Ref #	Cycle #	Topic	Citation	Fulltext or Citation Link	Abstract	SORT Grade or Source	Comments by Reviewer
Cycle 1: Disability despite non-surgical therapy							
1	I	Multiple elements of Cycle 1	2012 ACCF/AHA/ACP/AATS/PCNA/SCAI/STS guideline for the diagnosis and management of patients with stable ischemic heart disease: a report of the American College of Cardiology Foundation/American Heart Association task force on practice guidelines, and the American College of Physicians, American Association for Thoracic Surgery, Preventive Cardiovascular Nurses Association, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons. Circulation. 2012 Dec 18;126(25):e354-471. PMID: 23166211	http://circ.ahajournals.org/content/126/25/e354.long		Tier-2 Source	Professional society guideline that pertains to eleven elements of Cycle 1: I/B, I/C/1, I/C/2/a, I/C/3, I/C/4, I/C/7, I/C/10, I/C/13, I/C/14, I/C/15, and I/C/16. **--> Supports elements of Cycle 1.**
2	I	Multiple elements of Cycle 1	Fihn SD, Blankenship JC, Alexander KP, Bittl JA, Byrne JG, Fletcher BJ, Fonarow GC, Lange RA, Levine GN, Maddox TM, Naidu SS, Ohman EM, Smith PK. 2014 ACC/AHA/AATS/PCNA/SCAI/STS focused update of the guideline for the diagnosis and management of patients with stable ischemic heart disease: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines, and the American Association for Thoracic Surgery, Preventive Cardiovascular Nurses Association, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons. Circulation. 2014 Nov 4;130(19):1749-67. Epub 2014 Jul 28. PMID: 25070666	http://circ.ahajournals.org/content/130/19/1749.long		Tier-2 Source	Focused update to citation #1. **--> Supports elements of Cycle 1.**
3	I	Multiple elements of Cycle 1	Patel MR, Dehmer GJ, Hirshfeld JW, Smith PK, Spertus JA; American College of Cardiology Foundation Appropriateness Criteria Task Force; Society for Cardiovascular Angiography and Interventions; Society of Thoracic Surgeons; American Association for Thoracic Surgery; American Heart Association, and the American Society of Nuclear Cardiology Endorsed by the American Society of Echocardiography; Heart Failure Society of America; Society of Cardiovascular Computed Tomography. ACCF/SCAI/STS/AATS/AHA/ASNC 2009 Appropriateness Criteria for Coronary Revascularization: a report by the American College of Cardiology Foundation Appropriateness Criteria Task Force, Society for Cardiovascular Angiography and Interventions, Society of Thoracic Surgeons, American Association for Thoracic Surgery, American Heart Association, and the American Society of Nuclear Cardiology Endorsed by the American Society of Echocardiography, the Heart Failure Society of America, and the Society of Cardiovascular Computed Tomography. J Am Coll Cardiol. 2009 Feb 10;53(6):530-53. doi: 10.1016/j.jacc.2008.10.005. PubMed PMID: 19195618		The American College of Cardiology Foundation (ACCF), Society for Cardiovascular Angiography and Interventions, Society of Thoracic Surgeons, and the American Association for Thoracic Surgery, along with key specialty and subspecialty societies, conducted an appropriateness review of common clinical scenarios in which coronary revascularization is frequently considered. The clinical scenarios were developed to mimic common situations encountered in everyday practice and included information on symptom status, extent of medical therapy, risk level as assessed by noninvasive testing, and coronary anatomy. Approximately 180 clinical scenarios were developed by a writing committee and scored by a separate technical panel on a scale of 1 to 9. Scores of 7 to 9 indicate that revascularization was considered appropriate and likely to improve health outcomes or survival. Scores of 1 to 3 indicate revascularization was considered inappropriate and unlikely to improve health outcomes or survival. The mid range (4 to 6) indicates a clinical scenario for which the likelihood that coronary revascularization would improve health outcomes or survival was considered uncertain. For the majority of the clinical scenarios, the panel only considered the appropriateness of revascularization irrespective of whether this was accomplished by percutaneous coronary intervention (PCI) or coronary artery bypass graft surgery (CABG). In a select subgroup of clinical scenarios in which revascularization is generally considered appropriate, the appropriateness of PCI and CABG individually as the primary mode of revascularization was considered. In general, the use of coronary revascularization for patients with acute coronary syndromes and combinations of significant symptoms and/or ischemia was viewed favorably. In contrast, revascularization of asymptomatic patients or patients with low-risk findings on noninvasive testing and minimal medical therapy were viewed less favorably. It is anticipated that these results will have an impact on physician decision making and patient education regarding expected benefits from revascularization and will help guide future research.	Tier-2 Source	Professional society guideline that pertains to two elements of Cycle 1: : I/C and I/D/2. **--> Supports elements of Cycle 1.**
4	I	Multiple elements of Cycle 1	Patel MR, Dehmer GJ, Hirshfeld JW, Smith PK, Spertus JA. ACCF/SCAI/STS/AATS/AHA/ASNC/HFSA/SCCT 2012 Appropriate Use Criteria for Coronary Revascularization Focused Update: A Report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, Society for Cardiovascular Angiography and Interventions, Society of Thoracic Surgeons, American Association for Thoracic Surgery, American Heart Association, American Society of Nuclear Cardiology, and the Society of Cardiovascular Computed Tomography. J Am Coll Cardiol. 2012;59(9):857-881. PMID: 22296741	http://www.sciencedirect.com/science/article/pii/S0735109711050972	The American College of Cardiology Foundation (ACCF), Society for Cardiovascular Angiography and Interventions, Society of Thoracic Surgeons, and the American Association for Thoracic Surgery, along with key specialty and subspecialty societies, conducted an update of the appropriate use criteria (AUC) for coronary revascularization frequently considered. In the initial document, 180 clinical scenarios were developed to mimic patient presentations encountered in everyday practice and included information on symptom status, extent of medical therapy, risk level as assessed by noninvasive testing, and coronary anatomy. This update provides a reassessment of clinical scenarios the writing group felt to be affected by significant changes in the medical literature or gaps from prior criteria. The methodology used in this update is similar to the initial document, and the definition of appropriateness was unchanged. The technical panel scored the clinical scenarios on a scale of 1 to 9. Scores of 7 to 9 indicate that revascularization is considered appropriate and likely to improve patients' health outcomes or survival. Scores of 1 to 3 indicate revascularization is considered inappropriate and unlikely to improve health outcomes or survival. Scores in the mid-range (4 to 6) indicate a clinical scenario for which the likelihood that coronary revascularization will improve health outcomes or survival is uncertain. In general, as seen with the prior AUC, the use of coronary revascularization for patients with acute coronary syndromes and combinations of significant symptoms and/or ischemia is appropriate. In contrast, revascularization of asymptomatic patients or patients with low-risk findings on noninvasive testing and minimal medical therapy are viewed less favorably. The technical panel felt that based on recent studies, coronary artery bypass grafting remains an appropriate method of revascularization for patients with high burden of coronary artery disease (CAD). Additionally,percutaneous coronary intervention may have a role in revascularization of patients with high burden of CAD. The primary objective of the appropriate use criteria is to improve physician decision making and patient education regarding expected benefits from revascularization and to guide future research.	Tier-2 Source	Professional society guideline that pertains to two elements of Cycle 1: : I/C and I/D/2. **--> Supports elements of Cycle 1.**

5	I	Multiple elements of Cycle 1	Methodology manual and policies from the ACCF/AHA Task Force on Practice Guidelines. June 2010.	http://my.americanheart.org/idc/groups/ahamah-public/@wcm/@sop/documents/downloadable/ucm_319826.pdf		n/a	Methods utilized by the Task Force for writing clinical practice guidelines and appraising evidence for recommendations. **--> Support document to accompany the Guideline.**
6	I / A / 1	Document disability	Canadian Cardiovascular Society grading of angina pectoris.	http://www.ccs.ca/images/Guidelines/Guidelines_POS_Library/Ang_Gui_1976.pdf		3/C	**--> Guideline from professional society specifying grading of angina pectoris.**
7	I / A / 1	Document disability	Campeau L. Letter: Grading of angina pectoris. Circulation. 1976 Sep;54(3):522-3. PMID: 947585	*Request copy at local library.*		3/C	Letter to the editor referencing the grading standard of angina pectoris. **--> Unvalidated statement of prevailing grading scale for severity of angina pectoris.**
8	I / A / 2	Document disability; Seattle Angina Questionnaire tool	Spertus J. Seattle Angina Questionnaire - 7. c1992-2013.	http://www.ichom.org/files/proms/SAQ-7.pdf		n/a	**--> Content of the SAQ.**
9	I / A / 2	Document disability; Seattle Angina Questionnaire	Dougherty CM, Dewhurst T, Nichol WP, Spertus J Comparison of three quality of life instruments in stable angina pectoris: Seattle Angina Questionnaire, Short Form Health Survey (SF-36), and Quality of Life Index-Cardiac Version III. J Clin Epidemiol. 1998 Jul;51(7):569-75. PMID: 9674663	*Request copy at local library.*	Three instruments for the assessment of quality of life, the Seattle Angina Questionnaire (SAQ), the Short Form Health Survey (SF-36), and the Quality of Life Index-Cardiac Version III (QLI) were administered to 107 patients with stable angina pectoris in a longitudinal randomized trial comparing the use of alternative anginal medications in the management of chronic stable angina pectoris. This study demonstrated that differences in angina severity as measured by the Canadian Cardiovascular Society Classification (CCSC) were related to each of the SAQ subscales, to selected subscales of the SF-36, but not to the QLI. All quality of life (QOL) instruments demonstrated acceptable test-retest reliability when administered over a 2-week interval. Neither the SF-36 nor the QLI were discriminative of angina severity or sensitive to changes in CCSC angina classification. Both the SAQ and QLI detected changes in heart disease related QOL over time.	2/B	"Overall, the SAQ demonstrated the greatest sensitivity to angina classification and was the easiest to use for both patients and investigators." Relatively small study size and restricted to male patients. Used a validated reference standard for comparison. **--> Supports the use of the Seattle Angina Questionnaire as a measure of patient disability.**
10	I / A / 3	Document Disability; PROMIS 10; Patient reported outcome tool	Cella D, Riley W, Stone A, Rothrock N, Reeve B, Yount S, Amtmann D, Bode R, Buysse D, Choi S, Cook K, Devellis R, DeWalt D, Fries JF, Gershon R, Hahn EA, Lai JS, Pilkonis P, Revicki D, Rose M, Weinfurt K, Hays R; PROMIS Cooperative Group. The Patient-Reported Outcomes Measurement Information System (PROMIS) developed and tested its first wave of adult self-reported health outcome item banks: 2005-2008. J Clin Epidemiol. 2010 Nov; 63(11): 1179-94. PMID: 20685078	https://www.clinicalkey.com/#!/content/journal/1-s2.0-S0895435610001733	OBJECTIVES: Patient-reported outcomes (PROs) are essential when evaluating many new treatments in health care; yet, current measures have been limited by a lack of precision, standardization, and comparability of scores across studies and diseases. The Patient-Reported Outcomes Measurement Information System (PROMIS) provides item banks that offer the potential for efficient (minimizes item number without compromising reliability), flexible (enables optional use of interchangeable items), and precise (has minimal error in estimate) measurement of commonly studied PROs. We report results from the first large-scale testing of PROMIS items. STUDY DESIGN AND SETTING: Fourteen item pools were tested in the U.S. general population and clinical groups using an online panel and clinic recruitment. A scale-setting subsample was created reflecting demographics proportional to the 2000 U.S. census. RESULTS: Using item-response theory (graded response model), 11 item banks were calibrated on a sample of 21,133, measuring components of self-reported physical, mental, and social health, along with a 10-item Global Health Scale. Short forms from each bank were developed and compared with the overall bank and with other well-validated and widely accepted ("legacy") measures. All item banks demonstrated good reliability across most of the score distributions. Construct validity was supported by moderate to strong correlations with legacy measures. CONCLUSION: PROMIS item banks and their short forms provide evidence that they are reliable and precise measures of generic symptoms and functional reports comparable to legacy instruments. Further testing will continue to validate and test PROMIS items and banks in diverse clinical populations.	1/B	Test cohort reflected demographics proportional to US population, not individual subsets of population. **→ Validates the PROMIS tool to measure patient-related outcomes.**
11	I / B	Diagnosis and management; Stable ischemic heart disease	*See citation #1 and #2*			Tier-2 Source	See appraisals for specific recommendations within the guideline and/or update. **--> Professional society guideline.**
12	I / C	Indications for revascularization	*See citations #3 and #4*			Tier-2 Source	See appraisals for specific recommendations within the guideline and/or update. **--> Professional society guideline.**
13	I / C	Risk calculator	ACC/AHA cardiovascular risk calculator. 2013.	http://my.americanheart.org/professional/StatementsGuidelines/Prevention-Guidelines_UCM_457698_SubHomePage.jsp		n/a	Calculator is referenced in the 2013 ACC/AHA Guideline: Stone, et.al. **--> Calculator to determine risk of coronary artery disease.**
14	I / C	Cardiovascular risk assessment guideline	Goff DC Jr, Lloyd-Jones DM, Bennett G, Coady S, D'Agostino RB Sr, Gibbons R, Greenland P, Lackland DT, Levy D, O'Donnell CJ, Robinson J, Schwartz JS, Shero ST, Smith SC Jr, Sorlie P, Stone NJ, Wilson PW. 2013 ACC/AHA Guideline on the Assessment of Cardiovascular Risk: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. Circulation. 2013 Nov 12. [Epub ahead of print]. PMID: 24222018	http://circ.ahajournals.org/content/early/2013/11/11/01.cir.0000437741.48606.98		Tier-2 Source	Professional society guideline. **--> Recommendations related to risk assessment.**
15	I / C / 1	Patient Education	*See citation #1 and #2*			Tier-2 Source	See appraisals for specific recommendations within the guideline and/or update. **--> Professional society guideline.**

16	I / C / 1	Patient Education	Arnold J, Goodacre S, Bath P, Price J. Information sheets for patients with acute chest pain: randomised controlled trial. BMJ. 2009 Feb 26;338:b541. PMID: 19246544	http://www.bmj.com/content/338/bmj.b541.full.pdf+html	OBJECTIVES: To determine whether providing an information sheet to patients with acute chest pain reduces anxiety, improves health related quality of life, improves satisfaction with care, or alters subsequent symptoms or actions. DESIGN: Single centre, non-blinded, randomised controlled trial. SETTING: Chest pain unit of an emergency department. PARTICIPANTS: 700 consecutive patients with acute chest pain and no clear diagnosis at initial presentation. INTERVENTIONS: After a diagnostic assessment patients were randomised to receive either standard verbal advice or verbal advice followed by an information sheet. MAIN OUTCOME MEASURES: The primary outcome was anxiety (hospital anxiety and depression scale). Secondary outcomes were depression (hospital anxiety and depression scale), health related quality of life (SF-36), patient satisfaction, presentation with further chest pain within one month, lifestyle change (smoking cessation, diet, exercise), further information sought from other sources, and planned healthcare seeking behaviour in response to further pain. RESULTS: 494 of 700 (70.6%) patients responded. Compared with those receiving standard verbal advice those receiving advice and an information sheet had lower mean hospital anxiety and depression scale scores for anxiety (7.61 v 8.63, difference 1.02, 95% confidence interval 0.20 to 1.84) and depression (4.14 v 5.28, difference 1.14, 0.41 to 1.86) and higher scores for mental health and perception of general health on the SF-36. The information sheet had no significant effect on satisfaction with care, subsequent symptoms, lifestyle change, information seeking, or planned actions in the event of further pain. CONCLUSIONS: Provision of an information sheet to patients with acute chest pain can reduce anxiety and depression and improve mental health and perception of general health but does not alter satisfaction with care or other outcomes. TRIAL REGISTRATION: Current Controlled Trials ISRCTN85248020.	2/B	RCT compares verbal information to verbal information plus printed materials for patients with chest pain of possible cardiac origin. "Provision of an information sheet to patients with acute chest pain can reduce anxiety and depression and improve mental health and perception of general health but does not alter satisfaction with care or other outcomes." - NICE **--> Study supports providing printed information, in addition to verbal, for patients with chest pain of possible cardiac origin.**
17	1 / C / 2 / a	Weight management	*See citation #1 and #2*			Tier-2 Source	See appraisals for specific recommendations within the guideline and/or update. **--> Professional society guideline.**
18	I / C / 2 / a	Obesity; Weight management	Jensen MD, Ryan DH, Apovian CM, Ard JD, Comuzzie AG, Donato KA, Hu FB, Hubbard VS, Jakicic JM, Kushner RF, Loria CM, Millen BE, Nonas CA, Pi-Sunyer FX, Stevens J, Stevens VJ, Wadden TA, Wolfe BM, Yanovski SZ. 2013 AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity Society. Circulation. 2013 Nov 12. [Epub ahead of print]. PMID: 24222017	http://circ.ahajournals.org/content/early/2013/11/01.cir.0000437739.71477.ee		Tier-2 Source	Guideline contains sections on identification of patients who need to lose weight; relates treatment benefits to risk profiles; and provides general diet recommendations, lifestyle interventions, and an approach to identify patient that may benefit from bariatric surgery. **--> Professional society guideline.**
19	I / C / 2 / b-c	Lifestyle management; Hypertension; Lipid management	Eckel RH, Jakicic JM, Ard JD, Hubbard VS, de Jesus JM, Lee IM, Lichtenstein AH, Loria CM, Millen BE, Miller NH, Nonas CA, Sacks FM, Smith SC Jr, Svetkey LP, Wadden TW, Yanovski SZ. 2013 AHA/ACC Guideline on Lifestyle Management to Reduce Cardiovascular Risk: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. Circulation. 2013 Nov 12. [Epub ahead of print]. PMID: 24222015	http://circ.ahajournals.org/lookup/doi/10.1161/01.cir.0000437740.48606.d1		Tier-2 Source	Guideline recommends the DASH diet, the USDA Food Pattern, or the AHA Diet for patients with elevated LDL. Exercise recommendations for patients with hyperlipidemia is for moderate-to-vigorous aerobic physical activity 3 to 4 sessions a week, 40 minutes per session. See Table 5: Summary of recommendations for lifestyle management. **--> Professional society guideline.**
20	I / C / 3	Physical activity	*See citation #1 and #2*			Tier-2 Source	See appraisals for specific recommendations within the guideline and/or update. **--> Professional society guideline.**
21	I / C / 4	Alcohol use	*See citation #1 and #2*			Tier-2 Source	See appraisals for specific recommendations within the guideline and/or update. **--> Professional society guideline.**
22	I / C / 4	Alcohol use	Smith PC, Schmidt SM, Allensworth-Davies D, Saitz R. Primary care validation of a single-question alcohol screening test. J Gen Intern Med. 2009 Jul; 24(7): 783-8. PMID: 19247718	http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2695521/	BACKGROUND: Unhealthy alcohol use is prevalent but under-diagnosed in primary care settings. OBJECTIVE: To validate, in primary care, a single-item screening test for unhealthy alcohol use recommended by the National Institute on Alcohol Abuse and Alcoholism (NIAAA). DESIGN: Cross-sectional study. PARTICIPANTS: Adult English-speaking patients recruited from primary care waiting rooms. MEASUREMENTS: Participants were asked the single screening question, "How many times in the past year have you had X or more drinks in a day?", where X is 5 for men and 4 for women, and a response of 1 or greater [corrected] is considered positive. Unhealthy alcohol use was defined as the presence of an alcohol use disorder, as determined by a standardized diagnostic interview, or risky consumption, as determined using a validated 30-day calendar method. MAIN RESULTS: Of 394 eligible primary care patients, 286 (73%) completed the interview. The single-question screen was 81.8% sensitive (95% confidence interval (CI) 72.5% to 88.5%) and 79.3% specific (95% CI 73.1% to 84.4%) for the detection of unhealthy alcohol use. It was slightly more sensitive (87.9%, 95% CI 72.7% to 95.2%) but was less specific (66.8%, 95% CI 60.8% to 72.3%) for the detection of a current alcohol use disorder. Test characteristics were similar to that of a commonly used three-item screen, and were affected very little by subject demographic characteristics. CONCLUSIONS: The single screening question recommended by the NIAAA accurately identified unhealthy alcohol use in this sample of primary care patients. These findings support the use of this brief screen in primary care.	2/B	**--> Supports use of a single question screen to identify unhealthy alcohol use.**
23	I / C / 5	Smoking cessation	Quao Q, Tervahauta M, Nissinen A, Tuomilehto J. Mortality from all causes and from coronary heart disease related to smoking and changes in smolking during a 35-year follow-up of middle-aged Finnish men. Eur Heart J, 2000 Oct; 21(19): 1621-6. PMID: 10988015	http://eurheartj.oxfordjournals.org/content/ehj/21/19/1621.full.pdf	Abstract: AIMS: The risk of early and late death in relation to smoking and ex-smoking were studied. METHODS AND RESULTS: A cohort of 1711 Finnish men born between 1900 and 1919 were recruited in 1959 and followed up for 35 years. Information on smoking status was collected at each of six examinations made from 1959 to 1989 using a standardized questionnaire. Vital status at the end of 1994 was collected for every man. The effect of smoking on mortality was assessed using Cox proportional hazards model. Adjusted ratios for 35-year all-cause mortality were 1.62 (95% CI 1.40-1.88) in current smokers and 1.13 (CI 0.93-1.36) in former smokers compared with non-smokers. The hazards ratios for 35-year coronary heart disease mortality were 1. 63 (CI 1.24-2.13) and 1.39 (CI 1.00-1.94), respectively. The risk for 10 year mortality was stronger than for 35 year mortality among both former and current smokers, given the same amount of cigarettes consumed. Men smoking persistently were most at risk, while those who persisted in quitting had no increased risk of death compared with non-smokers. CONCLUSION: Smoking increases the risk of premature death in middle-aged men and giving up smoking earlier in life can prevent smoking attributable premature death.	2 / B	Prospective cohort study of Finnish males with good follow-up over 35 years. Uncontrolled for all variables except smoking. Increased risk of death due to coronary artery disease for patients who continued to smoke. Men who persisted in quitting smoking reduced risk to level of non-smokers. **--> Supports discontinuation of smoking as a means for reducing death due to coronary disease.**

