Patient Safety Tip of the Week

April 10, 2018

Prepping the Geriatric Patient for Surgery

In our August 17, 2010 Patient Safety Tip of the Week "Preoperative Consultation – Time to Change" we proposed that the three most important considerations during the preoperative assessment of geriatric patients are: (1) assessment for frailty (2) assessment for delirium risk and (3) risk assessment for obstructive sleep apnea. We've now done numerous columns on the **impact of frailty on surgical outcomes, complications, and mortality** (see full list below). But since our last column (May 16, 2017 Patient Safety Tip of the Week "Are Surgeons Finally Ready to Screen for Frailty?") there have been innumerable studies on the relationship between frailty and surgery and some good recommendations regarding preparation of geriatric patients for surgery.

A systematic review and meta-analysis (Watt 2018) looking for prognostic factors for postoperative complications in elderly patients undergoing surgery had some interesting findings. Frailty, cognitive impairment, depressive symptoms, and smoking were associated with developing postoperative complications, but age and ASA status were not. We have often emphasized that age, per se, is not a good predictor of complications. Rather, it is the underlying functional status of the individual that is important, independent of chronological age. The authors recommend focusing on potentially modifiable prognostic factors (e.g., frailty, depressive symptoms, and smoking) associated with developing postoperative complications that can be targeted preoperatively to optimize care.

The Watt study and others have aptly pointed out that pre-existing **cognitive impairment** is a risk factor for postoperative delirium and other complications. We've noted in prior columns on delirium that simple assessment of cognitive function can be done using the MMSE (Mini Mental Status Exam) or the MiniCog, or simply having the patient draw a clock.

Two widely used tools to estimate surgical risk, the ASA status and the ACS NSQIP Surgical Risk Calculator, do not include either frailty or cognitive impairment in their risk assessments. The ACS NSQIP Surgical Risk Calculator is a nationally validated tool and does have an input for functional status (independent, partially dependent, fully dependent). But given all the recent attention to both frailty and cognitive impairment as factors contributing to surgical risk, we suspect future updates of the NSQIP online calculator will include modifications for these factors.

The American College of Surgeons and the American Geriatrics Society have suggested that preoperative cognitive screening should be performed in older surgical patients.

Culley et al. (Culley 2017) studied 211 patients 65 year of age or older without a diagnosis of dementia who were scheduled for an elective hip or knee replacement, screening them preoperatively using the Mini-Cog. Patients with a Mini-Cog score less than or equal to 2 (24% of patients) were more likely to be discharged to a place other than home, develop postoperative delirium, and have a longer hospital length of stay.

Frailty and cognitive impairment are often associated. A previous study noted the close association between frailty and cognitive impairment and found that taking cognitive function into account may allow better prediction of adverse outcomes of frailty in later life (Lee 2017a). Now a new study (Makhani 2017) demonstrated that using a combination of the Fried Frailty score and the Emory clock draw test to assess preoperative frailty and cognitive impairment, respectively, more accurately predicted survival after surgery than either alone. The authors conclude that the addition of cognitive assessment to physical frailty measure can improve preoperative decision making and possibly early intervention, as well as more accurate patient counseling.

A second recent study (Min 2017) used the Vulnerable Elders Surgical Pathways and Outcomes Assessment (VESPA) tool, along with the Mini-Cog and Timed Up and Go test during preoperative evaluation of patients 70 years of age or older who were underwent elective surgery. Patients were assessed on 5 preoperative activities of daily living recommended by the American College of Surgeons (bathing, transferring, dressing, shopping, and meals), history of falling or gait impairment, and depressive symptoms (2-item Patient Health Questionnaire). Patients also underwent a brief cognitive examination (Mini-Cog) and gait and balance assessment (Timed Up and Go test). A novel question was also asked as to whether patients expected they could manage themselves alone after discharge. Comorbidities and work-related relative value units (categorized into low, moderate, and high tertiles) were also collected.

A total of 131 of 740 patients had geriatric complications, and 114 of 740 patients had surgical complications; 187 of 740 patients (25.3%) had either geriatric or surgical complications. The following items were independently associated with postoperative complications: the number of difficulties with activities of daily living, anticipated difficulty with postoperative self-care, Charlson Comorbidity score of 2 or more vs less than 2, male sex, and work-related relative value units. A whole-point VESPA score used alone to estimate risk of complications also demonstrated excellent fit.

