a planned postoperative admission to intensive care unit.

An example of a clinical scenario in colorectal surgery that would benefit from shared-decision making to align goals of care is a 90-year-old female patient with a distal rectal cancer. The patient has mild cognitive impairment and walks with a walker but still lives independently – she values the quality of her life and it is important for her to remain living independently as long as possible. The pros/cons of surgery, treatment with chemoradiation, and observation should all be reviewed. An important part of this conversation about surgery with an older adult involves understanding their overall health and treatment goals and understanding how these goals align (or don't align) with surgical goals. For older adults that decide to move forward with surgery, it is imperative to also discuss details of advance care planning including surrogate decision makers and advance directives. The patient described above may ultimately choose to pursue chemoradiation as primary treatment for her rectal cancer and not undergo surgery, owing to the risk of surgical complications and the need for an ostomy– both of which would limit her ability to live independently.

Preoperative work-up

The goal of preoperative screening is to identify potentially modifiable geriatric vulnerabilities (e.g. components of frailty) that 1) can be optimized prior to surgery, and 2) may impact surgical outcomes and/or surgical decision making. Frailty, or an accumulation of age-related deficits, has been shown to rise in prevalence as age increases, with those 80 years or older at the highest risk of being frail.[28] Postoperative complications have been reported to occur in up to 40% of frail patients undergoing surgery, and recovery from these complications is less likely to be successful owing to the reduced ability to endure physiologic derangements.[29]

As previously discussed, geriatric-specific vulnerabilities that contribute to frailty include impaired cognition and risk of postoperative delirium, impaired functional status and ability to maintain independence, impaired mobility, and malnutrition and dehydration. In order to accurately assess the surgical risk of older adults, validated instruments targeting each of these areas must be employed to both accurately screen for geriatric-specific vulnerabilities and identify those who are at high risk. Examples of validated instruments include the Mini Cog for cognition, Activities of Daily Living (ADL) or Instrumental Activities of Daily Living (IADL) for functional status, the Timed Up and Go (TUG) test for mobility, Mini Nutritional Assessment Form (MNAF) for malnutrition, and the "surprise question" for palliative care needs. Then, targeted plans informed by interdisciplinary collaboration and expertise must be developed for patients identified as high risk (e.g. presence of geriatric-specific vulnerabilities).

Peri- and postoperative management

Given the unique vulnerabilities of older adults, it is imperative that postoperative care engages disciplines with specific skills in preventing/treating issues that can arise in older patients. Areas for interdisciplinary postoperative care for older adults include the following:

- *Prevent, recognize, and treat postoperative delirium* – delirium is a common complication after surgery and associated with worse outcomes including prolonged length of stay, discharge to skilled nursing facility, death, and readmission.
- *Avoid inappropriate medications for older adults as outlined by the American Geriatrics Society Beers Criteria*[30] – older adults are at increased risk of adverse drug events and medications that induce postoperative delirium should be avoided.
- *Promote mobility and function* – functional decline is a common complication after surgery and efforts should be made to promote early and frequent mobility in older adults which should consequently help decrease negative outcomes such as falls and pressure ulcers.
- *Maintain nutrition and hydration* – older adults may have difficulty feeding, chewing, or swallowing which impacts their ability to eat and drink; close attention to these issues should also help decrease negative outcomes such as aspiration.

Other important areas of perioperative care include: early return of personal sensory equipment (e.g. hearing aids, glasses or contacts, dentures, etc.), maintaining open channels of communication by revisiting goals of care for patients in the ICU, and reassessing for geriatric vulnerabilities at discharge to identify potential hospital-related deconditioning that may have occurred during the inpatient stay.

Transitions of care

At the time of hospital discharge, patients may either be able to return home, with or without additional services, or need to be discharged to a transitional facility (e.g. acute rehabilitation, skilled nursing). Frailty and decreased physiologic reserve exacerbate the potential for complications even after discharge from the hospital. Sensitive to this, the GSV Program requires geriatric-specific patient and caregiver education regarding geriatric syndromes (e.g. falls, postoperative delirium) and management plans in the event something occurs. In addition, re-screening for geriatric vulnerabilities at discharge is needed in order to compare to preoperative screens and develop targeted discharge plans. Finally, transparency is needed in communicating follow-up plans with members of the care team, as well as protocolized two-way communication with post-acute care facilities.

Institutional framework of quality improvement

Finally, while the standards of the GSV Program are intended to standardize and protocolize care in order to improve outcomes, the ACS recognizes that dictating clinical practice without establishing a cultural framework of quality improvement yields suboptimal results. Therefore, the GSV Program additionally helps hospitals institute an infrastructure onto which clinical standards of practice can be put into play to create durable and meaningful improvement. These

GSV Standards include demonstrating hospital leadership support, assembling a core GSV team to champion and oversee the program, updating hospital facilities to be geriatric-friendly, collecting and feeding back data to both frontline providers and hospital quality personnel, developing quality and process improvement projects, engaging the community in outreach initiatives, and educating participating frontline providers on topics of geriatric care.