24	I / C / 6	Diabetes management	NICE 2008 Guidance - Recommendation 76. National Institute for Health and Care Excellence (NICE). Type 2 Diabetes: national clinical guideline for management in primary and secondary care (update). CG66. 2008; updated July 2014.	http://www.nice.org.uk/guidance/cg87/resources/cg66-type-2-diabetes-full-guideline2		Tier 1 Source	**--> Outlines management recommendations for Type-2 diabetes.**
25	I / C / 7	Depression screening; PHQ-2	Corson K, Gerrity MS, Dobscha SK. Screening for depression and suicidality in a VA primary care setting: 2 items are better than 1 item. Am J Manag Care. 2004 Nov;10(11 Pt 2):839-45. PMID: 15609737	http://www.ajmc.com/publications/issue/2004/2004-11-vol10-n11Pt2/Nov04-1949p839-845/	OBJECTIVE: To evaluate the psychometric properties of a single-item depression screen against validated scoring algorithms for the Patient Health Questionnaire (PHQ) and the utility of these algorithms in screening for depression and suicidality in a Department of Veterans Affairs (VA) primary care setting. STUDY DESIGN: Recruitment phase of a randomized trial. METHODS: A total of 1211 Portland VA patients with upcoming primary care clinic appointments were administered by telephone a single item assessing depressed mood over the past year and the PHQ. The PHQ-9 (9 items) encompasses DSM-IV criteria for major depression, the PHQ-8 (8 items) excludes the thoughts of death or suicide item, and the PHQ-2 (2 items) assesses depressed mood and anhedonia. Patients whose responses suggested potential suicidality were administered 2 additional items assessing suicidal ideation. Patients receiving mental health specialty care were excluded. RESULTS: Using the PHQ-9 algorithm for major depression as the reference standard, the VA single-item screen was specific (88%) but less sensitive (78%). A PHQ-2 score of > or =3 demonstrated similar specificity (91%) with high sensitivity (97%). For case finding, the PHQ-8 was similar to the PHQ-9. Approximately 20% of patients screened positive for moderate depression, 7% reported thoughts of death or suicide, 2% reported thoughts of harming themselves, and 1% had specific plans. CONCLUSIONS: The PHQ-2 offers brevity and better psychometric properties for depression screening than the single-item screen. The PHQ-9 item assessing thoughts of death or suicide does not improve depression case finding; however, one third of patients endorsing this item reported recent active suicidal ideation.	C (ICSI)	Using the PHQ-9 as a reference standard, this study compared utility of shorter tests: a single question depression screen versus the PHQ-2. The PHQ-2 was superior, demonstrating similar sensitivity and specificity to the PHQ-9. **--> Supports use of the PHQ-2 for screening for depression.**
26	I / C / 7	Depression	*See citation #1 and #2*			Tier-2 Source	See appraisals for specific recommendations within the guideline and/or update. **--> Professional society guideline.**
27	I / C / 8	Psychological factors; Stress management	Gallacher JEJ, Hopkinson CA, Bennett P et al. Effect of stress management on angina. Psychology & Health. 1997; 12(4):523-532		Four hundred and fifty two male angina patients were randomised to receive stress management or no psychological intervention. Instruction in stress management was given in three group sessions each of about one hour. Patients were also asked to practice relaxation and read a course "manual" at home. After six months the group instructed in stress management showed a reduction in the frequeny of non-exertional chest pain (as measured by a 14 day diary) compared to the non-intervention group. Analysis of covariance showed a benefit of stress management irrespective of angina frequency at recruitment. Further analysis of covariance showed reduction in the frequency of non-exertional chest pain to be associated with increased ability to relax. This study has demonstrated that stress management can be effective in reducing the frequency on non-exertional chest pain, and that a possible mechanism for this lies in the practice of relaxation.	2/B	Randomized, controlled trial testing the benefit of stress management program versus no stress management program in men with angina. The stress management program consisted of three 1-hour sessions plus audiotapes and manuals. Chest pain decreased in patients receiving the stress management program. Follow-up was incomplete for 20-30% of patients and study did not include women. **--> Supports stress management in men with angina.**
28	I / C / 9	Screening for Dementia	Hu CJ, Liao CC, Chang CC, Wu CH, Chen TI. Postoperative adverse outcomes in surgical patients with dementia: a retrospective cohort study. World Journal of Surgery, 2012 Sep; 36(9): 2051-8. PMID: 22535212	http://link.springer.com/article/10.1007/s00268-012-1609-x	BACKGROUND: Dementia patients often present with coexisting medical conditions and potentially face higher risk of complications during hospitalization. Because the general features of postoperative adverse outcomes among surgical patients with dementia are unknown, we conducted a nationwide, retrospective cohort study to characterize surgical complications among dementia patients compared with sex- and age-matched nondementia controls. METHODS: Reimbursement claims from the Taiwan National Health Insurance Research Database were studied. A total of 18,923 surgical patients were enrolled with preoperative diagnosis of dementia for 207,693 persons aged 60 years or older who received inpatient major surgeries between 2004 and 2007. Their preoperative comorbidities were adjusted and risks for major surgical complications were analyzed. RESULTS: Dementia patients who underwent surgery had a significantly higher overall postoperative complication rate, adjusted odds ratio (OR) 1.79 (95 % confidence interval [CI] 1.72-1.86), with higher medical resources use, and in-hospital expenditures. Compared with controls, dementia patients had a higher incidence of certain postoperative complications that are less likely to be identified in their initial stage, such as: acute renal failure, OR = 1.32 (1.19-1.47); pneumonia, OR = 2.18 (2.06-2.31); septicemia, OR = 1.8 (1.69-1.92); stroke, OR = 1.51 (1.43-1.6); and urinary tract infection, OR = 1.62 (1.5-1.74). CONCLUSIONS: These findings have specific implications for postoperative care of dementia patients regarding complications that are difficult to diagnose in their initial stages. Acute renal failure, pneumonia, septicemia, stroke, and urinary tract infection are the top priorities for prevention, early recognition, and intervention of postoperative complications among surgical patients with dementia. Further efforts are needed to determine specific protocols for health care teams serving this population.	2/B	Retrospective cohort study of the Taiwan National Health Insurance Research Database. **→ Suggests that for patients undergoing surgical procedures, those with dementia have a higher rate of postoperative complications.**
29	I / C / 9	Screen for Dementia; Screening tool	Freitas S, Simões MR, Alves L, Duro D, Santana I. Montreal Cognitive Assessment (MoCA): validation study for frontotemporal dementia. J Geriatr Psychiatry Neurol. 2012 Sep; 25(3): 146-54. PMID: 22859702		The Montreal Cognitive Assessment (MoCA) is a brief instrument developed for the screening of milder forms of cognitive impairment, having surpassed the well-known limitations of the Mini-Mental State Examination (MMSE). The aim of the present study was to validate the MoCA as a cognitive screening test for behavioral-variant frontotemporal dementia (bv-FTD) by examining its psychometric properties and diagnostic accuracy. Three matched subgroups of participants were considered: bv-FTD (n = 50), Alzheimer disease (n = 50), and a control group of healthy adults (n = 50). Compared with the MMSE, the MoCA demonstrated consistently superior psychometric properties and discriminant capacity, providing comprehensive information about the patients' cognitive profiles. The diagnostic accuracy of MoCA for bv-FTD was extremely high (area under the curve AUC [MoCA] = 0.934, 95% confidence interval [CI] = 0.866-.974; AUC [MMSE] = 0.772, 95% CI = 0.677-0.850). With a cutoff below 17 points, the MoCA results for sensitivity, specificity, positive predictive value, negative predictive value, and classification accuracy were significantly superior to those of the MMSE. The MoCA is a sensitive and accurate instrument for screening the patients with bv-FTD and represents a better option than the MMSE.	2/B	Validates use of MoCA as an instrument for screening for cognitive impairment. **→ Limitation: study cohort is patients undergoing hip surgery for displaced femoral neck fracture.**
30	I / C / 10	Influenza immunization	*See citation #1 and #2*			Tier-2 Source	See appraisals for specific recommendations within the guideline and/or update. **--> Professional society guideline.**

31	I / C / 11	Lipid management; Statins	Stone NJ, Robinson J, Lichtenstein AH, Merz CN, Blum CB, Eckel RH, Goldberg AC, Gordon D, Levy D, Lloyd-Jones DM, McBride P, Schwartz JS, Shero ST, Smith SC Jr, Watson K, Wilson PW. 2013 ACC/AHA Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. Circulation. 2013 Nov 12. [Epub ahead of print]. PMID: 24222016	http://circ.ahajournals.org/content/early/2013/11/11/01.cir.0000437738.63853.7a		Tier-2 Source	Professional society guideline. Proposes new risk calculator. **--> Guideline recommends treating patientswith statins if they have a 7.5% 10-year risk of an atherosclerotic cardiovascular event.**
32	I / C / 11	Lipid management; Statins	Hillis LD, Smith PK, Anderson JL, Bittl JA, Bridges CR, Byrne JG, Cigarroa JE, Disesa VJ, Hiratzka LF, Hutter AM Jr, Jessen ME, Keeley EC, Lahey SJ, Lange RA, London MJ, Mack MJ, Patel MR, Puskas JD, Sabik JF, Selnes O, Shahian DM, Trost JC, Winniford MD. 2011 ACCF/AHA Guideline for Coronary Artery Bypass Graft Surgery: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. Circulation. 2011 Dec 6;124(23):e652-735. PMID: 22064599	http://circ.ahajournals.org/content/124/23/e652.long		Tier-2 Source	Professional society guideline. **--> Supports the use of statin in patients undergoing CABG surgery.**
33	I / C /12	Blood pressure	Rosendorff C, Lackland DT, Allison M, Aronow WS, Black HR, Blumenthal RS, Cannon CP, de Lemos JA, Elliott WJ, Findeiss L, Gersh BJ, Gore JM, Levy D, Long JB, O'Connor CM, O'Gara PT, Ogedegbe O, Oparil S, White WB.Treatment of Hypertension in Patients With Coronary Artery Disease: A Scientific Statement From the American Heart Association, American College of Cardiology, and American Society of Hypertension. Circulation. 2015 Mar 31. pii: CIR.0000000000000207. [Epub ahead of print]	http://circ.ahajournals.org/content/early/2015/03/31/CIR.0000000000000207.long		Tier-2 Source	See text for appraisals for specific recommendations. **--> Professional society guideline.**
34	1 / C / 12	Blood pressure; JNC8	James PA, Oparil S, Carter BL, Cushman WC, Dennison-Himmelfarb C, Handler J, Lackland DT, LeFevre ML, MacKenzie TD, Ogedegbe O, Smith SC Jr, Svetkey LP, Taler SJ, Townsend RR, Wright JT Jr, Narva AS, Ortiz E. 2014 evidence-based guideline for the management of high blood pressure in adults: report from the panel members appointed to the Eighth Joint National Committee (JNC 8). JAMA. 2014 Feb 5;311(5):507-20. PMID: 24352797	http://jnc8.jamanetwork.com/	Hypertension is the most common condition seen in primary care and leads to myocardial infarction, stroke, renal failure, and death if not detected early and treated appropriately. Patients want to be assured that blood pressure (BP) treatment will reduce their disease burden, while clinicians want guidance on hypertension management using the best scientific evidence. This report takes a rigorous, evidence-based approach to recommend treatment thresholds, goals, and medications in the management of hypertension in adults. Evidence was drawn from randomized controlled trials, which represent the gold standard for determining efficacy and effectiveness. Evidence quality and recommendations were graded based on their effect on important outcomes. There is strong evidence to support treating hypertensive persons aged 60 years or older to a BP goal of less than 150/90 mm Hg and hypertensive persons 30 through 59 years of age to a diastolic goal of less than 90 mm Hg; however, there is insufficient evidence in hypertensive persons younger than 60 years for a systolic goal, or in those younger than 30 years for a diastolic goal, so the panel recommends a BP of less than 140/90 mm Hg for those groups based on expert opinion. The same thresholds and goals are recommended for hypertensive adults with diabetes or nondiabetic chronic kidney disease (CKD) as for the general hypertensive population younger than 60 years. There is moderate evidence to support initiating drug treatment with an angiotensin-converting enzyme inhibitor, angiotensin receptor blocker, calcium channel blocker, or thiazide-type diuretic in the nonblack hypertensive population, including those with diabetes. In the black hypertensive population, including those with diabetes, a calcium channel blocker or thiazide-type diuretic is recommended as initial therapy. There is moderate evidence to support initial or add-on antihypertensive therapy with an angiotensin-converting enzyme inhibitor or angiotensin receptor blocker in persons with CKD to improve kidney outcomes. Although this guideline provides evidence-based recommendations for the management of high BP and should meet the clinical needs of most patients, these recommendations are not a substitute for clinical judgment, and decisions about care must carefully consider and incorporate the clinical characteristics and circumstances of each individual patient.	Tier-2 Source	**--> NIH guideline.**
35	I / C / 13	Anti-platelet therapy	*See citation #1 and #2*			Tier-2 Source	See appraisals for specific recommendations within the guideline and/or update. **--> Professional society guideline.**
36	I / C / 14	Beta-blocker therapy	*See citation #1 and #2*			Tier-2 Source	See appraisals for specific recommendations within the guideline and/or update. **--> Professional society guideline.**
37	I / C / 15-16	Renin-angiotensin aldosterone blocker therapy	*See citation #1 and #2*			Tier-2 Source	See appraisals for specific recommendations within the guideline and/or update. **--> Professional society guideline.**
38	I / D / 1	Heart team	Folliguet T, Al-Attar N. The Heart Team to assess risk in corony artery disease. An article from the e-journal of the ESC Council for Cardiology Practice. 28 Mar 2013.	http://www.escardio.org/Guidelines-&-Education/Journals-and-publications/ESC-journals-family/E-journal-of-Cardiology-Practice/Volume-11/The-Heart-Team-to-assess-risk-in-coronary-artery-disease	It used to be that the cardiologist would act as gatekeeper for percutaneous coronary intervention and coronary artery bypass grafting. In contrast, the concept of the Heart Team is being advocated whereby a surgeon, interventionalist, cardiologist and other specialties as required work together to decide on needed treatment. Read here about the genesis of the Heart Team, its advantages and limitations, and find a review of risk scores and how a model can help guide decision-making.	3/C	**--> Opinion piece with bibliography describing heart team.**
39	1 / D / 2	Interventions	*See citations #3 and #4*			Tier-2 Source	See appraisals for specific recommendations within the guideline and/or update. **--> Professional society guideline.**
40	I / D / 3	Syntax Score	Syntax Score online calculator	http://ir-nwr.ru/calculators/syntaxscore.htm		3/C	According to authors Folliguet and Al-Attar (reference #35): "Used to predict 3-year outcomes in patients who have complex coronary artery disease (triple vessel and/or left-main stem). The higher the score, the more the team should turn to CABG." **--> Provides access URL to the Syntax calculator.**