Yet another recent study assessed the impact of frailty on failure to rescue in a cohort of almost a million patients undergoing inpatient general, vascular, thoracic, cardiac, and orthopedic surgery in the National Surgical Quality Improvement Program (Shah 2018). Frailty was assessed using the Risk Analysis Index (RAI), and patients were stratified into 5 groups (RAI score, ≤10, 11-20, 21-30, 31-40, and >40). Procedures were categorized as low mortality risk (≤1%) or high mortality risk (>1%). They found that **frailty has a dose-response association with complications and failure to rescue** and that this relationship is apparent after low-risk and high-risk inpatient surgery.

Most studies on "the elderly" include all patients age 65 and older. But one study (Pelavski 2017) points out that "the eldest old" (those age 85 and older) is the fastest-growing and most vulnerable group and also an insufficiently studied group. Those researchers looked at patients aged ≥85 years undergoing any elective procedure and analyzed demographic data, grade of surgical complexity, preoperative comorbidities, and some characteristically geriatric conditions (functional reserve, nutrition, cognitive status, polypharmacy, dependency, and frailty). The 30-day mortality was 7.9% and had 3 predictors: malnutrition (odds ratio 15), complexity 3 (OR 9.1), and osteoporosis/osteoporotic fractures (OR 14.7). Significant predictors for morbidity were ischemic heart disease (OR 3.9) and complexity 3 (OR 3.6), while a nonfrail phenotype (OR 0.3) was found to be protective. Only 2 factors were found to be predictive of longer admissions, namely complexity 3 (OR, 4.4) and frailty (OR 2.7). Finally, risk factors for escalation of care in living conditions were slow gait (a surrogate for frailty, OR 2.5), complexity 3 (OR 3.2), and hypertension (OR 2.9). They conclude that surgical complexity and certain geriatric variables (malnutrition and frailty), which are overlooked in American Society of Anesthesiologists and most other usual scores, are particularly relevant in this population.

Estimating the risk of morbidity and mortality for surgery is important in providing patients with solid information when discussing whether to proceed with surgery. It can lead to realistic expectations. But accurate prediction might also help avoid decisions to unnecessarily avoid surgery. In fact, a recent study showed that both surgical and internal medicine residents routinely overestimate the risk of postoperative complications and death compared to the NSQIP online calculator (Healy 2017). Maybe the residents are already considering factors not included in the NSQIP, such as frailty and cognitive impairment!

Another important concept in geriatric care is "**functional trajectory**". That basically describes the course of disabilities in a patient. Researchers at Yale (Stabenau 2018) logically hypothesized that the functional trajectory of a patient in the year prior to surgery might predict functional outcomes after surgery. They studied community-living persons, 70 years or older for the year prior to and year after surgery. Before surgery, 4 functional trajectories were identified: no disability, mild, moderate, and severe disability. After surgery, 4 functional trajectories were identified: rapid, gradual, partial, and little improvement. They saw rapid improvement in 51.7% of participants with no disability before surgery, but only 9.5% of those with mild disability, and 0% in those in the moderate and severe trajectory groups. For participants with mild to moderate disability before surgery, gradual improvement was seen in 54.8% and partial improvement in 49.3%. Most participants (81.8%) with severe disability before surgery exhibited little improvement. Also, outcomes were better for participants undergoing elective versus nonelective surgery. Thus, functional prognosis in the year after major surgery is highly dependent on premorbid function and functional trajectory.

How are we actually doing at documenting issues related to frailty in patients undergoing surgery? A study done in Ottawa, Ontario (MacDonald 2017 abstract 1473) found striking gaps between recommended and actual practices for elderly patients undergoing

non-cardiac surgery. The authors noted that, for geriatric patients, guidelines recommend assessment for frailty, decision-making capacity (DMC), and the consent process be documented in a manner that reflects geriatric syndromes such as frailty and cognitive dysfunction. A random sample of 240 patients, aged 65 or older, having elective inpatient surgery at a tertiary care center was identified.