Value of GSV for colorectal surgeons

Colorectal surgery as a field is a leader in the realm of interdisciplinary, evidence-based care. Enhanced Recovery Pathways (ERPs)—pioneered in colorectal surgery patients—are coordinated pre-, peri-, and postoperative processes predicated on interdisciplinary collaboration and protocolized patient education and expectation management to achieve faster recovery. Processes include minimizing narcotic use, encouraging early postoperative ambulation and oral intake, limiting intravenous fluids (to minimize bowel edema and dysmotility), and early removal of other additional tethers that hinder ambulation and encourage infection (e.g. Foley catheters). Implementation of ERPs have reduced hospital length of stay (LOS) without increasing readmissions, and, in some instances, eliminated LOS-associated racial disparities.[31] Furthermore, ERPs have been shown to be safe and effective in the older adult surgical population.[32–35]

Considering the success of ERPs, the Agency for Healthcare Research and Quality (AHRQ) sponsored Improving Surgical Care and Recovery (ISCR), or the ACS program and data registry for ERPs. There is some overlap, in principle and practice, between ISCR and GSV. In fact, all of the component ERP processes listed above are packaged, in some form, within the GSV Program. As healthcare reimbursement shifts away from volume towards value-based care, hospitals are faced with the challenging task of balancing quality and cost, inundated with a multitude of quality improvement initiatives, and armed with limited resources. For all of these reasons, it is important to note that GSV has added benefit for older adults in addition to other quality initiatives such as ERPs.

First, the GSV Program is specific to the geriatric surgical care of older patients, prioritizing shared decision making informed by what matters most to the patient. This piece is one of the most important components of GSV. Current events surrounding the convergence of surgical practice and the COVID-19 pandemic, which has preferentially affected older adults, have heightened collective awareness to the necessity of these discussions,[36] and uncovered the fallacy that current practices provide acceptable care.

Second, the GSV standards focus on preoperative identification of geriatric vulnerabilities to identify high risk patients. For example, patients with cognitive impairment are at higher risk of postoperative delirium and postoperative care pathways can be put in place for these high-risk patients to prevent delirium. Additionally, the GSV standards highlight other issues specific to older adults such as avoiding potentially inappropriate medications (e.g. gabapentin and nonsteroidal anti-inflammatory drugs (NSAIDS)) which are commonly prescribed as part of ERPs.

Third, the GSV Program has been designed with both flexibility and feasibility in mind. The GSV Program and Standards have been informed not only by extensive expert opinion but also by decades of ACS experience in quality improvement program development and implementation on a national scale. Participation in GSV includes access to ACS' first ever implementation curriculum. The *GSV Implementation Training Course* is a self-paced, module-based online course offering a structured curriculum to help hospitals meet GSV Standards by educating clinicians on best practices for geriatric surgical care, offering guidance on improving interprofessional collaboration and quality improvement culture, and promoting interdisciplinary patient-centered care. These ten online modules encompass topics such as Institutional Commitment, Facility and Data Infrastructure, Interdisciplinary Management of High-Risk Patients, Education and Research in Geriatric Surgical Care, and Verification Preparation.

Finally, the GSV program provides external peer review to confirm adherence to the standards and help overcome barriers and challenges to implementation of the standards. As demonstrated by other ACS verification programs for trauma,[37] bariatric,[38–42] and breast cancer surgery[43], patients who seek surgical care at hospitals verified in those programs have better outcomes. The GSV Program has been built and centered around evidence-based standards—unconstrained by surgical procedure—that provide a mechanism for obtaining external verification. The GSV program will afford not only patients and their loved ones, but clinicians, and the hospital system the confidence that they are receiving and providing the best possible care for older adults undergoing surgery.

Conclusion

While advances in medicine have allowed people to live longer, they have not necessarily prioritized living better. Older adults contribute disproportionately to total surgical volumes while experiencing significantly worse outcomes owing in part to potentially non-beneficial surgery and inadequate recognition and management of older adult patients' specific vulnerabilities. Until now, a lack of guidelines specific to geriatric surgery has led to variability in care and poor outcomes. The GSV Program was developed to support all hospitals—irrespective of size or access to resources—in this mission of achieving safer, better, and more equitable care regardless of age. The GSV Program has the potential to transform clinical practice across surgical specialties including colorectal surgery.

Please visit www.facs.org/geriatrics for the GSV Program standards manual or email geriatricsurgery@facs.org for more information on the GSV Program.

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