41	I / D / 3	Syntax Score	Farooq V, van Klaveren D, Steyerberg EW, Meliga E, Vergouwe Y, Chieffo A, Kappetein AP, Colombo A, Holmes DR Jr, Mack M, Feldman T, Morice MC, Ståhle E, Onuma Y, Morel MA, Garcia-Garcia HM, van Es GA, Dawkins KD, Mohr FW, Serruys PW. Anatomical and clinical characteristics to guide decision making between coronary artery bypass surgery and percutaneous coronary intervention for individual patients: development and validation of SYNTAX score II. Lancet. 2013 Feb 23;381(9867):639-50.	http://ac.els-cdn.com/S0140673613601087/1-s2.0-S0140673613601087-main.pdf?_tid=1ed611c0-b6f6-11e4-8272-00000aab0f02&acdnat=1424213072_f78ac6838d0bec4baa85ecbcbf573c6f	BACKGROUND: The anatomical SYNTAX score is advocated in European and US guidelines as an instrument to help clinicians decide the optimum revascularisation method in patients with complex coronary artery disease. The absence of an individualised approach and of clinical variables to guide decision making between coronary artery bypass graft surgery (CABG) and percutaneous coronary intervention (PCI) are limitations of the SYNTAX score. SYNTAX score II aimed to overcome these limitations. METHODS: SYNTAX score II was developed by applying a Cox proportional hazards model to results of the randomised all comers SYNTAX trial (n=1800). Baseline features with strong associations to 4-year mortality in either the CABG or the PCI settings (interactions), or in both (predictive accuracy), were added to the anatomical SYNTAX score. Comparisons of 4-year mortality predictions between CABG and PCI were made for each patient. Discriminatory performance was quantified by concordance statistics and internally validated with bootstrap resampling. External validation was done in the multinational all comers DELTA registry (n=2891), a heterogeneous population that included patients with three-vessel disease (26%) or complex coronary artery disease (anatomical SYNTAX score ≥33, 30%) who underwent CABG or PCI. The SYNTAX trial is registered with ClinicalTrials.gov, number NCT00114972. FINDINGS: SYNTAX score II contained eight predictors: anatomical SYNTAX score, age, creatinine clearance, left ventricular ejection fraction (LVEF), presence of unprotected left main coronary artery (ULMCA) disease, peripheral vascular disease, female sex, and chronic obstructive pulmonary disease (COPD). SYNTAX score II significantly predicted a difference in 4-year mortality between patients undergoing CABG and those undergoing PCI (p(interaction) 0·0037). To achieve similar 4-year mortality after CABG or PCI, younger patients, women, and patients with reduced LVEF required lower anatomical SYNTAX scores, whereas older patients, patients with ULMCA disease, and those with COPD, required higher anatomical SYNTAX scores. Presence of diabetes was not important for decision making between CABG and PCI (p(interaction) 0·67). SYNTAX score II discriminated well in all patients who underwent CABG or PCI, with concordance indices for internal (SYNTAX trial) validation of 0·725 and for external (DELTA registry) validation of 0·716, which were substantially higher than for the anatomical SYNTAX score alone (concordance indices of 0·567 and 0·612, respectively). A nomogram was constructed that allowed for an accurate individualised prediction of 4-year mortality in patients proposing to undergo CABG or PCI. INTERPRETATION: Long-term (4-year) mortality in patients with complex coronary artery disease can be well predicted by a combination of anatomical and clinical factors in SYNTAX score II. SYNTAX score II can better	2/B	**-->Study supports the utility of Syntax Score II versus Syntax Score (I) to predict 4-year mortality in patients undergoing coronary artery procedures. Syntax Score II adds clinical variable to the anatomic data of Syntax Score (I).**
42	I / D / 3	Syntax Score; EuroScore	Folliguet T, Al-Attar N. The Heart Team to assess risk in corony artery disease. An article from the e-journal of the ESC Council for Cardiology Practice.	http://www.escardio.org/communities/councils/ccp/e-journal/volume11/Pages/The-Heart-Team-and-Risk-scores-Al-Attar-Nawwar.aspx#.VOPGHq1OXX5	It used to be that the cardiologist would act as gatekeeper for percutaneous coronary intervention and coronary artery bypass grafting. In contrast, the concept of the Heart Team is being advocated whereby a surgeon, interventionalist, cardiologist and other specialties as required work together to decide on needed treatment. Read here about the genesis of the Heart Team, its advantages and limitations, and find a review of risk scores and how a model can help guide decision-making.	3/C	**--> Opinion piece with bibliography describing heart team.**
43	I / D / 3	Euroscore	Euroscore online calculator	http://www.euroscore.org/calc.html		n/a	"A method of calculating predicted operative mortality for patients undergoing cardiac surgery." **--> Access to the EuroScore calculator.**
Cycle 2: Fitness for Surgery							
44	II		Hillis LD, Smith PK, Anderson JL, Bittl JA, Bridges CR, Byrne JG, Cigarroa JE, Disesa VJ, Hiratzka LF, Hutter AM Jr, Jessen ME, Keeley EC, Lahey SJ, Lange RA, London MJ, Mack MJ, Patel MR, Puskas JD, Sabik JF, Selnes O, Shahian DM, Trost JC, Winniford MD. 2011 ACCF/AHA Guideline for Coronary Artery Bypass Graft Surgery: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. Circulation. 2011 Dec 6;124(23):e652-735. PMID: 22064599	http://circ.ahajournals.org/content/124/23/e652.long		Tier-2 Source	Professional society guideline that pertains to three elements of Cycle 2: : II/A/11, II/C/3, and II/C/7.
45	II / A / 1	Obesity	Milano CA, Kesler K, Archibald N, Sexton DJ, Jones RH. Mediastinitis after coronary artery bypass graft surgery. Risk factors and long-term survival. Circulation. 1995 Oct 15;92(8):2245-51. PMID: 7554208	http://circ.ahajournals.org/content/92/8/2245.long	BACKGROUND: Mediastinitis is a severe complication of coronary artery bypass graft surgery (CABG). The purpose of the present study was to determine preoperative and intraoperative variables that predict mediastinitis and to determine the impact of this complication on long-term survival. METHODS AND RESULTS: Data on 20 preoperative and intraoperative variables were collected prospectively on 6459 consecutive patients who underwent CABG between January 1987 and January 1994. Eighty-three patients (1.3%) developed mediastinitis postoperatively, and a total of 24 patients (29%) died. Multivariate analysis identified 4 of the 20 variables as highly significant independent predictors for the development of mediastinitis: obesity (P = .0002), New York Heart Association congestive heart failure class (P = .002), previous heart surgery (P = .008), and duration of cardiopulmonary bypass (P = .05). A comprehensive review of the literature identified 13 other studies that evaluated 48 factors as predictors of mediastinitis; these data were critically analyzed and compared with the results from this series. In this series, postoperative interval mortality during the first 90 days after surgery for the patients with mediastinitis was 11.8% compared with 5.5% for the patients without mediastinitis. Interval mortality between 1 and 2 years after surgery remained high for the mediastinitis group (8.1%) relative to the nonmediastinitis group (2.3%). These differences were not eliminated by adjusting for important variables that influenced late survival in this population. CONCLUSIONS: The present study and a review of the literature suggest that obesity and duration of surgery are the most important predictors of mediastinitis. Furthermore, although the early increase in mortality has been well described, the present study documents for the first time that mediastinitis has a significant negative influence on long-term survival independent of the patient's preoperative condition.	2/B	Case-controlled study of 6459 consecutive patients undergoing CABG, 83 of whom developed mediastinitis. This complication was strongly associated with obesity as defined by weight to height ratio more than 50% above ideal according to Metropolitan Life tables (P=.0002). Other factors associated with mediastinitis included duration of cardiopulmonary bypass and previous heart surgery. Study uses Metropolitan Life tables rather than Body Mass Index (BMI). **--> Supports the conclusion that obesity is a risk factor for mediastinitis following CABG.** Note: BMI of 40 or greater is 100% above ideal body weight as defined by the Metropolitan Life tables, see: Brethauer S, Kashyap S, Schauer P. Obesity. March 2013. Cleveland Clinic, Center for Continuing Education, Publications, http://www.clevelandclinicmeded.com/medicalpubs/diseasemanagement/endocrinology/obesity/

46	II / A / 2	Glycemic Control	Dronge AS, Perkal MF, Kancir S, Concato J, Aslan M, Rosenthal RA. Long-term glycemic control and postoperative infectious complications. Arch Surg. 2006 Apr; 141(4): 375-80; discussion 380. PMID: 16618895	http://archsurg.jamanetwork.com/article.aspx?articleid=398289	Abstract: HYPOTHESIS: Good preoperative glycemic control (hemoglobin A(1c) [HbA(1c)] levels <7%) is associated with decreased postoperative infections. DESIGN: Retrospective observational study using Veterans Affairs National Surgical Quality Improvement Program data from the Veterans Affairs Connecticut Healthcare System from January 1, 2000, through September 30, 2003. SETTING: Veterans Affairs Connecticut Healthcare System, a tertiary referral center and major university teaching site. PATIENTS: Six hundred forty-seven diabetic patients underwent major noncardiac surgery during the study period; 139 were excluded because the HbA(1c) levels were more than 180 days prior to surgery; 19 were excluded for other reasons; 490 diabetic patients were analyzed. The study patients were predominantly nonblack men with a median age of 71 years. MAIN OUTCOME MEASURES: Primary outcomes were infectious complications, including pneumonia, wound infection, urinary tract infection, or sepsis. Bivariate analysis was used first to determine the association of each independent variable (age, race, diabetic treatment, American Society of Anesthesiologists classification, Activities of Daily Living assessment, elective vs emergent procedure, wound classification, operation length, and HbA(1c) levels) with outcome. Factors significant at P<.05 were used in a multivariable logistic regression model. RESULTS: In the multivariable model, age, American Society of Anesthesiologists class, operation length, wound class, and HbA(1c) levels were significantly associated with postoperative infections. Emergency/urgent cases and dependence in Activities of Daily Living were significant in bivariate analysis but failed to reach statistical significance in the multivariable model. An HbA(1c) level of less than 7% was significantly associated with decreased infectious complications with an adjusted odds ratio of 2.13 (95% confidence interval, 1.23-3.70) and a P value of .007. CONCLUSION: Good preoperative glycemic control (HbA(1c) levels <7%) is associated with a decrease in infectious complications across a variety of surgical procedures.	2/B	Cohort includes only male patients. **→ Supports value of preoperative blood sugar control in surgical patients.**
47	II / A / 2	Glycemic Control	Halkos ME, Lattouf OM, Puskas JD, Kilgo P, Cooper WA, Morris CD, Guyton RA, Thourani VH. Elevated preoperative hemoglobin A1c level is associated with reduced long-term survival after coronary artery bypass surgery. Ann Thorac Surg. 2008 Nov;86(5):1431-7. PMID: 19049726	http://www.sciencedirect.com/science/article/pii/S000349750801374X	BACKGROUND: The predictive role of hemoglobin A1c (HbA1c) on long-term outcomes after coronary artery bypass surgery has not been evaluated. METHODS: Preoperative HbA1c levels were obtained in 3,201 patients undergoing primary, elective coronary artery bypass surgery at Emory Healthcare Hospitals from January 2002 to December 2006 and entered prospectively into a computerized database. Long-term survival status was determined by cross-referencing patient records with the Social Security Death Index. Log-rank (unadjusted) and Cox proportional hazards regression models (adjusted) were employed to determine whether HbA1c and diabetes mellitus were independent risk factors for reduced long-term survival, adjusted for 29 covariates. Hazard ratios for each unit increase in continuous HbA1c were calculated. RESULTS: Patients with HbA1c of 7% or greater had lower unadjusted 5-year survival compared with patients with HbA1c less than 7% ($p = 0.001$). Similarly, patients with diabetes mellitus had lower unadjusted 5-year survival compared with patients without diabetes ($p < 0.001$). After multivariable adjustment, higher HbA1c (measured as a continuous variable) was associated with reduced long-term survival for each unit increase in HbA1c (hazard ratio 1.15, $p < 0.001$), but preoperative diagnosis of diabetes was not associated with reduced long-term survival after coronary artery bypass surgery ($p = 0.41$). Other multivariable predictors of reduced long-term survival included age, cerebrovascular disease, elevated serum creatinine, renal insufficiency, congestive heart failure, previous myocardial infarction, chronic lung disease, and peripheral vascular disease. CONCLUSIONS: Poor preoperative glycemic control, as measured by an elevated HbA1c, is associated with reduced long-term survival after coronary artery bypass surgery. Optimizing glucose control in these patients may improve long-term survival.	2/B	Prognosis study of 3201 patients undergoing elective primary coronary artery bypass graft surgery and with hemoglobin A1c measured pre-operatively. A limitation of the study was that diabetes control was not measured following surgery. **--> Correlates pre-operative control of diabetes prior to CABG with increased long-term survival.**
48	II / A /3	Nutritional status; Reduced serum albumin	van Stijn MF, Korkic-Halilovic I, Bakker MS, van der Ploeg T, van Leeuwen PA, Houjijk AP. Preoperative nutrition status and postoperative outcome in elderly general surgery patients: a systematic review. JPEN: Journal of Parenteral & Enteral Nutrition, 2013 Jan; 37(1): 37-43. PMID: 22549764	http://pen.sagepub.com/content/37/1/37.full.pdf+html	BACKGROUND: Poor nutrition status is considered a risk factor for postoperative complications in the adult population. In elderly patients, who often have a poor nutrition status, this relationship has not been substantiated. Thus, the aim of this systematic review was to assess the merit of preoperative nutrition parameters used to predict postoperative outcome in elderly patients undergoing general surgery. METHODS: A systematic literature search of 10 consecutive years, 1998-2008, in PubMed, EMBASE, and Cochrane databases was performed. Search terms used were nutrition status, preoperative assessment, postoperative outcome, and surgery (hip or general), including their synonyms and MeSH terms. Limits used in the search were human studies, published in English, and age (65 years or older). Articles were screened using inclusion and exclusion criteria. All selected articles were checked on methodology and graded. RESULTS: Of 463 articles found, 15 were included. They showed profound heterogeneity in the parameters used for preoperative nutrition status and postoperative outcome. The only significant preoperative predictors of postoperative outcome in elderly general surgery patients were serum albumin and >= 10% weight loss in the previous 6 months. CONCLUSIONS: This systematic review revealed only 2 preoperative parameters to predict postoperative outcome in elderly general surgery patients: weight loss and serum albumin. Both are open to discussion in their use as a preoperative nutrition parameter. Nonetheless, serum albumin seems a reliable preoperative parameter to identify a patient at risk for nutrition deterioration and related complicated postoperative course.	2/B	Focus is pre-operative nutritional state as a risk factor for complications for patients 65 years of age or older. **→ Supports conclusion that reduced serum albumin and weight loss over previous six months predicts postoperative complications for elderly general surgery patients.**

49	II / A / 4	Liver function	Suman A, Barnes DS, Zein NN, Levinthal GN, Connor JT, Carey WD. Predicting outcome after cardiac surgery in patients with cirrhosis: a comparison of Child-Pugh and MELD scores. Clin Gastroenterol Hepatol. 2004 Aug;2(8):719-23. PMID: 15290666	copy ordered from library 3/17/2015	BACKGROUND & AIMS: This study aims to quantify the risk of cardiac surgery in patients with cirrhosis. METHODS: Records of all adult patients with cirrhosis undergoing cardiac surgery using cardiopulmonary bypass at the Cleveland Clinic (Cleveland, OH) from January 1992 to June 2002 were analyzed for any relationship of Child-Pugh class and/or score and Model for End-Stage Liver Disease (MELD) score with outcome measures of hepatic decompensation and death during the first 3 months after surgery. RESULTS: Forty-four patients underwent coronary artery bypass grafting (16 patients), valve surgery (16 patients), a combination of the 2 procedures (10 patients), or pericardiectomy (2 patients). Twelve patients (27%) developed hepatic decompensation, and 7 patients (16%) died. Proportions of hepatic decompensation were 3 of 31, 8 of 12, and 1 of 1 patients, and death, 1 of 31, 5 of 12, and 1 of 1 patients in Child-Pugh classes A, B, and C, respectively. The association of hepatic decompensation and mortality with Child-Pugh class, Child-Pugh score, and MELD score was significant (P < 0.005). Areas under the receiver operating characteristic curves for mortality were similar for Child-Pugh (0.84 +/- 0.09) and MELD scores (0.87 +/- 0.09). A cutoff Child-Pugh score >7 was found to have a sensitivity and specificity of 86% and 92% for mortality, with a negative predictive value of 97% (95% confidence interval [CI], 83-99) and positive predictive value of 67% (95% CI, 31-91), respectively. However, a similar cutoff value for MELD score could not be established. CONCLUSIONS: Child-Pugh score and/or class and MELD score are significantly associated with hepatic decompensation and mortality after cardiac surgery using cardiopulmonary bypass in patients with cirrhosis. Such surgery can be conducted safely in patients with a Child-Pugh score </=7. Patients with a Child-Pugh score >/=8 have a significant risk for mortality.	2/B	Retrospective cohort study of forty-four adult patients with cirrhosis undergoing cardiac surgery were evaluated with Child-Pugh and MELD scores. "A cutoff Child-Pugh score >7 was found to have a sensitivity and specificity of 86% and 92% for mortality, with a negative predictive value of 97% (95% confidence interval [CI], 83-99) and positive predictive value of 67% (95% CI, 31-91), respectively. However, a similar cutoff value for MELD score could not be established." **--> Elevated Child-Pugh Score is associated post-operative mortality in patients with cirrhosis undergoing cardiac surgery.** Child-Pugh Score includes total bilirubin, serum albumin, PT INR, ascites, and hepatic encephalopathy.
50	II / A / 5	Opioids	Washington State Department of Labor and Industries. Guideline for prescribing opioids to treat pain in injured workers. Effective July 1, 2013.	http://www.lni.wa.gov/claimsins/Files/OMD/MedTreat/FINALOpioidGuideline010713.pdf	The Washington State Department of Labor & Industries (L&I, or the department) is officially adopting the Interagency Guideline on Opioid Dosing for Chronic Non-Cancer Pain as developed by the Agency Medical Directors' Group (AMDG Guideline) and revised in June 2010 [1]. The AMDG Guideline represents the best practices and universal precautions necessary to safely and effectively prescribe opioids to treat patients with chronic non-cancer pain. This guideline is a supplement to both the AMDG Guideline and the Department of Health's (DOH) pain management rules, and provides information specific to treating injured workers covered by Washington State workers' compensation [3]. Both the AMDG Guideline and this guideline are intended for use by health care providers, the department, insurers, and utilization review staff. This guideline was developed in 2011-2012 by the Industrial Insurance Medical Advisory Committee (IIMAC) and its subcommittee on chronic non-cancer pain. It is based on the best available clinical and scientific evidence from a systematic review of the literature and a consensus of expert opinion. The IIMAC's primary goal is to provide standards that ensure the highest quality of care for injured workers in Washington State.	Tier-2 Source	Recommends postoperative use of opioids should be limited to no longer than six weeks. Also provides recommendations for perioperative management of patients on chronic opioid therapy. **→ L&I guide to use of opioids.**
51	II / A / 6	Smoking Cessation	Møller AM, Villebro N, Pedersen T, Tønnesen H. Effect of preoperative smoking intervention on postoperative complications: a randomised clinical trial. Lancet. 2002 Jan 12; 359(9301): 114-7. PMID: 11809253	http://dx.doi.org/10.1016/S0140-6736(02)07369-5	BACKGROUND: Smokers are at higher risk of cardiopulmonary and wound-related postoperative complications than non-smokers. Our aim was to investigate the effect of preoperative smoking intervention on the frequency of postoperative complications in patients undergoing hip and knee replacement. METHODS: We did a randomised trial in three hospitals in Denmark. 120 patients were randomly assigned 6-8 weeks before scheduled surgery to either the control (n=60) or smoking intervention (60) group. Smoking intervention was counselling and nicotine replacement therapy, and either smoking cessation or at least 50% smoking reduction. An assessor, who was masked to the intervention, registered the occurrence of cardiopulmonary, renal, neurological, or surgical complications and duration of hospital admittance. The main analysis was by intention to treat. FINDINGS: Eight controls and four patients from the intervention group were excluded from the final analysis because their operations were either postponed or cancelled. Thus, 52 and 56 patients, respectively, were analysed for outcome. The overall complication rate was 18% in the smoking intervention group and 52% in controls (p=0.0003). The most significant effects of intervention were seen for wound-related complications (5% vs 31%, p=0.001), cardiovascular complications (0% vs 10%, p=0.08), and secondary surgery (4% vs 15%, p=0.07). The median length of stay was 11 days (range 7-55) in the intervention group and 13 days (8-65) in the control group. INTERPRETATION: An effective smoking intervention programme 6-8 weeks before surgery reduces postoperative morbidity, and we recommend, on the basis of our results, this programme be adopted	1/A	Supports the conclusion that smoking intervention prior to surgery reduces postoperative morbidity. **→ Cohort is patients undergoing hip or knee replacement.**
52	II / A / 6	Smoking Cessation	Møller AM, Villebro N, Pedersen T, Tønnesen H. Effect of preoperative smoking intervention on postoperative complications: a randomised clinical trial. Lancet. 2002 Jan 12;359(9301):114-7. PMID: 11809253	http://dx.doi.org/10.1016/S0140-6736(02)07369-5	BACKGROUND: Smokers are at higher risk of cardiopulmonary and wound-related postoperative complications than non-smokers. Our aim was to investigate the effect of preoperative smoking intervention on the frequency of postoperative complications in patients undergoing hip and knee replacement. METHODS: We did a randomised trial in three hospitals in Denmark. 120 patients were randomly assigned 6-8 weeks before scheduled surgery to either the control (n=60) or smoking intervention (60) group. Smoking intervention was counselling and nicotine replacement therapy, and either smoking cessation or at least 50% smoking reduction. An assessor, who was masked to the intervention, registered the occurrence of cardiopulmonary, renal, neurological, or surgical complications and duration of hospital admittance. The main analysis was by intention to treat. FINDINGS: Eight controls and four patients from the intervention group were excluded from the final analysis because their operations were either postponed or cancelled. Thus, 52 and 56 patients, respectively, were analysed for outcome. The overall complication rate was 18% in the smoking intervention group and 52% in controls (p=0.0003). The most significant effects of intervention were seen for wound-related complications (5% vs 31%, p=0.001), cardiovascular complications (0% vs 10%, p=0.08), and secondary surgery (4% vs 15%, p=0.07). The median length of stay was 11 days (range 7-55) in the intervention group and 13 days (8-65) in the control group. INTERPRETATION: An effective smoking intervention programme 6-8 weeks before surgery reduces postoperative morbidity, and we recommend, on the basis of our results, this programme be adopted	1/A	**--> Supports the conclusion that smoking intervention prior to surgery reduces postoperative morbidity.**