Frailty was mentioned in 1% of the charts reviewed and no formal frailty assessments were documented. Risk quantification was documented in 15% of the preoperative notes. The four legally relevant criteria for assessment of DMC were documented in 3% of the notes. All notes documented at least four of the seven elements required for informed consent but all elements were present in only 1% of the notes. Specific risks of the procedure were documented in 56%, unique risks in 20%, and the risks of not treating the diagnosed condition were documented in 6% of surgical notes.

The authors conclude that, despite guidelines for optimal preoperative assessment of the geriatric patient, recommended practices such as frailty and DMC assessment are rarely documented. Furthermore, legally required elements of informed consent are regularly missing from the preoperative surgical notes.

There are, of course, a variety of tools used for screening for frailty, varying from simple to complex. Many are described in our May 31, 2016 Patient Safety Tip of the Week "More Frailty Measures That Predict Surgical Outcomes" and the other columns listed at the end of today's column. We've noted some of the simpler ones have looked at gait speed, the timed up-and-go test, handgrip strength, and others. And in our May 16, 2017 Patient Safety Tip of the Week "Are Surgeons Finally Ready to Screen for Frailty?" we noted a stoudy that looked at individual components of the Fried frailty phenotype measures (gait speed, hand-grip strength as measured by a dynamometer, and self-reported exhaustion, low physical activity, and unintended weight loss) in a primary care setting (Lee 2017b). The researchers found that individual criteria all showed sensitivity and specificity of more than 80%, with the exception of weight loss. The positive predictive value of the single-item criteria in predicting the Fried frailty phenotype ranged from 12.5% to 52.5%. When gait speed and hand-grip strength were combined as a dual measure, the positive predictive value increased to 87.5%. They conclude that, while use of gait speed or grip strength alone was found to be sensitive and specific as a proxy for the Fried frailty phenotype, use of both measures together was found to be accurate, precise, specific, and more sensitive than other possible combinations and that assessing both measures is feasible within the primary care setting.

Recently, Canadian researchers performed a multicenter cohort study to compare the predictive accuracy of two leading frailty tools, the Clinical Frailty Scale (CFS) and the Modified Fried Index (mFI), in identifying older patients who have self-reported disability after elective surgery (McIsaac 2017 abstract 284220). The primary outcome was new disability at 90 days after surgery using the validated WHODAS 2.0 tool. Preliminary findings showed new disabilities were present in 11.2 % of 509 participants. The CFS was 77% sensitive and 54% specific for new disability; the mFI 13% and 84% respectively. The relative true positive rate (rTPR) and relative false positive rate (rFPR)

were 5.92 and 2.9 (CFS vs. mFI). Each unit increase on the CFS was associated with a 1.71 times increase in the odds of new disability; each increase in the mFI increased the odds 1.64-fold. Thus, these preliminary results suggest that the CFS was more sensitive at identifying patients who experience a new disability after surgery, while the mFI was more specific. The incremental risk associated with increasing frailty on each scale was similar. Based on these results, the authors recommend that choice of a frailty instrument be guided by the purpose for screening. Where a sensitive approach is needed, the CFS appears to be superior. When specificity is required, the mFI appears to be superior. Efforts to assess the feasibility and acceptability of each instrument are needed, as are evaluation of optimal cut-points in the perioperative setting.

But we concur with the authors that ease of and time required for administration of the tool will likely be a deciding factor in which to use. We have often advocated for use of the most simple tests for frailty (timed up and go test, gait speed, handgrip strength) to get surgeons to screen for frailty preoperatively. But McIsaac and colleagues note that the Clinical Frailty Scale takes only about 30 seconds to administer, compared to about 5 minutes for the modified Fried Index. You can see the Clinical Frailty Scale here.

Another recent Canadian study used the Clinical Frailty Scale to prospectively evaluate patients 65 years of age or older who underwent emergency abdominal surgery (Li 2018). 54.5% were classified as vulnerable (CFS score 3 or 4) and 22.1% as frail (CFS score 5 or 6). At 30 days after discharge, the proportions of patients who were readmitted or had died were greater among vulnerable patients (adjusted odds ratio 4.60), and frail patients (adjusted OR 4.51). And by 6 months, the degree of frailty independently and dose-dependently predicted readmission or death. Thus, the degree of frailty has important prognostic value for readmission. Yet only 4.2% of those classified as vulnerable or frail received a geriatric consultation.