53	II / A / 6	Smoking Cessation	Lindström D, Sadr Azodi O, Wladis A, Tønnesen H, Linder S, Nåsell H, Ponzer S, Adami J. Effects of a perioperative smoking cessation intervention on postoperative complications: a randomized trial. Ann Surg. 2008 Nov; 248(5): 739-45. PMID: 18948800	http://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&NEWS=N&PAGE=fulltext&AN=00000658-200811000-00008&LSLINK=80&D=ovft	OBJECTIVE: To determine whether an intervention with smoking cessation starting 4 weeks before general and orthopedic surgery would reduce the frequency of postoperative complications. SUMMARY BACKGROUND DATA: Complications are a major concern after elective surgery and smokers have an increased risk. There is insufficient evidence concerning how the duration of preoperative smoking intervention affects postoperative complications. METHODS: A randomized controlled trial, conducted between February 2004 and December 2006 at 4 university-affiliated hospitals in the Stockholm region, Sweden. The outcome assessment was blinded. The follow-up period for the primary outcome was 30 days. Eligibility criteria were active daily smokers, aged 18 to 79 years. Of the 238 patients assessed, 76 refused participating, and 117 men and women undergoing surgery for primary hernia repair, laparoscopic cholecystectomy, or a hip or knee prosthesis were enrolled. INTERVENTION: Smoking cessation therapy with individual counseling and nicotine substitution started 4 weeks before surgery and continued 4 weeks postoperatively. The control group received standard care. The main outcome measure was frequency of any postoperative complication. RESULTS: An intention-to-treat analysis showed that the overall complication rate in the control group was 41%, and in the intervention group, it was 21% (P = 0.03). Relative risk reduction for the primary outcome of any postoperative complication was 49% and number needed to treat was 5 (95% CI, 3-40). An analysis per protocol showed that abstainers had fewer complications (15%) than those who continued to smoke or only reduced smoking (35%), although this difference was not statistically significant. CONCLUSION: Perioperative smoking cessation seems to be an effective tool to reduce postoperative complications even if it is introduced as late as 4 weeks before surgery.	1/A	RCT at four Swedish hospitals of smokers undergoing orthopedic or general surgery.Relative risk reduction for any postop complication was 49% and number needed to treat was 5. **→ Supports the conclusion that smoking cessation prior to surgery reduces postoperative complications if smoking discontinued as late as four weeks prior to surgery.**
54	II / A / 7	Alcohol use	Smith PC, Schmidt SM, Allensworth-Davies D, Saitz R. Primary care validation of a single-question alcohol screening test. J Gen Intern Med. 2009 Jul; 24(7): 783-8. PMID: 19247718	http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2695521/	BACKGROUND: Unhealthy alcohol use is prevalent but under-diagnosed in primary care settings. OBJECTIVE: To validate, in primary care, a single-item screening test for unhealthy alcohol use recommended by the National Institute on Alcohol Abuse and Alcoholism (NIAAA). DESIGN: Cross-sectional study. PARTICIPANTS: Adult English-speaking patients recruited from primary care waiting rooms. MEASUREMENTS: Participants were asked the single screening question, "How many times in the past year have you had X or more drinks in a day?", where X is 5 for men and 4 for women, and a response of 1 or greater [corrected] is considered positive. Unhealthy alcohol use was defined as the presence of an alcohol use disorder, as determined by a standardized diagnostic interview, or risky consumption, as determined using a validated 30-day calendar method. MAIN RESULTS: Of 394 eligible primary care patients, 286 (73%) completed the interview. The single-question screen was 81.8% sensitive (95% confidence interval (CI) 72.5% to 88.5%) and 79.3% specific (95% CI 73.1% to 84.4%) for the detection of unhealthy alcohol use. It was slightly more sensitive (87.9%, 95% CI 72.7% to 95.2%) but was less specific (66.8%, 95% CI 60.8% to 72.3%) for the detection of a current alcohol use disorder. Test characteristics were similar to that of a commonly used three-item screen, and were affected very little by subject demographic characteristics. CONCLUSIONS: The single screening question recommended by the NIAAA accurately identified unhealthy alcohol use in this sample of primary care patients. These findings support the use of this brief screen in primary care.	2/B	Cross-sectional study compared single-question screen of alcohol use with diagnostic interview or validated calendar method to identify unhealthy alcohol use. **'--> Supports use of a single question screen to identify unhealthy alcohol use.**
55	II / A / 7	Alcohol Use	Nath B, Li Y, Carroll JE, Szabo G, Tseng JF, Shah SA. Alcohol exposure as a risk factor for adverse outcomes in elective surgery. J Gastrointest Surg. 2010 Nov;14(11):1732-41. PMID: 20839071	http://download.springer.com/static/pdf/605/art%253A10.1007%252Fs11605-010-1350-4.pdf?auth66=1425423256_257e5eba9ffa60b6f861a68902b79c4c&ext=.pdf	BACKGROUND AND AIMS: Alcohol consumption is a well-documented determinant of adverse perioperative outcome. We sought to determine the effect of active alcohol consumption following elective surgery. METHODS: We queried discharge records from the American College of Surgeons' National Surgical Quality Improvement Program (NSQIP, 2005-2007) for all elective adult admissions. The 7,631 (2.5%) patients with documented alcohol use (active alcohol use of at least two drinks per day within 2 weeks of surgery; ETOH use) underwent elective surgery; 301,994 (97.5%) patients denied ETOH use. Multivariate analysis was performed with adjustments for demographic and comorbid factors. Primary outcome measures included length of stay (LOS), postoperative complications, and death. RESULTS: ETOH use associated with elective surgery decreased over the course of the study ($p < 0.0001$). ETOH use was an independent predictor of pneumonia (OR 1.98, 95% CI 1.84-2.13), sepsis (OR 1.19, 95% CI 1.03-1.37), superficial surgical site infection (SSI; OR 1.15, 95% CI 1.02-1.31), wound disruption (OR 1.41, 95% CI 1.11-1.80), and prolonged LOS (OR 1.17, 95% CI 1.08-1.26). Except for SSI, these complications were independent risk factors for postoperative mortality. ETOH use was associated with earlier time to wound disruption (9 vs. 11 days; $p = 0.04$), longer median hospital stays (5 vs. 3 days; $p < 0.0001$), and longer LOS after operation (4 vs. 3 days; $p < 0.0001$). CONCLUSIONS: Active alcohol consumption is a significant determinant of adverse outcomes in elective surgery; patients with ETOH use who are scheduled to undergo elective surgery should be appropriately educated and counseled.	2/B	Retrospective cohort study from the database of the National Surgical Quality Improvement Program (2005-2007). Multivariate analysis was performed with adjustments for demographic and comorbid factors. Alcohol use was found to be an independent risk factor for pneumonia, sepsis, superficial surgical site infection, wound disruption, and prolonged length of hospital stay. Alcohol use was defined as at least two drinks per day within two weeks of surgery. **--> Supports the conclusion that pre-operative alcohol use is associated with post-operative complications.**

56	II / A / 8	Depression / Psychiatric disorders	Dao TK, Youssef NA, Armsworth M, Wear E, Papathopoulos KN, Gopaldas R. Randomized controlled trial of brief cognitive behavioral intervention for depression and anxiety symptoms preoperatively in patients undergoing coronary artery bypass graft surgery. J Thorac Cardiovasc Surg. 2011 Sep;142(3):e109-15. PMID: 21621227	http://www.sciencedirect.com/science/article/pii/S0022522311004028	OBJECTIVE: The goal of this study was to examine the feasibility, acceptability, and efficacy of a brief, tailored cognitive-behavioral intervention for patients with symptoms of preoperative depression or anxiety before undergoing a coronary artery bypass graft (CABG) operation. METHODS: Patients were recruited from a university teaching hospital between February 2007 and May 2009. Patients were randomly assigned to receive treatment as usual (TAU) or a cognitive behavioral therapy (CBT) intervention called Managing Anxiety and Depression using Education and Skills (MADES). A total of 100 subjects were randomized into the study. Length of hospital stay was assessed with a 1-way analysis of variance. Depression, anxiety, and quality of life were assessed with mixed-model repeated measures analyses. RESULTS: Overall, the intervention was feasible, and patients had a positive impression of the MADES. Patients in the TAU group stayed longer in the hospital than did those in the MADES group (7.9 days ± 2.6 vs 9.2 days ± 3.5; P = .049). Depressive symptoms increased at time of hospital discharge for the TAU group, whereas the MADES group had a decrease in depressive symptoms at the time of discharge. Quality of life and anxiety symptoms improved in both groups at 3 to 4 weeks of follow-up. However, the MADES group had greater improvements than did the TAU group. CONCLUSIONS: This study demonstrated that brief, tailored CBT targeting preoperative depression and anxiety is both feasible and acceptable for patients undergoing CABG surgery. Most important, this intervention improved depressive and anxiety symptoms, as well as quality of life. Moreover, it reduced in-hospital length of stay. This study found that a cognitive-behavioral intervention for patients undergoing CABG surgery for symptoms of preoperative depression/anxiety is both feasible and acceptable. Most important, this intervention improved depressive and anxiety symptoms, as well as quality of life. It also reduced in-hospital length of stay.	2/B	Short-term study of 100 patients with coronary artery disease scheduled for coronary artery bypass graft surgery were randomized into either treatment as usual or brief cognitive behavior therapy intervention. Patients treated with CBT had reduced hospital length of stay, improved depression symptoms at discharge, and improved indicators of quality of life and anxiety at 3-4 week post-discharge follow-up. **--> Supports the conclusion that a short course of CBT for patients with depression prior to CABG is associated with improved short-term outcomes.**
57	II / A / 8	Depression / Psychiatric disorders	Connerney I, Shapiro PA, McLaughlin JS, Bagiella E, Sloan RP. Relation between depression after coronary artery bypass surgery and 12-month outcome: a prospective study. Lancet. 2001 Nov 24;358(9295):1766-71. PMID: 11734233	http://www.sciencedirect.com/science/article/pii/S0140673601068039	BACKGROUND: The association of depression with cardiac events has been investigated mainly in community cohorts, in patients undergoing catheterisation, or in patients who have had myocardial infarction. We have assessed the effect of depression on outcomes after coronary artery bypass graft (CABG) surgery. METHODS: In a prospective study, we followed up for 1 year 207 men and 102 women, who had undergone coronary artery bypass graft surgery. We assessed depression with a structured psychiatric interview (diagnostic interview schedule) and a questionnaire (Beck depression inventory) before discharge. Cardiac events included angina or heart failure that needed admission to hospital, myocardial infarction, cardiac arrest, percutaneous transluminal coronary angioplasty, repeat CABG, and cardiac mortality. Non-cardiac events consisted of all other reasons for mortality or readmission. FINDINGS: 63 patients (20%) met modified diagnostic statistical manual IV criteria for major depressive disorder. At 12 months, 17 (27%) of these patients had a cardiac event compared with 25 of 246 (10%) who were not depressed (p<0.0008). Five variables had significant univariate associations with cardiac events: sex, living alone, low ejection fraction (<0.35), length of hospital stay, and depression. In a Cox proportional-hazard model with these five and two other variables of cardiac severity, major depressive disorder (risk ratio 2.3 [95% CI 1.17-4.56]), low ejection fraction (2.3 [1.07-5.03]), and female sex (2.4 [1.24-4.44]) were associated with adverse outcomes. Depression did not predict deaths or admissions for non-cardiac events. INTERPRETATION: Depression is an important independent risk factor for cardiac events after CABG surgery.	2/B	Prospective cohort study of 366 consecutive patients who had coronary artery bypass graft and were screened for depression before hospital discharge. Depression was an independent risk factor for cardiac events after CABG. Relatively small, single-center study, but consistent with prior studies on the same topic. **--> Supports the conclusion that patients with depression are at increased risk for subsequent cardiac events following CABG. This study does not address the effect of treatment of depression on cardiac events after CABG.**
58	II / A / 9	Screening for Dementia	Hu CJ, Liao CC, Chang CC, Wu CH, Chen TI. Postoperative adverse outcomes in surgical patients with dementia: a retrospective cohort study. World Journal of Surgery, 2012 Sep; 36(9): 2051-8. PMID: 22535212	http://link.springer.com/article/10.1007/s00268-012-1609-x	BACKGROUND: Dementia patients often present with coexisting medical conditions and potentially face higher risk of complications during hospitalization. Because the general features of postoperative adverse outcomes among surgical patients with dementia are unknown, we conducted a nationwide, retrospective cohort study to characterize surgical complications among dementia patients compared with sex- and age-matched nondementia controls. METHODS: Reimbursement claims from the Taiwan National Health Insurance Research Database were studied. A total of 18,923 surgical patients were enrolled with preoperative diagnosis of dementia for 207,693 persons aged 60 years or older who received inpatient major surgeries between 2004 and 2007. Their preoperative comorbidities were adjusted and risks for major surgical complications were analyzed. RESULTS: Dementia patients who underwent surgery had a significantly higher overall postoperative complication rate, adjusted odds ratio (OR) 1.79 (95 % confidence interval [CI] 1.72-1.86), with higher medical resources use, and in-hospital expenditures. Compared with controls, dementia patients had a higher incidence of certain postoperative complications that are less likely to be identified in their initial stage, such as: acute renal failure, OR = 1.32 (1.19-1.47); pneumonia, OR = 2.18 (2.06-2.31); septicemia, OR = 1.8 (1.69-1.92); stroke, OR = 1.51 (1.43-1.6); and urinary tract infection, OR = 1.62 (1.5-1.74). CONCLUSIONS: These findings have specific implications for postoperative care of dementia patients regarding complications that are difficult to diagnose in their initial stages. Acute renal failure, pneumonia, septicemia, stroke, and urinary tract infection are the top priorities for prevention, early recognition, and intervention of postoperative complications among surgical patients with dementia. Further efforts are needed to determine specific protocols for health care teams serving this population.	2/B	Retrospective cohort study of the Taiwan National Health Insurance Research Database. **→ Suggests that for patients undergoing surgical procedures, those with dementia have a higher rate of postoperative complications.**

59	II / A / 9	Screen for Dementia; Screening tool	Freitas S, Simões MR, Alves L, Duro D, Santana I. Montreal Cognitive Assessment (MoCA): validation study for frontotemporal dementia. J Geriatr Psychiatry Neurol. 2012 Sep; 25(3): 146-54. PMID: 22859702		The Montreal Cognitive Assessment (MoCA) is a brief instrument developed for the screening of milder forms of cognitive impairment, having surpassed the well-known limitations of the Mini-Mental State Examination (MMSE). The aim of the present study was to validate the MoCA as a cognitive screening test for behavioral-variant frontotemporal dementia (bv-FTD) by examining its psychometric properties and diagnostic accuracy. Three matched subgroups of participants were considered: bv-FTD (n = 50), Alzheimer disease (n = 50), and a control group of healthy adults (n = 50). Compared with the MMSE, the MoCA demonstrated consistently superior psychometric properties and discriminant capacity, providing comprehensive information about the patients' cognitive profiles. The diagnostic accuracy of MoCA for bv-FTD was extremely high (area under the curve AUC [MoCA] = 0.934, 95% confidence interval [CI] = 0.866-.974; AUC [MMSE] = 0.772, 95% CI = 0.677-0.850). With a cutoff below 17 points, the MoCA results for sensitivity, specificity, positive predictive value, negative predictive value, and classification accuracy were significantly superior to those of the MMSE. The MoCA is a sensitive and accurate instrument for screening the patients with bv-FTD and represents a better option than the MMSE.	2/B	Validates use of MoCA as an instrument for screening for cognitive impairment. **→ Limitation: study cohort is patients undergoing hip surgery for displaced femoral neck fracture.**
60	II / A / 11	Carotid duplex ultrasound pre-CABG	*See citation #44*			Tier-2 Source	See appraisals for specific recommendations within the guideline and/or update. **--> Professional society guideline.**
61	II / B / 1	Shared Decision Making	Arterburn D. Introducing decision aids at Group Health was linked to sharply lower hip and knee surgery rates and costs. Health Affairs, 2012, Sep; 31(9): 2094-104. PMID: 22949460	http://content.healthaffairs.org/content/31/9/2094.full.pdf+html	Decision aids are evidence-based sources of health information that can help patients make informed treatment decisions. However, little is known about how decision aids affect health care use when they are implemented outside of randomized controlled clinical trials. We conducted an observational study to examine the associations between introducing decision aids for hip and knee osteoarthritis and rates of joint replacement surgery and costs in a large health system in Washington State. Consistent with prior randomized trials, our introduction of decision aids was associated with 26 percent fewer hip replacement surgeries, 38 percent fewer knee replacements, and 12-21 percent lower costs over six months. These findings support the concept that patient decision aids for some health conditions, for which treatment decisions are highly sensitive to both patients' and physicians' preferences, may reduce rates of elective surgery and lower costs.	2/B	Cohort is patients considering joint replacement surgery. **→ Supports use of shared decision-making to avoid surgery that the patient with otherwise not choose.**
62	II / B / 1 / c	ASCERT	Shahian DM, O'Brien SM, Sheng S, Grover FL, Mayer JE, Jacobs JP, Weiss JM, Delong ER, Peterson ED, Weintraub WS, Grau-Sepulveda MV, Klein LW, Shaw RE, Garratt KN, Moussa ID, Shewan CM, Dangas GD, Edwards FH.Predictors of long-term survival after coronary artery bypass grafting surgery: results from the Society of Thoracic Surgeons Adult Cardiac Surgery Database (the ASCERT study). Circulation. 2012 Mar 27;125(12):1491-500. PMID: 22361330	http://circ.ahajournals.org/content/125/12/1491.full.pdf+html	BACKGROUND: Most survival prediction models for coronary artery bypass grafting surgery are limited to in-hospital or 30-day end points. We estimate a long-term survival model using data from the Society of Thoracic Surgeons Adult Cardiac Surgery Database and Centers for Medicare and Medicaid Services. METHODS AND RESULTS: The final study cohort included 348 341 isolated coronary artery bypass grafting patients aged ≥65 years, discharged between January 1, 2002, and December 31, 2007, from 917 Society of Thoracic Surgeons-participating hospitals, randomly divided into training (n=174 506) and validation (n=173 835) samples. Through linkage with Centers for Medicare and Medicaid Services claims data, we ascertained vital status from date of surgery through December 31, 2008 (1- to 6-year follow-up). Because the proportional hazards assumption was violated, we fit 4 Cox regression models conditional on being alive at the beginning of the following intervals: 0 to 30 days, 31 to 180 days, 181 days to 2 years, and >2 years. Kaplan-Meier-estimated mortality was 3.2% at 30 days, 6.4% at 180 days, 8.1% at 1 year, and 23.3% at 3 years of follow-up. Harrell's C statistic for predicting overall survival time was 0.732. Some risk factors (eg, emergency status, shock, reoperation) were strong predictors of short-term outcome but, for early survivors, became nonsignificant within 2 years. The adverse impact of some other risk factors (eg, dialysis-dependent renal failure, insulin-dependent diabetes mellitus) continued to increase. CONCLUSIONS: Using clinical registry data and longitudinal claims data, we developed a long-term survival prediction model for isolated coronary artery bypass grafting. This provides valuable information for shared decision making, comparative effectiveness research, quality improvement, and provider profiling.	2/B	Large, retrospective study of patients, aged 65 or over, with isolated CABG to develop a long-term survival prediction model. Patient follow-up was 1-7 years. **--> Supports the use of ASCERT in patients 65 or over, to predict of survival after CABG and as a tool for shared decision making.**
63	II / B / 1 / c	ASCERT calculator	ASCERT long-term survival calculator	http://www.sts.org/quality-research-patient-safety/quality/ascert-long-term-survival-calculator	The ASCERT Long-Term Survival Probability Calculator for Isolated CABG allows a user to calculate a patient's probability of survival following an isolated CABG surgical procedure in patients 65 years and older. The calculator incorporates a risk model derived from linking STS Adult Cardiac Surgery Database data (version 2.52) to Centers for Medicare & Medicaid Services MEDPAR data as part of the STS-ACC ASCERT grant.	Not appraised	Web-based calculator from Society of Thoracic Surgeons. Also available as iPad and Android app. **--> 31-question calculator used to predict long-term survival after CABG.**
64	II / B / 2	Care partner				3 / C	Unable to identify relevant citation for use of lay care partner to support patient through pre- and post-operative care. **→ Unvalidated usual practice with face value.**