The bottom line: screening for frailty and cognitive decline need not be time consuming and can be easily performed in an office or clinic setting prior to anticipated surgery using either one of the formal frailty scores or one of the simple tests noted above. Patients identified as frail by these methods not only need closer surveillance for complications post-operatively but may benefit from a multidisciplinary comprehensive geriatric management program prior to surgery.

Feldman and Carli (Feldman 2018), in an editorial accompanying the Shah study, point out that the evidence associating frailty with poor outcomes is now firmly established and that the real question is whether we can intervene to optimize patients prior to surgery and thereby improve outcomes.

So, are preoperative programs for frail elderly patients successful? Recently published results of the Perioperative Optimization of Senior Health (**POSH**) study (McDonald 2018) would suggest they are. POSH looked patients who were undergoing elective abdominal surgery and were considered at high risk for complications (ie, older than 85 years or older than 65 years with cognitive impairment, recent weight loss, multimorbidity, polypharmacy, visual or hearing loss, or simply deemed by their

surgeons to be at higher risk). Intervention patients received a multidisciplinary comprehensive preoperative evaluation that focused on cognition, medications, comorbidities, mobility, functional status, nutrition, hydration, pain, and advanced care planning.

Despite higher mean age and morbidity burden, older adults who participated in this interdisciplinary perioperative care intervention had fewer complications, shorter hospitalizations, more frequent discharge to home, and fewer readmissions than a comparison group. Though this was not a randomized, controlled trial (it was a before/after study design) and did not include a formal frailty measure, it is quite clear that most or all the intervention group patients were frail.

One small randomized trial of "prehabilitation" in high-risk patients (age >70 years and/or American Society of Anesthesiologists score III/IV) undergoing elective major abdominal surgery has recently been completed (Barberan-Garcia 2018).The researchers randomized 71 patients to the control arm and 73 to intervention. Prehabilitation covered 3 actions: motivational interview; high-intensity endurance training, and promotion of physical activity. The intervention group enhanced aerobic capacity, reduced the number of patients with postoperative complications by 51%, and the rate of complications ($P = 0.001$).

But a larger randomized study is ongoing. After doing a systematic review (McIsaac 2017 abstract 1037) that concluded there were few studies evaluating interventions specific to frail surgical patients, Canadian researchers began a study to test the efficacy of home-based **prehabilitation** of frail older people to improve their postoperative function following elective surgery cancer surgery (McIsaac 2017 abstract 1256). The study is randomizing consenting patients >65 years who are scheduled to undergo elective surgery for intraabdominal/thoracic cancer ≥4 weeks from recruitment, and who are diagnosed with frailty based on a Clinical Frailty Scale score of >4 out of 9. Patients in the intervention group will perform a home-based total-body exercise training program (prehabilitation) based on a protocol of proven efficacy. This prehabilitation consists of 3 components: 1) strength; 2) aerobics; and 3) flexibility. Participants also receive in-person teaching and video instruction to facilitate the program at home. Compliance will be assessed by weekly phone calls. Control group participants receive standard care. Primary outcome is the 6-minute walk test at the first clinic follow up after hospital discharge. Secondary outcomes are the Short Physical Performance Battery, EQ-5D health related quality of life measure, disability-free survival, adverse events, length of stay, and disposition,

Hopefully the ongoing McIsaac study will answer the question about utility of prehabilitation in preparing the frail geriatric patient for surgery.

Most of the published work on the association between frailty and surgical morbidity and mortality has pertained to surgical procedures traditionally performed on inpatients. But a recent study looked at ambulatory general surgery procedures (Seib 2018). Seib and colleagues found that frailty was associated with increased perioperative morbidity in

common ambulatory general surgery operations, independent of age, type of anesthesia, and other comorbidities. An increasing modified frailty index was associated with a stepwise increase in the incidence of complications.

So while we are waiting for the above study results, what should you do? Coburn et al. (Colburn 2017) were able to distill the recommendations of the 60+ pages in the Optimal Perioperative Management Of The Geriatric Patient: Best Practices Guideline from ACS NSQIP®/American Geriatrics Society (Mohanty 2016) into a much more concise document. It includes most of the interventions done in the POSH study noted above. This contains a nice checklist of items for clinicians to consider in preparing geriatric patients for surgery. In addition to traditional surgical risk factors like cardiac and pulmonary risks, it focuses on risk of developing delirium, risk of frailty, and risk of functional decline. In addition to surgical risk, it has categories for medication management, functional status, goals of care, and care transitions.

It also has a section on in-hospital perioperative management that includes a table with drugs that should be avoided and alternatives that may be used. It also includes good advice regarding anesthesia, analgesia, perioperative nausea/vomiting (PONV), and fluid management. It has an excellent section on prevention, assessment, and management of postoperative delirium.

It discusses prevention of pulmonary complications, UTI's, falls, pressure ulcers, and nutritional issues. There is a very good section on strategies to prevent functional decline (use of the Hospital Elder Life Program, early mobilization, early involvement of PT/OT, geriatric co-management, and interdisciplinary discharge planning).

It then focuses on the importance of care transition planning, assessing social support and need for home health before discharge, and involvement of family and caregivers as appropriate in discharge planning. Good medication reconciliation is stressed, including ensuring the patient and/or caregiver understand the purpose of each drug, how to take, and expected side effects/adverse reactions. The discharge planning process needs to be interdisciplinary, including surgeons, geriatricians, nursing and pharmacy plus social workers/discharge planners and family/caregivers. We're glad to see they emphasize the importance of communicating with the patient's primary caregiver and ensuring that a complete discharge summary is provided for the PCP. Also, as we've so often stressed, **documentation of pending labs/studies**, needs to be communicated to the patient, his/her PCP, and the surgeon.

There are numerous existing standards of care for the geriatric patient undergoing surgery. The Coalition for Quality in Geriatric Surgery (CQGS) includes 58 diverse stakeholder organizations committed to improving geriatric surgery. Using a modified RAND-UCLA Appropriateness Methodology, CQGS found that three hundred six of 308 (99%) standards to improve the surgical care of older adults were rated as valid to improve quality of geriatric surgery (Berian 2018). We refer you to the Berian article to see all 306 standards.

The AORN Position Statement on Care of the Older Adult in Perioperative Settings (AORN 2015) also includes important considerations for the nursing approach to older patients in the perioperative period.

As our population continues to age, more and more elderly patients will be undergoing surgery. We need to have in place systems that are attuned to the unique risks that this population presents.

Some of our prior columns on preoperative assessment and frailty:

- March 31, 2009 "Screening Patients for Risk of Delirium"
- January 26, 2010 "Preventing Postoperative Delirium"
- June 2010 "The Frailty Index and Surgical Outcomes"
- August 17, 2010 "Preoperative Consultation – Time to Change"
- August 31, 2010 "Postoperative Delirium"
- August 9, 2011 "Frailty and the Surgical Patient"
- September 2011 "Modified HELP Helps Outcomes in Elderly Undergoing Abdominal Surgery")
- October 18, 2011 "High Risk Surgical Patients"
- November 2011 "Timed Up-and-Go Test and Surgical Outcomes"
- April 3, 2012 "New Risk for Postoperative Delirium: Obstructive Sleep Apnea"
- August 7, 2012 "Cognition, Post-Op Delirium, and Post-Op Outcomes"
- August 14, 2012 "Gait Speed: A New Vital Sign?"
- September 25, 2012 "Preoperative Assessment for Geriatric Patients"
- September 3, 2013 "Predicting Perioperative Complications: Slow and Simple"
- November 2013 "Predicting Perioperative Complications: Even Simpler!"
- June 2014 "Another Study Linking Frailty to Surgical Complications"
- September 2, 2014 "Frailty and the Trauma Patient"
- February 17, 2015 "Functional Impairment and Hospital Readmission, Surgical Outcomes"
- June 2015 "Get a Grip on It!"
- January 26, 2016 "More on Frailty and Surgical Morbidity and Mortality"
- May 2016 "Guidelines for Perioperative Geriatric Care"
- May 31, 2016 "More Frailty Measures That Predict Surgical Outcomes"
- May 16, 2017 "Are Surgeons Finally Ready to Screen for Frailty?"
- February 2018 "Global Sensory Impairment and Patient Safety"