65	II / B / 3	Advance Directives; Durable Power of Attorney	Nicholas LH. Langa KM. Iwashyna TJ. Regional variation in the association between advance directives and end-of-life Medicare expenditures. JAMA, 2011 Oct 5; 306(13): 1447-53. PMID: 21972306	http://jama.jamanetwork.com/article.aspx?articleid=1104465	CONTEXT: It is unclear if advance directives (living wills) are associated with end-of-life expenditures and treatments. OBJECTIVE: To examine regional variation in the associations between treatment-limiting advance directive use, end-of-life Medicare expenditures, and use of palliative and intensive treatments. DESIGN, SETTING, AND PATIENTS: Prospectively collected survey data from the Health and Retirement Study for 3302 Medicare beneficiaries who died between 1998 and 2007 linked to Medicare claims and the National Death Index. Multivariable regression models examined associations between advance directives, end-of-life Medicare expenditures, and treatments by level of Medicare spending in the decedent's hospital referral region. MAIN OUTCOME MEASURES: Medicare expenditures, life-sustaining treatments, hospice care, and in-hospital death over the last 6 months of life. RESULTS: Advance directives specifying limits in care were associated with lower spending in hospital referral regions with high average levels of end-of-life expenditures (-$5585 per decedent; 95% CI, -$10,903 to -$267), but there was no difference in spending in hospital referral regions with low or medium levels of end-of-life expenditures. Directives were associated with lower adjusted probabilities of in-hospital death in high- and medium-spending regions (-9.8%; 95% CI, -16% to -3% in high-spending regions; -5.3%; 95% CI, -10% to -0.4% in medium-spending regions). Advance directives were associated with higher adjusted probabilities of hospice use in high- and medium-spending regions (17%; 95% CI, 11% to 23% in high-spending regions, 11%; 95% CI, 6% to 16% in medium-spending regions), but not in low-spending regions. CONCLUSION: Advance directives specifying limitations in end-of-life care were associated with significantly lower levels of Medicare spending, lower likelihood of in-hospital death, and higher use of hospice care in regions characterized by higher levels of end-of-life spending.	2/B	**→ Supports the use of advance directives to reduce the use of inappropriate and costly end-of-life care.**
66	II / B / 4	COAP registry	Clinical Outcomes Assessment Program: Cardiovascular Surgery. Foundation for Healthcare Quality.	http://www.coap.org/COAPPublicReporting/index2.html		Not appraised	**--> Washington State registry for reporting quality measures related to cardiovascular surgery.**
67	II / C / 1 / a	Fitness for Surgery; Pulmonary Fitness	Fleisher LA, et.al.; American College of Cardiology/American Heart Association Task Force on Practice Guidelines; American Society of Echocardiography; American Society of Nuclear Cardiology; Heart Rhythm Society; Society of Cardiovascular Anesthesiologists; Society for Cardiovascular Angiography and Interventions; Society for Vascular Medicine and Biology; Society for Vascular Surgery. ACC/AHA 2007 guidelines on perioperative cardiovascular evaluation and care for noncardiac surgery: a report... Circulation. 2007 Oct 23; 116(17): e418-99. PMID: 17901357	http://circ.ahajournals.org/content/116/17/e418.full	Presents guideline for cardiovascular evaluation for patients that will have non cardiac surgery.	Tier-2 Source	Society guideline. **→ Guide to preoperative evaluation for non-cardiac surgery.**
68	II / C / 1 / b	Management of anemia	Society of Thoracic Surgeons Blood Conservation Guideline Task Force, Ferraris VA, Brown JR, Despotis GJ, Hammon JW, Reece TB, Saha SP, Song HK, Clough ER; Society of Cardiovascular Anesthesiologists Special Task Force on Blood Transfusion, Shore-Lesserson LJ, Goodnough LT, Mazer CD, Shander A, Stafford-Smith M, Waters J; International Consortium for Evidence Based Perfusion, Baker RA, Dickinson TA, FitzGerald DJ, Likosky DS, Shann KG. 2011 update to the Society of Thoracic Surgeons and the Society of Cardiovascular Anesthesiologists blood conservation clinical practice guidelines. Ann Thorac Surg. 2011 Mar;91(3):944-82. PMID: 21353044	http://www.sciencedirect.com/science/article/pii/S0003497510028882	BACKGROUND: Practice guidelines reflect published literature. Because of the ever changing literature base, it is necessary to update and revise guideline recommendations from time to time. The Society of Thoracic Surgeons recommends review and possible update of previously published guidelines at least every three years. This summary is an update of the blood conservation guideline published in 2007. METHODS: The search methods used in the current version differ compared to the previously published guideline. Literature searches were conducted using standardized MeSH terms from the National Library of Medicine PUBMED database list of search terms. The following terms comprised the standard baseline search terms for all topics and were connected with the logical 'OR' connector--Extracorporeal circulation (MeSH number E04.292), cardiovascular surgical procedures (MeSH number E04.100), and vascular diseases (MeSH number C14.907). Use of these broad search terms allowed specific topics to be added to the search with the logical 'AND' connector. RESULTS: In this 2011 guideline update, areas of major revision include: 1) management of dual anti-platelet therapy before operation, 2) use of drugs that augment red blood cell volume or limit blood loss, 3) use of blood derivatives including fresh frozen plasma, Factor XIII, leukoreduced red blood cells, platelet plasmapheresis, recombinant Factor VII, antithrombin III, and Factor IX concentrates, 4) changes in management of blood salvage, 5) use of minimally invasive procedures to limit perioperative bleeding and blood transfusion, 6) recommendations for blood conservation related to extracorporeal membrane oxygenation and cardiopulmonary perfusion, 7) use of topical hemostatic agents, and 8) new insights into the value of team interventions in blood management. CONCLUSIONS: Much has changed since the previously published 2007 STS blood management guidelines and this document contains new and revised recommendations.	Tier-2 Source	Professional society guideline regarding blood conservation in cardiac surgery patients.
69	II / C / 1 / b	Management of anemia	A single dose of erythropoietin reduces perioperative transfusions in cardiac surgery: results of a prospective single-blind randomized controlled trial. Weltert L, Rondinelli B, Bello R, Falco M, Bellisario A, Maselli D, Turani F, De Paulis R, Pierelli L. A single dose of erythropoietin reduces perioperative transfusions in cardiac surgery: results of a prospective single-blind randomized controlled trial. Transfusion. 2015 Jul;55(7):1644-54. PMID: 25702777	*Obtain copy from your library.*	BACKGROUND We conducted a prospective single-blind randomized study to assess whether a single 80,000 IU dose of human recombinant erythropoietin (HRE), given just 2 days before cardiac surgery, could be effective in reducing perioperative allogeneic red blood cell transfusion (aRBCt). STUDY DESIGN AND METHODS Six-hundred patients presenting with preoperative hemoglobin (Hb) level of not more than 14.5 g/dL were randomly assigned to either HRE or control. The primary endpoint was the incidence of perioperative aRBCt. The secondary endpoints were mortality and the incidence of adverse events in the first 45 days after surgery, Hb level on Postoperative Day 4, and number of units of RBC transfusions in the first 4 days after surgery. RESULTS A total of 17% (HRE) versus 39% (control) required transfusion (relative risk, 0.436; $p < 0.0005$). After baseline Hb was controlled for, there was no difference in the incidence of aRBCt between HRE (0%) and control (3.5%) among the patients with baseline Hb of 13.0 g/dL or more, which included the nonanemic fraction of the study population. The mean (range) Hb level on Postoperative Day 4 was 10.2 (9.9-10.6) g/dL (HRE) versus 8.7 (8.5-9.2) g/dL (control; $p < 0.0005$). The distribution of number of units transfused was shifted toward fewer units in HRE ($p < 0.0005$). The all-cause mortality at 45 days was 3.00% (HRE) versus 3.33% (control). The 45-day adverse event rate was 4.33% (HRE) versus 5.67% (control; both p = NS). CONCLUSION In anemic patients (Hb < 13 g/dL), a single high dose of HRE administered 2 days before cardiac surgery is effective in reducing the incidence of aRBCt without increasing adverse events.	2/B	Single blind, randomized controlled trial with intention to treat analysis. Study hypothesis was that the administration of erythropoetin to patients prior to CABG would reduce the need for blood transfusion. In patients with preoperative hemoglobin less than 13.0g/dL, the preoperative administration of erythropoetin reduced the need for transfusion. The all cause 45-day mortality and 45-day adverse event rates were unchanged between control and experimental groups. "Aetna considers erythropoietin therapy (e.g., EPO, Epogen [epoetin alfa], Procrit, r-HuEPO) and darbepoietin alfa therapy (Aranesp) medically necessary when any of the following selection criteria is met (see Appendix for specific criteria):... D.Treatment of anemic members scheduled to undergo high-risk surgery who are at increased risk of or intolerant to transfusions." (http://www.aetna.com/cpb/medical/data/100_199/0195.html) **--> Supports the use of erythropoetin prior to CABG to reduce need for transfusion if hemoglobin is less than 13.0 g/dL.**

70	II / C / 1 / c	Nasal culture; Chlorhexidine	Bode LGM. Et.al. Preventing surgical-site infections in nasal carriers of Staphylococuccus aureus. New England Journal of Medicine, 2010 Jan 7; 362(1): 9-17. PMID: 20054045	http://www.nejm.org/doi/pdf/10.1056/NEJMoa0808939	BACKGROUND: Nasal carriers of Staphylococcus aureus are at increased risk for health care-associated infections with this organism. Decolonization of nasal and extranasal sites on hospital admission may reduce this risk. METHODS: In a randomized, double-blind, placebo-controlled, multicenter trial, we assessed whether rapid identification of S. aureus nasal carriers by means of a real-time polymerase-chain-reaction (PCR) assay, followed by treatment with mupirocin nasal ointment and chlorhexidine soap, reduces the risk of hospital-associated S. aureus infection. RESULTS: From October 2005 through June 2007, a total of 6771 patients were screened on admission. A total of 1270 nasal swabs from 1251 patients were positive for S. aureus. We enrolled 917 of these patients in the intention-to-treat analysis, of whom 808 (88.1%) underwent a surgical procedure. All the S. aureus strains identified on PCR assay were susceptible to methicillin and mupirocin. The rate of S. aureus infection was 3.4% (17 of 504 patients) in the mupirocin-chlorhexidine group, as compared with 7.7% (32 of 413 patients) in the placebo group (relative risk of infection, 0.42; 95% confidence interval [CI], 0.23 to 0.75). The effect of mupirocin-chlorhexidine treatment was most pronounced for deep surgical-site infections (relative risk, 0.21; 95% CI, 0.07 to 0.62). There was no significant difference in all-cause in-hospital mortality between the two groups. The time to the onset of nosocomial infection was shorter in the placebo group than in the mupirocin-chlorhexidine group (P=0.005). CONCLUSIONS: The number of surgical-site S. aureus infections acquired in the hospital can be reduced by rapid screening and decolonizing of nasal carriers of S. aureus on admission. (Current Controlled Trials number, ISRCTN56186788.	1/B	Cohort included a variety of surgical procedures, as well as patients hospitalized for medical issues. **→ Supports treatment of nasal carriers of Staphylococcus aureus to reduce incidence of surgical site infections.**
71	II / C / 1 / d	Delirium	Witlox J, Eurelings LS, de Jonghe JF, Kalisvaart KJ, Eikelenboom P, van Gool WA. Delirium in elderly patients and the risk of postdischarge mortality, institutionalization, and dementia: a meta-analysis. JAMA. 2010 Jul 28; 304(4): 443-51. PMID: 20664045	http://jama.jamanetwork.com/data/Journals/JAMA/4522/jrv05005_443_451.pdf	CONTEXT: Delirium is a common and serious complication in elderly patients. Evidence suggests that delirium is associated with long-term poor outcome but delirium often occurs in individuals with more severe underlying disease. OBJECTIVE: To assess the association between delirium in elderly patients and long-term poor outcome, defined as mortality, institutionalization, or dementia, while controlling for important confounders. DATA SOURCES: A systematic search of studies published between January 1981 and April 2010 was conducted using the databases of MEDLINE, EMBASE, PsycINFO, and CINAHL. STUDY SELECTION: Observational studies of elderly patients with delirium as a study variable and data on mortality, institutionalization, or dementia after a minimum follow-up of 3 months, and published in the English or Dutch language. Titles, abstracts, and articles were reviewed independently by 2 of the authors. Of 2939 references in the original search, 51 relevant articles were identified. DATA EXTRACTION: Information on study design, characteristics of the study population, and outcome were extracted. Quality of studies was assessed based on elements of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist for cohort studies. DATA SYNTHESIS: The primary analyses included only high-quality studies with statistical control for age, sex, comorbid illness or illness severity, and baseline dementia. Pooled-effect estimates were calculated with random-effects models. The primary analysis with adjusted hazard ratios (HRs) showed that delirium is associated with an increased risk of death compared with controls after an average follow-up of 22.7 months (7 studies; 271/714 patients [38.0%] with delirium, 616/2243 controls [27.5%]; HR, 1.95 [95% confidence interval {CI}, 1.51-2.52]; I(2), 44.0%). Moreover, patients who had experienced delirium were also at increased risk of institutionalization (7 studies; average follow-up, 14.6 months; 176/527 patients [33.4%] with delirium and 219/2052 controls [10.7%]; odds ratio [OR], 2.41 [95% CI, 1.77-3.29]; I(2), 0%) and dementia (2 studies; average follow-up, 4.1 years; 35/56 patients [62.5%] with delirium and 15/185 controls [8.1%]; OR, 12.52 [95% CI, 1.86-84.21]; I(2), 52.4%). The sensitivity, trim-and-fill, and secondary analyses with unadjusted high-quality risk estimates stratified according to the study characteristics confirmed the robustness of these results. CONCLUSION: This meta-analysis provides evidence that delirium in elderly patients is associated with poor outcome independent of important confounders, such as age, sex, comorbid illness or illness severity, and baseline dementia.+I37:I44	1/A	Cohort is elderly patients treated in hospital or acute care setting for medical or surgical conditions. **→ Supports the conclusion that delerium is associated with poor outcomes.**
72	II / C / 2 /a	Dental screening	American Academy of Orthopaedic Surgeons. Prevention of orthopaedic implant infection in patients undergoing dental procedures. Evidence-based guideline and evidence report. 2012	http://www.aaos.org/research/guidelines/PUDP/PUDP_guideline.pdf	Recommendation #3: In the absence of reliable evidence linking poor oral health to prosthetic joint infection, it is the opinion of the work group that patients with prosthetic joint implants or other orthopaedic implants maintain appropriate oral hygiene. Grade of Recommendation: Consensus.	3/C	"Recommendation #3: In the absence of reliable evidence linking poor oral health to prosthetic joint infection, it is the opinion of the work group that patients with prosthetic joint implants or other orthopaedic implants maintain appropriate oral hygiene. Consensus" **→ Supports patients with implants maintaining good oral health.**
73	II / C / 2 / b	Sleep apnea; Pulmonary hypertension	Kaw R, Golish J, Ghamande S, Burgess R, Foldvary N, Walker E. Incremental risk of obstructive sleep apnea on cardiac surgical outcomes. J Cardiovasc Surg (Torino). 2006 Dec;47(6):683-9. PMID: 17043616		AIM: Obstructive sleep apnea (OSA) is not generally acknowledged as a perioperative risk factor. High incidence of Sleep disordered breathing has been noticed in patients with cardiovascular disease. The Sleep Heart Health Research Study Group found Apnea-Hypopnea indices (AHI) as modest as 1-10 to be associated with cardiovascular disease manifestations. Given the lack of data we chose to study the incremental risk of OSA in patients undergoing cardiac surgery. METHODS: We looked at 25 587 patients who underwent cardiac surgery at the Cleveland Clinic. Of these, 37 patients were also identified on the Cleveland Clinic Sleep center database as having OSA. Each of these 37 cases were propensity matched for multiple covariates with 5 controls within a distance of 0.001 units. An assumption was made that if the surgery was performed within two years of the diagnosis of OSA, the patient had OSA at the time of the surgery. RESULTS: Higher incidence of encephalopathy (p=0.008), postoperative infection (0.028) and increased ICU length of stay (p=0.031) were noted in the group with OSA after cardiac surgery. The difference in the rates of infection was mostly accounted for by the presence of mediastinitis (8.1% vs 1.6%). Differences in the rates of reintubation, tube time, and overall postoperative morbidity were not statistically significant. CONCLUSIONS: | Increased risk for postoperative complications is suggested in patients with OSA undergoing cardiac surgery. This risk is underestimated on account of lack of awareness about the incidence of OSA in the general population and the cardiovascular population in particular, difficulties in clinical suspicion and diagnosis and limited use of polysomnography.	2/B	Retrospective cohort study of 25,587 patients who underwent cardiac surgery at the Cleveland Clinic, of which 30 were identified as having obstructive sleep apnea (OSA). Patients with OSA were found to have an increase in post-operative infection, ICU length of stay, and encephalopathy. Small "n." Authors suggest that OSA may have been underreported in the control population. **--> Support the conclusion that obstructive sleep apnea is associated with increased risk of post-operative complications following cardiac surgery.**

74	II / C / 2 / b	Pulmonary Hypertension	Reich DL, Bodian CA, Krol M, Kuroda M, Osinski T, Thys DM. Intraoperative hemodynamic predictors of mortality, stroke, and myocardial infarction after coronary artery bypass surgery. Anesth Analg. 1999 Oct;89(4):814-22. PMID: 10512249	http://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&NEWS=N&PAGE=fulltext&D=&AN=00000539-199910000-00002&PDF=y	Evidence that intraoperative hemodynamic abnormalities influence outcome is limited. The purpose of this study was to determine whether intraoperative hemodynamic abnormalities were associated with mortality, stroke, or perioperative myocardial infarction (PMI) in a large cohort of patients undergoing coronary artery bypass grafting. Risk factors and outcomes were queried from a state-mandated cardiac surgery reporting system at two hospitals in New York, NY. Intraoperative hemodynamic abnormalities were derived from computerized anesthesia records by assessing the duration of exposure to moderate or severe extremes of hemodynamic variables. Multivariate logistic regression identified independent predictors of perioperative mortality, stroke, and PMI. Among 2149 patients, there were 50 mortalities, 51 strokes, and 85 PMIs. In the precardiopulmonary bypass (pre-CPB) period, pulmonary hypertension was a predictor of mortality (odds ratio [OR] 2.1, P = 0.029), and bradycardia and tachycardia were predictors of PMI (OR 2.9, P = 0.007 and OR 2.0, P = 0.028, respectively). During CPB, hypotension was a predictor of mortality (OR 1.3, P = 0.025). Post-CPB, tachycardia was a predictor of mortality (OR 3.1, P = 0.001), diastolic arterial hypertension was a predictor of stroke (OR 5.4, P = 0.012), and pulmonary hypertension was a predictor of PMI (OR 7.0, P < 0.001). Increased pulmonary arterial diastolic pressure post-CPB was a predictor of mortality (OR 1.2, P = 0.004), stroke (OR 3.9, P = 0.002), and PMI (OR 2.2, P = 0.001). Rapid intraoperative variations in blood pressure and heart rate were not independent predictors of these outcomes. These findings demonstrate the prognostic significance of intraoperative hemodynamic abnormalities, including data from pulmonary artery catheterization, to adverse postoperative outcomes. It is not known whether interventions to control these variables would improve outcome.IMPLICATIONS: Intraoperative hemodynamic abnormalities, including pulmonary hypertension, hypotension during cardiopulmonary bypass, and postcardiopulmonary bypass pulmonary diastolic hypertension, were independently associated with mortality, stroke, and perioperative myocardial infarction over and above the effects of other preoperative risk factors.	2/B	Retrospective cohort study relating pulmonary hypertension to mortality (odds ratio 2.1) and peri-operative myocardial infarction (odds ratio 7.0). **--> Identifies pulmonary hypertension as a risk factor for patients undergoing coronary artery bypass grafting.**
75	II / C / 3	Cardiac Rehabilitation	*See citation #44*			Tier-2 Source	See appraisals for specific recommendations within the guideline and/or update. **--> Professional society guideline.**
76	II / C / 4	Statins	Stone NJ, Robinson J, Lichtenstein AH, Merz CN, Blum CB, Eckel RH, Goldberg AC, Gordon D, Levy D, Lloyd-Jones DM, McBride P, Schwartz JS, Shero ST, Smith SC Jr, Watson K, Wilson PW. 2013 ACC/AHA Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. Circulation. 2013 Nov 12. [Epub ahead of print]. PMID: 24222016	http://circ.ahajournals.org/content/early/2013/11/11/01.cir.0000437738.63853.7a		Tier-2 Source	Proposes new risk calculator. Guideline recommends treating patientswith statins if they have a 7.5% 10-year risk of an atherosclerotic cardiovascular event. **--> Current recommendation for use of statins to prevent coronary artery disease.**
77	II / C / 5-6	Beta-blocker therapy	The Joint Commission. Surgical Care Improvement Project (SCIP). Specifications manual for national hospital inpatient quality measures v4.3b. (2014)	http://www.jointcommission.org/surgical_care_improvement_project/		Not appraised	**→ The Joint Commission standard for perioperative administration of beta-blockers.**
78	II / C / 7	Antiplatelet therapy; Aspirin	*See citation #44*			Tier-2 Source	See appraisals for specific recommendations within the guideline and/or update. **--> Professional society guideline.**
79	II / C / 8 / a	Patient Reported Measures; PROMIS	Cella D, Riley W, Stone A, Rothrock N, Reeve B, Yount S, Amtmann D, Bode R, Buysse D, Choi S, Cook K, Devellis R, DeWalt D, Fries JF, Gershon R, Hahn EA, Lai JS, Pilkonis P, Revicki D, Rose M, Weinfurt K, Hays R; PROMIS Cooperative Group. The Patient-Reported Outcomes Measurement Information System (PROMIS) developed and tested its first wave of adult self-reported health outcome item banks: 2005-2008. J Clin Epidemiol. 2010 Nov; 63(11): 1179-94. PMID: 20685078	http://dx.doi.org/10.1016/j.jclinepi.2010.04.011	OBJECTIVES: Patient-reported outcomes (PROs) are essential when evaluating many new treatments in health care; yet, current measures have been limited by a lack of precision, standardization, and comparability of scores across studies and diseases. The Patient-Reported Outcomes Measurement Information System (PROMIS) provides item banks that offer the potential for efficient (minimizes item number without compromising reliability), flexible (enables optional use of interchangeable items), and precise (has minimal error in estimate) measurement of commonly studied PROs. We report results from the first large-scale testing of PROMIS items. STUDY DESIGN AND SETTING: Fourteen item pools were tested in the U.S. general population and clinical groups using an online panel and clinic recruitment. A scale-setting subsample was created reflecting demographics proportional to the 2000 U.S. census. RESULTS: Using item-response theory (graded response model), 11 item banks were calibrated on a sample of 21,133, measuring components of self-reported physical, mental, and social health, along with a 10-item Global Health Scale. Short forms from each bank were developed and compared with the overall bank and with other well-validated and widely accepted ("legacy") measures. All item banks demonstrated good reliability across most of the score distributions. Construct validity was supported by moderate to strong correlations with legacy measures. CONCLUSION: PROMIS item banks and their short forms provide evidence that they are reliable and precise measures of generic symptoms and functional reports comparable to legacy instruments. Further testing will continue to validate and test PROMIS items and banks in diverse clinical populations.	1/B	Test cohort reflected demographics proportional to US population, not individual subsets of population. **→ Validates the PROMIS tool to measure patient-related outcomes.**
80	II / C / 8 / b	Seattle Angina Questionnaire tool	Spertus J. Seattle Angina Questionnaire - 7. c1992-2013.	http://www.ichom.org/files/proms/SAQ-7.pdf		Not appraised	**--> Content of the SAQ.**
Cycle 3: Optimal surgical process							

81	III / A / 1	Surgeon Volume	Lapar DJ, Mery CM, Kozower BD, Kern JA, Kron IL, Stukenborg GJ, Ailawadi G. The effect of surgeon volume on mortality for off-pump coronary artery bypass grafting. J Thorac Cardiovasc Surg. 2012 Apr;143(4):854-63. PMID: 22341421	http://www.sciencedirect.com/science/article/pii/S0022522311014681	OBJECTIVE: Recent trials comparing on-pump (CABG) with off-pump coronary artery bypass grafting (OPCAB) have been criticized by those who believe that surgeon inexperience may explain the apparent worse outcomes for OPCAB. However, the true effect of surgeon volume on outcomes after OPCAB remains unknown. The purpose of this study was to examine the effect of surgeon volume on risk-adjusted mortality after OPCAB. METHODS: From 2003 to 2007, 709,483 patients underwent coronary artery bypass grafting operations (CABG = 439,253; OPCAB = 270,230) within the Nationwide Inpatient Sample database. Hierarchic generalized linear regression modeling with spline functions for annual individual operating surgeon volume was used to assess the relationship between annual surgeon volume and inpatient mortality, adjusted for comorbid disease and other potential confounders. RESULTS: OPCAB was performed in 38.1% of coronary artery bypass grafting operations. The average age for those undergoing OPCAB was 66.1 ± 11.1 years, and female patients accounted for 29.3% of operations with 1-vessel (20.4%), 2-vessel (36.6%), 3-vessel (20.5%), or 4 vessels or more (13.6%). Median surgeon volume for OPCAB was 105 (56-156) operations per year. A highly significant nonlinear relationship between surgeon volume and risk-adjusted mortality was observed for OPCAB operations ($P < .01$). Specifically, an estimated 5% decrease in the absolute probability of death occurred after OPCAB performed by the surgeons with the highest volume, which is greater than the 3% estimated decrease for conventional CABG. Of note, the effect of surgeon volume on mortality was significantly less than other risk factors, such as the presence of heart failure, renal failure, type of bypass conduit, and gender. CONCLUSIONS: A significant surgeon volume-outcome relationship exists for mortality after OPCAB with a threshold of more than 50 operations per year. However, the contribution of surgeon volume to the probability of death is incrementally small compared with other patient and operative characteristics. This demonstrates that outcomes after OPCAB are more dependent on patient risk factors than on surgeon volume.	2/B	Large, retrospective study using the Nationwide Inpatient Sample database. Surgeon volume was inversely correlated with in-hospital mortality "adjusted for comorbid disease and potential confounders." "However, the contribution of surgeon volume to the probability of death is incrementally small compared with other patient and operative characteristics." "A significant surgeon volume–outcome relationship exists for mortality after OPCAB with a threshold of more than 50 operations per year." **--> Surgeon volume is one factor correlated with in-hospital mortality in patients undergoing CABG.** **--> Suggests that surgeon volume of 50 operations per year is associated with lower in-hospital mortality.**
82	III / A / 1-2	Surgeon Volume; Hospital Volume	Birkmeyer JD, Stukel TA, Siewers AE, Goodney PP, Wennberg DE, Lucas FL. Surgeon volume and operative mortality in the United States. N Engl J Med. 2003 Nov 27;349(22):2117-27. PMID: 14645640	http://www.nejm.org/doi/pdf/10.1056/NEJMsa035205	BACKGROUND: Although the relation between hospital volume and surgical mortality is well established, for most procedures, the relative importance of the experience of the operating surgeon is uncertain. METHODS: Using information from the national Medicare claims data base for 1998 through 1999, we examined mortality among all 474,108 patients who underwent one of eight cardiovascular procedures or cancer resections. Using nested regression models, we examined the relations between operative mortality and surgeon volume and hospital volume (each in terms of total procedures performed per year), with adjustment for characteristics of the patients and other characteristics of the providers. RESULTS: Surgeon volume was inversely related to operative mortality for all eight procedures ($P=0.003$ for lung resection, $P<0.001$ for all other procedures). The adjusted odds ratio for operative death (for patients with a low-volume surgeon vs. those with a high-volume surgeon) varied widely according to the procedure--from 1.24 for lung resection to 3.61 for pancreatic resection. Surgeon volume accounted for a large proportion of the apparent effect of the hospital volume, to an extent that varied according to the procedure: it accounted for 100 percent of the effect for aortic-valve replacement, 57 percent for elective repair of an abdominal aortic aneurysm, 55 percent for pancreatic resection, 49 percent for coronary-artery bypass grafting, 46 percent for esophagectomy, 39 percent for cystectomy, and 24 percent for lung resection. For most procedures, the mortality rate was higher among patients of low-volume surgeons than among those of high-volume surgeons, regardless of the surgical volume of the hospital in which they practiced. CONCLUSIONS: For many procedures, the observed associations between hospital volume and operative mortality are largely mediated by surgeon volume. Patients can often improve their chances of survival substantially, even at high-volume hospitals, by selecting surgeons who perform the operations frequently.	2/B	Retrospective study of 474,108 Medicare patients undergoing one of eight cardiovascular or cancer resection surgeries during 1998-1999. Outcome measured was 30-day mortality following surgery. Regression models were used to study surgeon volume and hospital volume related mortality. Surgeon volume contributed 49% to the effect of hospital volume; hospital volume contributed 8% to the effect of surgeon volume. Mortality rate for low volume surgeons was higher than for high volume surgeons, regardless of hospital volumes. **--> Supports the conclusion that high volume surgeons have lower 30-day mortality rates for CABG procedures.**
83	III / A / 1	Surgeon Volume	Surgeon volume [fact sheet]. The Leapfrog Group, 12 Feb 2007.	http://www.leapfroggroup.org/media/file/Leapfrog-Surgeon_Volume_Fact_Sheet.pdf		Tier-3 Source	Leapfrog Group standard for surgeon volume for CABG. Recommeded yearly volume is 100 procedures. **--> Standard set by a national organization of large employers / purchasers.**
84	III / A / 1-2	Surgeon Volume; Hospital Volume	Hannan EL, Wu C, Ryan TJ, Bennett E, Culliford AT, Gold JP, Hartman A, Isom OW, Jones RH, McNeil B, Rose EA, Subramanian VA. Do hospitals and surgeons with higher coronary artery bypass graft surgery volumes still have lower risk-adjusted mortality rates? Circulation. 2003 Aug 19;108(7):795-801. PMID: 12885743	http://circ.ahajournals.org/content/108/7/795.full.pdf+html	BACKGROUND: Studies that are the basis of recommended volume thresholds for CABG surgery are outdated and not reflective of recent advances in the field. This study examines both hospital and surgeon volume-mortality relations for CABG surgery through the use of a population-based clinical data set. METHODS AND RESULTS: Data from New York's clinical CABG surgery registry from 1997 to 1999 (total number of procedures, 57 150) were used to examine the individual and combined impact of annual hospital volume and annual surgeon volume on in-hospital mortality rates after adjusting for differences in severity of illness. Significantly lower risk-adjusted mortality rates occurred above all annual hospital volume thresholds between 200 and 800 and above all surgeon volume thresholds between 50 and 200. The number needed to treat (NNT) at higher-volume providers to avoid a death was minimized for a hospital threshold volume of 100 (NNT=50) and a surgeon threshold volume of 50 (NNT=118). The risk-adjusted mortality rate (RAMR) for patients undergoing surgery performed by surgeons with volumes of > or =125 in hospitals with volumes of > or =600 was 1.89%. The RAMR was significantly higher (2.67%) for patients undergoing surgery performed by surgeons with volumes of <125 in hospitals with volumes of <600. CONCLUSIONS: Higher-volume surgeons and hospitals continue to have lower risk-adjusted mortality rates, and patients undergoing surgery performed by higher-volume surgeons in higher-volume hospitals have the lowest mortality rates.	2/B	Retrospective cohort study of 57,150 patients undergoing isolated CABG in the state of New York from 1997-1999. Mortality after correcting for severity of illness was lower in high volume hospitals compared to lower volume hospitals, and among higher volume surgeons compared to lower volume surgeons. The risk-adjusted mortality rate for patients undergoing surgery performed by surgeons with volumes of >= 125 in hospitals with volumes of >= 600 was 1.89%. The risk adjusted mortality rate was significantly higher (2.67%) for patients undergoing surgery performed by surgeons with volumes of < 125 in hospitals with volumes of < 600. **--> Supports the conclusion that patients undergoing CABG performed by higher volume surgeons operating in higher volume hospitals have lower mortality than low volume surgeons operating in low volume hospitals.**
85	III / A / 2	Hospital surgical volume	Hospital volume [fact sheet]. The Leapfrog Group, 7 Apr 2004..	http://www.leapfroggroup.org/media/file/Leapfrog-Evidence-based_Hospital_Referral_Fact_Sheet.pdf		Tier-3 Source	Leapfrog Group standard for hospital volume for CABG. Recommeded yearly volume is 450 procedures. **--> Standard set by a national organization of large employers / purchasers.**
86	III / A / 2	Hospital surgical volume	Guidelines for standards in cardiac surgery. Advisory Council for Cardiothoracic Surgery, American College of Surgeons. Bull Am Coll Surg. 1997 Feb;82(2):27-9. PMID: 10172907	https://www.facs.org/about-acs/guidelines/cardiac-surgery		Tier-2 Source	Professional society guidelines. **--> Recommends annual volume of at least 100 to 125 open heart procedures (including coronary artery bypass procedures, valve replacements, and other operations requiring the use of cardiopulmonary bypass) per hospital is necessary to maintain clinical quality.**

87	III / A / 2	Hospital surgical volume	Shahian DM, O'Brien SM, Normand SL, Peterson ED, Edwards FH. Association of hospital coronary artery bypass volume with processes of care, mortality, morbidity, and the Society of Thoracic Surgeons composite quality score. J Thorac Cardiovasc Surg. 2010 Feb;139(2):273-82. PMID: 20022608	http://www.sciencedirect.com/science/article/pii/S0022522309011635	OBJECTIVE: This study examines the association of hospital coronary artery bypass procedural volume with mortality, morbidity, evidence-based care processes, and Society of Thoracic Surgeons composite score. METHODS: The study population consisted of 144,526 patients from 733 hospitals that submitted data to the Society of Thoracic Surgeons Adult Cardiac Database in 2007. End points included use of National Quality Forum-endorsed process measures (internal thoracic artery graft; preoperative beta-blockade; and discharge beta-blockade, antiplatelet agents, and lipid drugs), operative mortality (in-hospital or 30-day), major morbidity (stroke, renal failure, reoperation, sternal infection, and prolonged ventilation), and Society of Thoracic Surgeons composite score. Procedural volume was analyzed as a continuous variable and by volume strata (< 100, 100-149, 150-199, 200-299, 300-449, and > or = 450). Analyses were performed with logistic and multivariate hierarchical regression modeling. RESULTS: Unadjusted mortality decreased across volume categories from 2.6% (< 100 cases) to 1.7% (> 450 cases, P < .0001), and these differences persisted after risk factor adjustment (odds ratio for lowest- vs highest-volume group, 1.49). Care processes and morbidity end points were not associated with hospital procedural volume except for a trend (P = .0237) toward greater internal thoracic artery use in high-volume hospitals. The average composite score for the lowest volume (< 100 cases) group was significantly lower than that of the 2 highest-volume groups, but only 1% of composite score variation was explained by volume. CONCLUSION: A volume-performance association exists for coronary artery bypass grafting but is weaker than that of other major complex procedures. There is considerable outcomes variability not explained by hospital volume, and low volume does not preclude excellent performance. Except for internal thoracic artery use, care processes and morbidity rates were not associated with volume.	2/B	Retrospective cohort study of 144,526 patients undergoing coronary artery bypass surgery in 2007. Inpatient and 30-day mortality was inversely related to hospital volume, p<0.0001. **--> Supports the inverse relationship between hospital volume and mortality related to CABG surgery. Does not examine the relationship between patient mortality and individual surgeon volume.**
88	III / A / 2	Hospital surgical volume	Welke KF, Barnett MJ, Sarrazin MS, Rosenthal GE. Limitations of hospital volume as a measure of quality of care for coronary artery bypass graft surgery. Ann Thorac Surg. 2005 Dec;80(6):2114-9. PMID: 16305854	http://www.sciencedirect.com/science/article/pii/S0003497505009100	BACKGROUND: While prior research has found an inverse relationship between hospital volume and mortality after coronary artery bypass graft surgery (CABG), the use of volume as a proxy for quality and a means for selecting hospitals is controversial. The objective of this study is to quantify the relationship between hospital volume alone and CABG mortality. METHODS: A retrospective cohort of 948,093 Medicare patients undergoing CABG in 870 US hospitals from 1996 to 2001 was categorized into quintiles, based on hospital CABG volume. Hospitals were also classified by volume criterion proposed by the Leapfrog Group. Logistic regression was used to adjust hospital mortality rates (in-hospital or within 30 days after CABG) for patient characteristics; discrimination of the volume categories was assessed by the c statistic. RESULTS: The range in risk-adjusted mortality for hospitals within the quintiles was substantial: 1% to 17% at very low, 2% to 12% at low, 2% to 10% at medium, 2% to 9% at high, and 3% to 11% at very high volume hospitals. Moreover, volume alone was a poor discriminator of mortality (c statistic = 0.52). Similar variation in adjusted mortality was seen within the Leapfrog low-volume (1% to 17%) and high-volume groups (2% to 11%), and the Leapfrog criterion was a poor discriminator of mortality (c statistic = 0.51). Of the 660 low-volume Leapfrog hospitals, 253 (38%) had risk-adjusted mortality rates that were similar to or lower than the overall risk-adjusted mortality of high-volume hospitals (5.2%). CONCLUSIONS: Volume alone, as a discriminator of mortality, is only slightly better than a coin flip (c statistic of 0.50).	2/B	Retrospective cohort study of 948,930 Medicare patients undergoing CABG in one of 870 hospitals with an outcome of either in-hospital or 30-day post-discharge mortality. Data was analyzed according to quintile and decile volume segments, plus Leapfrog high/low volume criteria. Mortality was inversely related to hospital volume. Variation of mortality risk within subsets resulted in overlap in adjacent subsets. Variation in mortality was higher among low volume hospitals than high volume hospitals, and mortality across the entire range of hospital volume was inversely related to hospital volume. Authors conclude that hospital volume alone is not a quality indicator with respect to mortality in CABG patients. **--> Does not support use of hospital CABG procedure volume as a isolated quality indicator.**
89	III / A / 2	Hospital surgical volume	Birkmeyer JD, Siewers AE, Finlayson EV, Stukel TA, Lucas FL, Batista I, Welch HG, Wennberg DE. Hospital volume and surgical mortality in the United States. N Engl J Med. 2002 Apr 11;346(15):1128-37. PMID: 11948273		BACKGROUND: Although numerous studies suggest that there is an inverse relation between hospital volume of surgical procedures and surgical mortality, the relative importance of hospital volume in various surgical procedures is disputed. METHODS: Using information from the national Medicare claims data base and the Nationwide Inpatient Sample, we examined the mortality associated with six different types of cardiovascular procedures and eight types of major cancer resections between 1994 and 1999 (total number of procedures, 2.5 million). Regression techniques were used to describe relations between hospital volume (total number of procedures performed per year) and mortality (in-hospital or within 30 days), with adjustment for characteristics of the patients. RESULTS: Mortality decreased as volume increased for all 14 types of procedures, but the relative importance of volume varied markedly according to the type of procedure. Absolute differences in adjusted mortality rates between very-low-volume hospitals and very-high-volume hospitals ranged from over 12 percent (for pancreatic resection, 16.3 percent vs. 3.8 percent) to only 0.2 percent (for carotid endarterectomy, 1.7 percent vs. 1.5 percent). The absolute differences in adjusted mortality rates between very-low-volume hospitals and very-high-volume hospitals were greater than 5 percent for esophagectomy and pneumonectomy, 2 to 5 percent for gastrectomy, cystectomy, repair of a nonruptured abdominal aneurysm, and replacement of an aortic or mitral valve, and less than 2 percent for coronary-artery bypass grafting, lower-extremity bypass, colectomy, lobectomy, and nephrectomy. CONCLUSIONS: In the absence of other information about the quality of surgery at the hospitals near them, Medicare patients undergoing selected cardiovascular or cancer procedures can significantly reduce their risk of operative death by selecting a high-volume hospital.	2/B	Retrospective cohort study using data from the Medicare claims and the Nationwide Inpatient Study databases, examining the mortality associated with six different types of cardiovascular procedures and eight types of major cancer resections between 1994 and 1999 (total number of procedures, 2.5 million). Regression techniques were used to describe relations between hospital volume (total number of procedures performed per year) and mortality (in-hospital or within 30 days), with adjustment for characteristics of the patients. Mortality decreased as volume increased for all 14 types of procedures, but the relative importance of volume varied markedly according to the type of procedure. The absolute differences in adjusted mortality rates between very-low volume hospitals and very-high-volume hospitals were less than 2 percent for coronary-artery bypass grafting. The adjusted odds ratio for operative mortality in high volume hospitals was 0.79 and compared to 1.0 for low volume hospitals. **--> Supports the conclusion that CABG performed in high volume hospitals is associated with a lower mortality rate than CABG performed in low volume hospitals.**
90	III / A / 5	Industry reps in OR	American College of Surgeons. ST-33: Statement on health care industry representatives in the operating room. Reviesed September 2005.	http://www.facs.org/fellows_info/statements/st-33.html		3/C	**→ Professional society statement on managing presentce of industry representatives in the operating room.**
91	III / B / 1	Anesthesia	Hillis LD, Smith PK, Anderson JL, Bittl JA, Bridges CR, Byrne JG, Cigarroa JE, Disesa VJ, Hiratzka LF, Hutter AM Jr, Jessen ME, Keeley EC, Lahey SJ, Lange RA, London MJ, Mack MJ, Patel MR, Puskas JD, Sabik JF, Selnes O, Shahian DM, Trost JC, Winniford MD. 2011 ACCF/AHA Guideline for Coronary Artery Bypass Graft Surgery: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. Circulation. 2011 Dec 6;124(23):e652-735. PMID: 22064599	http://circ.ahajournals.org/content/124/23/e652.full.pdf+html		Tier-2 Source	See appraisals for specific recommendations within the guideline and/or update. **--> Professional society guideline.**