References:

Watt J, Tricco AC, Talbot-Hamon C, et al. Identifying older adults at risk of harm following elective surgery: a systematic review and meta-analysis. BMC Med 2018; 16: 2
https://bmcmedicine.biomedcentral.com/articles/10.1186/s12916-017-0986-2

ACS NSQIP Surgical Risk Calculator
https://riskcalculator.facs.org/RiskCalculator/

Culley DJ, Flaherty D, Fahey MC, et al. Poor Performance on a Preoperative Cognitive Screening Test Predicts Postoperative Complications in Older Orthopedic Surgical Patients. Anesthesiology 2017; 127(5): 765-774
http://anesthesiology.pubs.asahq.org/article.aspx?articleid=2654245

Lee L, Patel T, Costa A, Bryce E, Hillier LM, Slonim K, et al. Screening for frailty in primary care. Accuracy of gait speed and hand-grip strength. Can Fam Physician 2017; 63: e51-7
http://www.cfp.ca/content/63/1/e51

Makhani SS, Kim FY, Li Y, et al. Cognitive Impairment and Overall Survival in Frail Surgical Patients. J Amer Coll Surg 2017; published online August 4, 2017
http://www.journalacs.org/article/S1072-7515(17)31705-2/fulltext

Min L, Hall K, Finlayson E, et al. Estimating Risk of Postsurgical General and Geriatric Complications Using the VESPA Preoperative Tool. JAMA Surg 2017; Published online August 2, 2017
http://jamanetwork.com/journals/jamasurgery/article-abstract/2644903

Min L, Hall K, Finlayson E, et al. The Vespa Pre-Operative Tool: A Scale That Predicts Post-Surgical General And Geriatric Complications. Innovation in Aging 2017; 1(suppl_1): 928 Published: 30 June 2017
https://academic.oup.com/innovateage/article/1/suppl_1/928/3900410

Shah R, Attwood K, Arya S, et al. Association of Frailty With Failure to Rescue After Low-Risk and High-Risk Inpatient Surgery. JAMA Surg 2018; Published online March 21, 2018
https://jamanetwork.com/journals/jamasurgery/article-abstract/2675993?utm_source=silverchair&utm_medium=email&utm_campaign=article_alert-jamasurgery&utm_content=olf&utm_term=032118&redirect=true

Pelavski AD, De Miguel M, Alcaraz Garcia-Tejedor G, et al. Mortality, Geriatric, and Nongeriatric Surgical Risk Factors Among the Eldest Old: A Prospective Observational Study. Anesthesia & Analgesia 2017; 125(4): 1329-1336
https://journals.lww.com/anesthesia-analgesia/Abstract/2017/10000/Mortality,_Geriatric,_and_Nongeriatric_Surgical.39.aspx

Healy JM, Davis KA, Pei KY. Comparison of Internal Medicine and General Surgery Residents' Assessments of Risk of Postsurgical Complications in Surgically Complex.Patients. JAMA Surg 2017; Published online October 11, 2017
https://jamanetwork.com/journals/jamasurgery/fullarticle/2656839

Stabenau HF, Becher RD, Gahbauer EA, et al. Functional Trajectories Before and After Major Surgery in Older Adults, Annals of Surgery 2018; Published Ahead of Print: January 19, 2018
https://journals.lww.com/annalsofsurgery/Abstract/publishahead/Functional_Trajectories_Before_and_After_Major.95733.aspx

MacDonald DB, Pelipeychenko D, Boland L, McIsaac DI. Documentation of Frailty, Capacity and Consent for Elderly Patients Having Elective Inpatient Non-Cardiac Surgery: A Clear Evidence-Practice Gap. International Anesthesia Research Society 2017 Annual Meeting. Abstract 1473
https://iars.app.box.com/v/IARS2017AbstractSupplement/file/164641914799

Lee Y, Kim J, Chon D, et al. The effects of frailty and cognitive impairment on 3-year mortality in older adults. Maturitas 2017; 107: 50-55
http://www.maturitas.org/article/S0378-5122(17)30711-9/fulltext