92	III / B / 1 / a	Anesthesia	Elia N, Lysakowski C, Tramèr MR. Does multimodal analgesia with acetaminophen, nonsteroidal antiinflammatory drugs, or selective cyclooxygenase-2 inhibitors and patient-controlled analgesia morphine offer advantages over morphine alone? Meta-analyses of randomized trials. Anesthesiology. 2005 Dec;103(6):1296-304. PMID: 16306743	http://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&NEWS=N&PAGE=fulltext&AN=00000542-200512000-00025&LSLINK=80&D=ovft	The authors analyzed data from 52 randomized placebo-controlled trials (4,893 adults) testing acetaminophen, nonsteroidal antiinflammatory drugs, or selective cyclooxygenase-2 inhibitors given in conjunction with morphine after surgery. The median of the average 24-h morphine consumption in controls was 49 mg (range, 15-117 mg); it was significantly decreased with all regimens by 15-55%. There was evidence of a reduction in pain intensity at 24 h (1 cm on the 0- to 10-cm visual analog scale) only with nonsteroidal antiinflammatory drugs. Nonsteroidal antiinflammatory drugs also significantly reduced the incidence of nausea/vomiting from 28.8% to 22.0% (number needed to treat, 15) and of sedation from 15.4% to 12.7% (number needed to treat, 37) but increased the risk of severe bleeding from 0% to 1.7% (number needed to harm, 59). Selective cyclooxygenase-2 inhibitors increased the risk of renal failure in cardiac patients from 0% to 1.4% (number needed to harm, 73). A decrease in morphine consumption is not a good indicator of the usefulness of a supplemental analgesic. There is evidence that the combination of nonsteroidal antiinflammatory drugs with patient-controlled analgesia morphine offers some advantages over morphine alone.	2/B	Acetaminophen, NSAIDs, and /or COX-2 inhibitors all reduce morphine need after surgery. NSAIDs in combination with morphine reduce nausea/vomiting and sedation but increase the risk for severe bleeding. COX-2 inhibitors increase risk for renal failure in cardiac patients. **→ Supports use of multimodal analgesia to reduce opiate need.**
93	III / B / 1 / b	Opioids	Washington State Department of Labor and Industries. Guideline for prescribing opioids to treat pain in injured workers. Effective July 1, 2013.	http://www.lni.wa.gov/claimsins/Files/OMD/MedTreat/FINALOpioidGuideline010713.pdf	The Washington State Department of Labor & Industries (L&I, or the department) is officially adopting the Interagency Guideline on Opioid Dosing for Chronic Non-Cancer Pain as developed by the Agency Medical Directors' Group (AMDG Guideline) and revised in June 2010 [1]. The AMDG Guideline represents the best practices and universal precautions necessary to safely and effectively prescribe opioids to treat patients with chronic non-cancer pain. This guideline is a supplement to both the AMDG Guideline and the Department of Health's (DOH) pain management rules, and provides information specific to treating injured workers covered by Washington State workers' compensation [3]. Both the AMDG Guideline and this guideline are intended for use by health care providers, the department, insurers, and utilization review staff. This guideline was developed in 2011-2012 by the Industrial Insurance Medical Advisory Committee (IIMAC) and its subcommittee on chronic non-cancer pain. It is based on the best available clinical and scientific evidence from a systematic review of the literature and a consensus of expert opinion. The IIMAC's primary goal is to provide standards that ensure the highest quality of care for injured workers in Washington State.	Tier-2 Source	Recommends postoperative use of opioids should be limited to no longer than six weeks. Also provides recommendations for perioperative management of patients on chronic opioid therapy. **--> New L&I guidelines for opioids will be available late 2015.**
94	III / B / 2 / a	Perioperative antibiotics	The Joint Commission. Surgical Care Improvement Project (SCIP). Specifications manual for national hospital inpatient quality measures v4.3b. (2014)	http://www.jointcommission.org/surgical_care_improvement_project/		Not appraised	**→ The Joint Commission standard for perioperative administration of antibiotics.**
95	III / B / 2 / a	Perioperative antibiotics	Technical specifications for ACE Demonstration Quality Monitoring Program. Measures 1-4: Surgical Care Improvement Project measures. CMS, [revised] 2011.	http://www.cms.gov/Medicare/Demonstration-Projects/DemoProjectsEvalRpts/downloads/ACEQualityMeasures.pdf	Introduction: The CMS Surgical Care Improvement Project (SCIP) measures are a subset of National Quality Hospital Measures created through the joint efforts of the Centers for Medicare & Medicaid and the Joint Commission (Specifications Manual for National Hospital Quality Measures Version 2.5 effective for discharges 10-01-2008 through 03-31-2009). The SCIP measures have been endorsed by the National Quality Forum, and are used by Hospital Compare, the Premier demonstration, and RHQDAPU. Corresponding measures are used by PQRI at the individual physician level. The NQF endorsed measures are calculated across a defined list of major surgical procedures and separately for the MS-DRG ACE demonstration surgical procedure groups of CABG, Cardiac Valves, and Hip and Knee Replacement.	Not appraised	**→ CMS standard for measures to prevent infection and venous thromboembolism for surgical patients.**
96	III / B / 2 /b	Urinary catheter < 48 hours	Technical specifications for ACE Demonstration Quality Monitoring Program. Measures 1-4: Surgical Care Improvement Project measures. CMS, [revised] 2011.	http://www.cms.gov/Medicare/Demonstration-Projects/DemoProjectsEvalRpts/downloads/ACEQualityMeasures.pdf	Introduction: The CMS Surgical Care Improvement Project (SCIP) measures are a subset of National Quality Hospital Measures created through the joint efforts of the Centers for Medicare & Medicaid and the Joint Commission (Specifications Manual for National Hospital Quality Measures Version 2.5 effective for discharges 10-01-2008 through 03-31-2009). The SCIP measures have been endorsed by the National Quality Forum, and are used by Hospital Compare, the Premier demonstration, and RHQDAPU. Corresponding measures are used by PQRI at the individual physician level. The NQF endorsed measures are calculated across a defined list of major surgical procedures and separately for the MS-DRG ACE demonstration surgical procedure groups of CABG, Cardiac Valves, and Hip and Knee Replacement.	Not appraised	**→ CMS standard for measures to prevent infection and venous thromboembolism for surgical patients.**
97	III / B / 2 / b	Urinary catheter < 48 hours	The Joint Commission. Surgical Care Improvement Project (SCIP). Specifications manual for national hospital inpatient quality measures v4.3b. (2014)	http://www.jointcommission.org/surgical_care_improvement_project/		Not appraised	SCIP-Inf-9 standard. Recommends removal of urinary catheter on post-operative day 1 or post-operative day 2. **→ The Joint Commission standard for postoperative removal of urinary catheter.**
98	III / B / 2 / c	Hair removal	The Joint Commission. Surgical Care Improvement Project (SCIP). Specifications manual for national hospital inpatient quality measures v4.3b. (2014)	http://www.jointcommission.org/surgical_care_improvement_project/		Not appraised	SCIP-Inf-6 standard. Specifies avoidance of shaving to prep surgical site. **→ The Joint Commission standard for pre-operative hair removal.**
99	III / B / 2 / d	Skin preparation	Bode LGM. Et.al. Preventing surgical-site infections in nasal carriers of Staphylococuccus aureus. New England Journal of Medicine, 2010 Jan 7; 362(1): 9-17. PMID: 20054045	http://www.nejm.org/doi/pdf/10.1056/NEJMoa0808939	BACKGROUND: Nasal carriers of Staphylococcus aureus are at increased risk for health care-associated infections with this organism. Decolonization of nasal and extranasal sites on hospital admission may reduce this risk. METHODS: In a randomized, double-blind, placebo-controlled, multicenter trial, we assessed whether rapid identification of S. aureus nasal carriers by means of a real-time polymerase-chain-reaction (PCR) assay, followed by treatment with mupirocin nasal ointment and chlorhexidine soap, reduces the risk of hospital-associated S. aureus infection. RESULTS: From October 2005 through June 2007, a total of 6771 patients were screened on admission. A total of 1270 nasal swabs from 1251 patients were positive for S. aureus. We enrolled 917 of these patients in the intention-to-treat analysis, of whom 808 (88.1%) underwent a surgical procedure. All the S. aureus strains identified on PCR assay were susceptible to methicillin and mupirocin. The rate of S. aureus infection was 3.4% (17 of 504 patients) in the mupirocin-chlorhexidine group, as compared with 7.7% (32 of 413 patients) in the placebo group (relative risk of infection, 0.42; 95% confidence interval [CI], 0.23 to 0.75). The effect of mupirocin-chlorhexidine treatment was most pronounced for deep surgical-site infections (relative risk, 0.21; 95% CI, 0.07 to 0.62). There was no significant difference in all-cause in-hospital mortality between the two groups. The time to the onset of nosocomial infection was shorter in the placebo group than in the mupirocin-chlorhexidine group (P=0.005). CONCLUSIONS: The number of surgical-site S. aureus infections acquired in the hospital can be reduced by rapid screening and decolonizing of nasal carriers of S. aureus on admission. (Current Controlled Trials number, ISRCTN56186788.	1/B	Cohort includes a high proportion of patients undergoing surgery, including cardiothoracic surgery. **→ Supports treatment of patients with Staphylococcus aureus diagnosed by nasal swab PCR assay to reduce incidence of surgical site infections.**

100	III / B / 2 / d	Skin preparation	Webster J, Osborne S. Preoperative bathing or showering with skin antiseptics to prevent surgical site infection. Cochrane Database of Systematic Reviews 2015, Issue 2. Art. No.: CD004985.	http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD004985.pub5/abstract	BACKGROUND: Surgical site infections (SSIs) are wound infections that occur after invasive (surgical) procedures. Preoperative bathing or showering with an antiseptic skin wash product is a well-accepted procedure for reducing skin bacteria (microflora). It is less clear whether reducing skin microflora leads to a lower incidence of surgical site infection. OBJECTIVES: To review the evidence for preoperative bathing or showering with antiseptics for preventing hospital-acquired (nosocomial) surgical site infections. SEARCH METHODS: For this fifth update we searched the Cochrane Wounds Group Specialised Register (searched 18 December 2014); the Cochrane Central Register of Controlled Trials (The Cochrane Library 2014 Issue 11); Ovid MEDLINE (2012 to December Week 4 2014), Ovid MEDLINE (In-Process & Other Non-Indexed Citations December 18, 2014); Ovid EMBASE (2012 to 2014 Week 51), EBSCO CINAHL (2012 to December 18 2014) and reference lists of articles. SELECTION CRITERIA: Randomised controlled trials comparing any antiseptic preparation used for preoperative full-body bathing or showering with non-antiseptic preparations in people undergoing surgery. DATA COLLECTION AND ANALYSIS: Two review authors independently assessed studies for selection, risk of bias and extracted data. Study authors were contacted for additional information. MAIN RESULTS: We did not identify any new trials for inclusion in this fifth update. Seven trials involving a total of 10,157 participants were included. Four of the included trials had three comparison groups. The antiseptic used in all trials was 4% chlorhexidine gluconate (Hibiscrub/Riohex). Three trials involving 7791 participants compared chlorhexidine with a placebo. Bathing with chlorhexidine compared with placebo did not result in a statistically significant reduction in SSIs; the relative risk of SSI (RR) was 0.91 (95% confidence interval (CI) 0.80 to 1.04). When only trials of high quality were included in this comparison, the RR of SSI was 0.95 (95%CI 0.82 to 1.10). Three trials of 1443 participants compared bar soap with chlorhexidine; when combined there was no difference in the risk of SSIs (RR 1.02, 95% CI 0.57 to 1.84). Three trials of 1192 patients compared bathing with chlorhexidine with no washing, one large study found a statistically significant difference in favour of bathing with chlorhexidine (RR 0.36, 95%CI 0.17 to 0.79). The smaller studies found no difference between patients who washed with chlorhexidine and those who did not wash preoperatively. AUTHORS' CONCLUSIONS: This review provides no clear evidence of benefit for preoperative showering or bathing with chlorhexidine over other wash products, to reduce surgical site infection. Efforts to reduce the incidence of nosocomial surgical site infection should focus on interventions where effect has been demonstrated.	Tier-1 Source	Cochrane meta-analysis of including seven trials involving a total of 10,157 surgical participants. Authors' conclusion: "This review provides no clear evidence of benefit for preoperative showering or bathing with chlorhexidine over other wash products, to reduce surgical site infection." **--> Does not support the conclusion that chlorhexidine is superior to other wash products for preoperative skin preparation.**
101	III / B / 3 / a	Tranexamic acid to reduce bleeding	Henry DA, Carless PA, Moxey AJ, O'Connell D, Stokes BJ, Fergusson DA, Ker K. Anti-fibrinolytic use for minimising perioperative allogeneic blood transfusion. Cochrane Database Syst Rev. 2011 Mar 16;(3):CD001886.	http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD001886.pub4/abstract	BACKGROUND: Concerns regarding the safety of transfused blood have led to the development of a range of interventions to minimise blood loss during major surgery. Anti-fibrinolytic drugs are widely used, particularly in cardiac surgery, and previous reviews have found them to be effective in reducing blood loss, the need for transfusion, and the need for re-operation due to continued or recurrent bleeding. In the last few years questions have been raised regarding the comparative performance of the drugs. The safety of the most popular agent, aprotinin, has been challenged, and it was withdrawn from world markets in May 2008 because of concerns that it increased the risk of cardiovascular complications and death. OBJECTIVES: To assess the comparative effects of the anti-fibrinolytic drugs aprotinin, tranexamic acid (TXA), and epsilon aminocaproic acid (EACA) on blood loss during surgery, the need for red blood cell (RBC) transfusion, and adverse events, particularly vascular occlusion, renal dysfunction, and death. SEARCH STRATEGY: We searched: the Cochrane Injuries Group's Specialised Register (July 2010), Cochrane Central Register of Controlled Trials (The Cochrane Library 2010, Issue 3), MEDLINE (Ovid SP) 1950 to July 2010, EMBASE (Ovid SP) 1980 to July 2010. References in identified trials and review articles were checked and trial authors were contacted to identify any additional studies. The searches were last updated in July 2010. SELECTION CRITERIA: Randomised controlled trials (RCTs) of anti-fibrinolytic drugs in adults scheduled for non-urgent surgery. Eligible trials compared anti-fibrinolytic drugs with placebo (or no treatment), or with each other. DATA COLLECTION AND ANALYSIS: Two authors independently assessed trial quality and extracted data. This version of the review includes a sensitivity analysis excluding trials authored by Prof. Joachim Boldt. MAIN RESULTS: This review summarises data from 252 RCTs that recruited over 25,000 participants. Data from the head-to-head trials suggest an advantage of aprotinin over the lysine analogues TXA and EACA in terms of reducing perioperative blood loss, but the differences were small. Compared to control, aprotinin reduced the probability of requiring RBC transfusion by a relative 34% (relative risk [RR] 0.66, 95% confidence interval [CI] 0.60 to 0.72). The RR for RBC transfusion with TXA was 0.61 (95% CI 0.53 to 0.70) and was 0.81 (95% CI 0.67 to 0.99) with EACA. When the pooled estimates from the head-to-head trials of the two lysine analogues were combined and compared to aprotinin alone, aprotinin appeared more effective in reducing the need for RBC transfusion (RR 0.90; 95% CI 0.81 to 0.99).Aprotinin reduced the need for re-operation due to bleeding by a relative 54% (RR 0.46, 95% CI 0.34 to 0.62). This translates into an absolute risk reduction of 2% and a number needed-to-treat (NNT) of 50 (95% CI 33 to 100). A similar trend was	Tier-1 Source	Cochrane meta-analysis for study cohorts of adults undergoing non-emergent surgery. Authors' conclusions: "Aprotinin, although effective in reducing bleeding, had a higher rate of death than tranexamic acid and aminocaproic acid, which appeared free of serious side-effects." **→ Study evaluates benefits and risks of different drugs to reduce surgical blood loss.**
102	III / B / 3 / b	Goal Directed Hemodynamic Therapy	Aya HD, Cecconi M, Hamilton M, Rhodes A. Goal-directed therapy in cardiac surgery: a systematic review and meta-analysis. Br J Anaesth. 2013 Apr;110(4):510-7. PMID: 23447502	http://bja.oxfordjournals.org/content/110/4/510.full.pdf+html	BACKGROUND: Perioperative mortality after cardiac surgery has decreased in recent years although postoperative morbidity is still significant. Although there is evidence that perioperative goal-directed haemodynamic therapy (GDT) may reduce surgical mortality and morbidity in non-cardiac surgical patients, the data are less clear after cardiac surgery. The objective of this review is to perform a meta-analysis on the effects of perioperative GDT on mortality, morbidity, and length of hospital stay in cardiac surgical patients. METHODS: We conducted a systematic review using Medline, EMBASE, and the Cochrane Controlled Clinical Trials Register. Additional sources were sought from experts. The inclusion criteria were randomized controlled trials, mortality reported as an outcome, pre-emptive haemodynamic intervention, and cardiac surgical population. Included studies were examined in full and subjected to quantifiable analysis, subgroup analysis, and sensitivity analysis where possible. Data synthesis was obtained by using odds ratio (OR) and mean difference (MD) for continuous data with 95% confidence interval (CI) utilizing a random-effects model. RESULTS: From 4986 potential studies, 5 met all the inclusion criteria (699 patients). The quantitative analysis showed that the use of GDT reduced the postoperative complication rate (OR 0.33, 95% CI 0.15-0.73; P=0,006) and hospital length of stay (MD -2.44, 95% CI -4.03 to -0.84; P=0,003). There was no significant reduction in mortality. CONCLUSION: The use of pre-emptive GDT in cardiac surgery reduces morbidity and hospital length of stay.	1/A	Systematic review and meta-analysis of goal directed therapy undergoing cardiac surgery supports the use of this approach to reduce morbidity and length of stay. The study included five studies and 699 patients. **→ High-quality study measuring perioperative morbidity in cardiac patients supports the use of hemodynamic "goal directed therapy" that includes IV fluids, inotropic support or both.**