McIsaac DI, Hamilton G, Hladkowicz E, Bryson G. Comparing Two Frailty Tools To Predict Disability After Elective Noncardiac Surgery: A Multicentre Cohort Study. 2017 annual meeting of the Canadian Anesthesiologists' Society (abstract 284220)
http://www.casconference.ca/cas-media/2017/abstracts/CAS_2017_Poster_Discussions.pdf

Clinical Frailty Scale
http://camapcanada.ca/Frailtyscale.pdf

Li Y, Pederson JL, Churchill TA, et al. Vulnerable Populations: Impact of frailty on outcomes after discharge in older surgical patients: a prospective cohort study. CMAJ 2018; 190 (7): E184-E190

http://www.cmaj.ca/content/190/7/E184

Feldman LS, Carli F. From Preoperative Assessment to Preoperative Optimization of Frailty. (editorial). JAMA Surg 2018; Published online March 21, 2018 https://jamanetwork.com/journals/jamasurgery/article-abstract/2675990?redirect=true (Feldman 2018)

McDonald SR, Heflin MT, Whitson HE, et al. Association of Integrated Care Coordination With Postsurgical Outcomes in High-Risk Older AdultsThe Perioperative Optimization of Senior Health (POSH) Initiative. JAMA Surg 2018; Published online January 3, 2018 https://jamanetwork.com/journals/jamasurgery/article-abstract/2666836?redirect=true

Barberan-Garcia A, Ubré M, Roca J, et al. Personalised Prehabilitation in High-risk Patients Undergoing Elective Major Abdominal Surgery: A Randomized Blinded Controlled Trial. Ann Surg 2018; 267(1): 50-56 https://insights.ovid.com/pubmed?pmid=28489682

McIsaac DI, Ting Han Jen T, Mookerji N, et al. Prehabilitation Before Cancer Surgery to Improve Patient Function in Frail Elderly. International Anesthesia Research Society 2017 Annual Meeting. Abstract 1037 https://iars.app.box.com/v/IARS2017AbstractSupplement/file/164641914799

McIsaac DI, Moloo H, Lavallee LT, et al. Prehabilitation Before Cancer Surgery to Improve Patient Function in Frail Elderly. International Anesthesia Research Society 2017 Annual Meeting. Abstract 1256 https://iars.app.box.com/v/IARS2017AbstractSupplement/file/164641914799

Seib CD, Rochefort H, Chomsky-Higgins K, et al. Association of Patient Frailty With Increased Morbidity After Common Ambulatory General Surgery Operations. JAMA Surg 2018; 153(2): 160-168 Published online October 11, 2017 https://jamanetwork.com/journals/jamasurgery/article-abstract/2656841?utm_source=silverchair&utm_medium=email&utm_campaign=article_alert-jamasurgery&utm_content=etoc&utm_term=022118&redirect=true

Colburn JL, Mohanty S, Burton JR. Surgical Guidelines for Perioperative Management of Older Adults: What Geriatricians Need to Know. J Am Geriatr Soc 2017; 65(6): 1339-1346 http://onlinelibrary.wiley.com/doi/10.1111/jgs.14877/full

Mohanty S, Rosenthal RA, Russell MM, et al. Optimal Perioperative Management Of The Geriatric Patient: Best Practices Guideline from ACS NSQIP®/American Geriatrics Society. ACS NSQIP®/American Geriatrics Society 2016 https://www.facs.org/~/media/files/quality%20programs/geriatric/acs%20nsqip%20geriatric%202016%20guidelines.ashx

Berian JR, Rosenthal RA, Baker TL, et al. Hospital Standards to Promote Optimal Surgical Care of the Older Adult: A Report From the Coalition for Quality in Geriatric Surgery. Annals of Surgery 2018; 267(2): 280-290, February 2018 https://journals.lww.com/annalsofsurgery/Fulltext/2018/02000/Hospital_Standards_to_Promote_Optimal_Surgical.15.aspx

AORN (Association of periOperative Registered Nurses). AORN Position Statement on Care of the Older Adult in Perioperative Settings. AORN 2015 https://www.aorn.org/-/media/aorn/guidelines/position-statements/posstat-patients-older-adults.pdf

http://www.patientsafetysolutions.com/

Home

Tip of the Week Archive

What's New in the Patient Safety World Archive