103	III / B / 3 / b	Bleeding	Murphy GJ, Pike K, Rogers CA, Wordsworth S, Stokes EA, Angelini GD, Reeves BC; TITRe2 Investigators. Liberal or restrictive transfusion after cardiac surgery. N Engl J Med. 2015 Mar 12;372(11):997-1008. PMID: 25760354	http://www.nejm.org/doi/pdf/10.1056/NEJMoa1403612	BACKGROUND: Whether a restrictive threshold for hemoglobin level in red-cell transfusions, as compared with a liberal threshold, reduces postoperative morbidity and health care costs after cardiac surgery is uncertain. METHODS: We conducted a multicenter, parallel-group trial in which patients older than 16 years of age who were undergoing nonemergency cardiac surgery were recruited from 17 centers in the United Kingdom. Patients with a postoperative hemoglobin level of less than 9 g per deciliter were randomly assigned to a restrictive transfusion threshold (hemoglobin level <7.5 g per deciliter) or a liberal transfusion threshold (hemoglobin level <9 g per deciliter). The primary outcome was a serious infection (sepsis or wound infection) or an ischemic event (permanent stroke [confirmation on brain imaging and deficit in motor, sensory, or coordination functions], myocardial infarction, infarction of the gut, or acute kidney injury) within 3 months after randomization. Health care costs, excluding the index surgery, were estimated from the day of surgery to 3 months after surgery. RESULTS: A total of 2007 patients underwent randomization; 4 participants withdrew, leaving 1000 in the restrictive-threshold group and 1003 in the liberal-threshold group. Transfusion rates after randomization were 53.4% and 92.2% in the two groups, respectively. The primary outcome occurred in 35.1% of the patients in the restrictive-threshold group and 33.0% of the patients in the liberal-threshold group (odds ratio, 1.11; 95% confidence interval [CI], 0.91 to 1.34; P=0.30); there was no indication of heterogeneity according to subgroup. There were more deaths in the restrictive-threshold group than in the liberal-threshold group (4.2% vs. 2.6%; hazard ratio, 1.64; 95% CI, 1.00 to 2.67; P=0.045). Serious postoperative complications, excluding primary-outcome events, occurred in 35.7% of participants in the restrictive-threshold group and 34.2% of participants in the liberal-threshold group. Total costs did not differ significantly between the groups. CONCLUSIONS: A restrictive transfusion threshold after cardiac surgery was not superior to a liberal threshold with respect to morbidity or health care costs. (Funded by the National Institute for Health Research Health Technology Assessment program; Current Controlled Trials number, ISRCTN70923932.).	2/B	Prospective randomized trial testing efficacy of liberal versus restrictive approaches to transfusion in patients undergoing cardiac surgery. There was no difference in the primary outcome (serious infection and/or ischemic event). Death rate (a secondary outcome) was lower when transfusions were given more liberally. Results aligned with a Cochrane systematic review, but not with other observational studies that indicate higher complication rates with more liberal transfusion protocols. **--> Suggests that a liberal transfusion strategy in patients undergoing cardiac surgery may have advantages over a restrictive transfusion strategy.**
104	III / B / 4	Anticoagulation	Technical specifications for ACE Demonstration Quality Monitoring Program. Measures 1-4: Surgical Care Improvement Project measures. CMS, [revised] 2011.	http://www.cms.gov/Medicare/Demonstration-Projects/DemoProjectsEvalRpts/downloads/ACEQualityMeasures.pdf	Introduction: The CMS Surgical Care Improvement Project (SCIP) measures are a subset of National Quality Hospital Measures created through the joint efforts of the Centers for Medicare & Medicaid and the Joint Commission (Specifications Manual for National Hospital Quality Measures Version 2.5 effective for discharges 10-01-2008 through 03-31-2009). The SCIP measures have been endorsed by the National Quality Forum, and are used by Hospital Compare, the Premier demonstration, and RHQDAPU. Corresponding measures are used by PQRI at the individual physician level. The NQF endorsed measures are calculated across a defined list of major surgical procedures and separately for the MS-DRG ACE demonstration surgical procedure groups of CABG, Cardiac Valves, and Hip and Knee Replacement.	Not appraised	**→ CMS standard for measures to prevent infection and venous thromboembolism for surgical patients.**
105	III / B / 4	Anticoagulation	Geerts WH, Bergqvist D, Pineo GF, Heit JA, Samama CM, Lassen MR, Colwell CW; American College of Chest Physicians. Prevention of venous thromboembolism: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition). Chest. 2008 Jun; 133(6 Suppl): 381S-453S. PMID: 18574271	http://journal.publications.chestnet.org/article.aspx?articleid=1085923	This article discusses the prevention of venous thromboembolism (VTE) and is part of the Antithrombotic and Thrombolytic Therapy: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition). Grade 1 recommendations are strong and indicate that the benefits do or do not outweigh risks, burden, and costs. Grade 2 suggestions imply that individual patient values may lead to different choices (for a full discussion of the grading, see the "Grades of Recommendation" chapter by Guyatt et al). Among the key recommendations in this chapter are the following: we recommend that every hospital develop a formal strategy that addresses the prevention of VTE (Grade 1A). We recommend against the use of aspirin alone as thromboprophylaxis for any patient group (Grade 1A), and we recommend that mechanical methods of thromboprophylaxis be used primarily for patients at high bleeding risk (Grade 1A) or possibly as an adjunct to anticoagulant thromboprophylaxis (Grade 2A). For patients undergoing major general surgery, we recommend thromboprophylaxis with a low-molecular-weight heparin (LMWH), low-dose unfractionated heparin (LDUH), or fondaparinux (each Grade 1A). We recommend routine thromboprophylaxis for all patients undergoing major gynecologic surgery or major, open urologic procedures (Grade 1A for both groups), with LMWH, LDUH, fondaparinux, or intermittent pneumatic compression (IPC). For patients undergoing elective hip or knee arthroplasty, we recommend one of the following three anticoagulant agents: LMWH, fondaparinux, or a vitamin K antagonist (VKA); international normalized ratio (INR) target, 2.5; range, 2.0 to 3.0 (each Grade 1A). For patients undergoing hip fracture surgery (HFS), we recommend the routine use of fondaparinux (Grade 1A), LMWH (Grade 1B), a VKA (target INR, 2.5; range, 2.0 to 3.0) [Grade 1B], or LDUH (Grade 1B). We recommend that patients undergoing hip or knee arthroplasty or HFS receive thromboprophylaxis for a minimum of 10 days (Grade 1A); for hip arthroplasty and HFS, we recommend continuing thromboprophylaxis > 10 days and up to 35 days (Grade 1A). We recommend that all major trauma and all spinal cord injury (SCI) patients receive thromboprophylaxis (Grade 1A). In patients admitted to hospital with an acute medical illness, we recommend thromboprophylaxis with LMWH, LDUH, or fondaparinux (each Grade 1A). We recommend that, on admission to the ICU, all patients be assessed for their risk of VTE, and that most receive thromboprophylaxis (Grade 1A).	Tier-2 Source	Specialty society guideline. **→ Recommends anticoagulant therapy for elective surgical patients with emphasis on patients undergoing joint surgery.**
106	III / B / 4	Venous Thromboembolism prevention	The Joint Commission. Surgical Care Improvement Project (SCIP). Specifications manual for national hospital inpatient quality measures v4.3b. (2014)	http://www.jointcommission.org/surgical_care_improvement_project/		Not appraised	SCIP-VTE2 standard. **→ The Joint Commission standard for prevention of perioperative venous thromboembolism.**
107	III / B / 4	Venous Thromboembolism prevention	Technical specifications for ACE Demonstration Quality Monitoring Program. Measures 1-4: Surgical Care Improvement Project measures. CMS, [revised] 2011.	http://www.cms.gov/Medicare/Demonstration-Projects/DemoProjectsEvalRpts/downloads/ACEQualityMeasures.pdf	Introduction: The CMS Surgical Care Improvement Project (SCIP) measures are a subset of National Quality Hospital Measures created through the joint efforts of the Centers for Medicare & Medicaid and the Joint Commission (Specifications Manual for National Hospital Quality Measures Version 2.5 effective for discharges 10-01-2008 through 03-31-2009). The SCIP measures have been endorsed by the National Quality Forum, and are used by Hospital Compare, the Premier demonstration, and RHQDAPU. Corresponding measures are used by PQRI at the individual physician level. The NQF endorsed measures are calculated across a defined list of major surgical procedures and separately for the MS-DRG ACE demonstration surgical procedure groups of CABG, Cardiac Valves, and Hip and Knee Replacement.	Not appraised	**→ CMS standard for measures to prevent infection and venous thromboembolism for surgical patients.**

108	III / B / 5	Glycemic Control	The Joint Commission. Surgical Care Improvement Project (SCIP). Specifications manual for national hospital inpatient quality measures v4.3b. (2014)	http://www.jointcommission.org/surgical_care_improvement_project/		Not appraised	SCIP-Inf-4 standard. **→ The Joint Commission standard for perioperative glycemic control.**
109	III / B / 6	Temperature Control	The Joint Commission. Surgical Care Improvement Project (SCIP). Specifications manual for national hospital inpatient quality measures v4.3b. (2014)	http://www.jointcommission.org/surgical_care_improvement_project/		Not appraised	SCIP-Inf-10 standard. **→ The Joint Commission standard for perioperative temperature control.**
110	III / C	Registry	Goss JR, Whitten RW, Phillips RC, Johnston GG, Hofer BO, Mansfield PB, Tidwell SL, Spertus JA, LoGerfo JP. Washington State's model of physician leadership in cardiac outcomes reporting. Ann Thorac Surg. 2000 Sep;70(3):695-701. PMID: 11016296	http://www.sciencedirect.com/science/article/pii/S0003497500013916	BACKGROUND: In 1993, the cardiac surgery community in Washington State opposed an effort by the state Health Care Authority (HCA) to identify "centers of excellence" for selective contracting of coronary artery bypass grafting (CABG) procedures, and proposed an alternate model that would create a statewide cardiac outcomes registry under physician governance to be used by all institutions for internal quality improvement activities. METHODS: A prospective pilot data collection effort, which examined preoperative and postoperative patient-reported health status, served as the basis for evaluating the capacity of a physician-led organization to develop a collaborative atmosphere and facilitate universal hospital participation. RESULTS: A surgical steering group met on a regular basis and reached consensus on governance issues, protocols for standardized data collection, and policies regarding data dissemination. All 14 centers that performed bypass surgery in the state participated. Patients who were surveyed reported statistically significant improvements in physical, emotional, and anginal-specific health status after bypass surgery. Baseline patient characteristics and longitudinal outcomes were compared across institutions. CONCLUSIONS: Based on the feasibility of this collaborative outcomes reporting program, the HCA revised its policy regarding selective contracting and has helped to support an ongoing physician-led and -governed cardiac outcomes reporting system that is particularly notable for the subsequent integration of both CABG surgery and catheterization-based procedures into one standardized registry.	3/C	Feasibility study describing the development of a collaborative outcomes reporting program for CABG in Washington State. Data on patient-reported outcomes were measured and reported for all institutions that performed CABG in Washington State. **--> Demonstrates the feasibility of a cooperative, statewide program to share quality measures between institutions**
111	III / C	COAP registry	Clinical Outcomes Assessment Program: Cardiovascular Surgery. Foundation for Healthcare Quality.	http://www.coap.org/COAPPublicReporting/index2.html		Not appraised	**--> Washington State registry for reporting quality measures related to cardiovascular surgery.**
Cycle 4: Post-operative Care and Return to Function							
112	IV / A / 1 / a	Early mobilization; Cardiac rehabilitation	Hillis LD, Smith PK, Anderson JL, Bittl JA, Bridges CR, Byrne JG, Cigarroa JE, Disesa VJ, Hiratzka LF, Hutter AM Jr, Jessen ME, Keeley EC, Lahey SJ, Lange RA, London MJ, Mack MJ, Patel MR, Puskas JD, Sabik JF, Selnes O, Shahian DM, Trost JC, Winniford MD. 2011 ACCF/AHA Guideline for Coronary Artery Bypass Graft Surgery: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. Circulation. 2011 Dec 6;124(23):e652-735. PMID: 22064599	http://circ.ahajournals.org/content/124/23/e652.long		Tier-2 Source	See appraisals for specific recommendations within the guideline and/or update. **--> Professional society guideline.**
113	IV / B	Discharge Process; Medication reconciliation	Wagner C, Zabari M. Reducing readmissions: care transitions toolkit. Washington State Hospital Association, 2013	https://www.wsha.org/images/activEdit/1.18.13_FINAL_CT_Toolkit_Web.pdf	"Washington State Care Transitions" is a state-wide initiative to foster safe, timely, effective, and coordinated care as patients move between settings. The six strategies are as follows: consistent plan of care with primary care provider and home health care (if applicable) upon arrival and discharge from the hospital; coordinated follow up call or visit at discharge; timely visit to primary care provider; reconciliation of medications soon after transition; patient education coordinated between settings; and support through increased care management for high-risk patients.	3/C	Washington State standard with numerous stakeholders contributing to document. **→ A consensus document that proposes a community standard for hospital discharge process.**
114	IV / B	Discharge Process	Jack BW, Chetty VK, Anthony D, Greenwald JL, Sanchez GM, Johnson AE, Forsythe SR, O'Donnell JK, Paasche-Orlow MK, Manasseh C, Martin S, Culpepper L. A reengineered hospital discharge program to decrease rehospitalization: a randomized trial. Ann Intern Med. 2009 Feb 3; 150(3): 178-87. PMID: 19189907	http://annals.org/article.aspx?articleid=744252	BACKGROUND: Emergency department visits and rehospitalization are common after hospital discharge. OBJECTIVE: To test the effects of an intervention designed to minimize hospital utilization after discharge. DESIGN: Randomized trial using block randomization of 6 and 8. Randomly arranged index cards were placed in opaque envelopes labeled consecutively with study numbers, and participants were assigned a study group by revealing the index card. SETTING: General medical service at an urban, academic, safety-net hospital. PATIENTS: 749 English-speaking hospitalized adults (mean age, 49.9 years). INTERVENTION: A nurse discharge advocate worked with patients during their hospital stay to arrange follow-up appointments, confirm medication reconciliation, and conduct patient education with an individualized instruction booklet that was sent to their primary care provider. A clinical pharmacist called patients 2 to 4 days after discharge to reinforce the discharge plan and review medications. Participants and providers were not blinded to treatment assignment. MEASUREMENTS: Primary outcomes were emergency department visits and hospitalizations within 30 days of discharge. Secondary outcomes were self-reported preparedness for discharge and frequency of primary care providers' follow-up within 30 days of discharge. Research staff doing follow-up were blinded to study group assignment. RESULTS: Participants in the intervention group (n = 370) had a lower rate of hospital utilization than those receiving usual care (n = 368) (0.314 vs. 0.451 visit per person per month; incidence rate ratio, 0.695 [95% CI, 0.515 to 0.937]; P = 0.009). The intervention was most effective among participants with hospital utilization in the 6 months before index admission (P = 0.014). Adverse events were not assessed; these data were collected but are still being analyzed. LIMITATION: This was a single-center study in which not all potentially eligible patients could be enrolled, and outcome assessment sometimes relied on participant report. CONCLUSION: A package of discharge services reduced hospital utilization within 30 days of discharge. FUNDING: Agency for Healthcare Research and Quality and National Heart, Lung, and Blood Institute, National Institutes of Health.	2/B	Study cohort is general medicine patients. **→ Supports the value of a systematic approach to discharge process to reduce aggregate hospital readmissions.**
115	IV / B / 4 / a	Anti-Platelet Medication	Technical specifications for ACE Demonstration Quality Monitoring Program. Measure 10: Anti-platelet medication prescribed at discharge. CMS, [revised] 2011. p.22.	http://www.cms.gov/Medicare/Demonstration-Projects/DemoProjectsEvalRpts/downloads/ACEQualityMeasures.pdf	Introduction: The CMS Surgical Care Improvement Project (SCIP) measures are a subset of National Quality Hospital Measures created through the joint efforts of the Centers for Medicare & Medicaid and the Joint Commission (Specifications Manual for National Hospital Quality Measures Version 2.5 effective for discharges 10-01-2008 through 03-31-2009). The SCIP measures have been endorsed by the National Quality Forum, and are used by Hospital Compare, the Premier demonstration, and RHQDAPU. Corresponding measures are used by PQRI at the individual physician level. The NQF endorsed measures are calculated across a defined list of major surgical procedures and separately for the MS-DRG ACE demonstration surgical procedure groups of CABG, Cardiac Valves, and Hip and Knee Replacement.	Not appraised	**→ CMS standard for anti-platelet therapy at discharge.**

116	IV / B / 4 / b	Statins	Stone NJ, Robinson J, Lichtenstein AH, Merz CN, Blum CB, Eckel RH, Goldberg AC, Gordon D, Levy D, Lloyd-Jones DM, McBride P, Schwartz JS, Shero ST, Smith SC Jr, Watson K, Wilson PW. 2013 ACC/AHA Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. Circulation. 2013 Nov 12. [Epub ahead of print]. PMID: 24222016	http://circ.ahajournals.org/content/early/2013/11/11/01.cir.0000437738.63853.7a		1-2 / A-B *see citation*	Proposes new risk calculator. Guideline recommends treating patients with statins if they have a 7.5% 10-year risk of an atherosclerotic cardiovascular event. **--> Current recommendation for use of statins to prevent coronary artery disease.**
117	IV / D / 4 / a	SAQ-7	Spertus J. Seattle Angina Questionnaire - 7. c1992-2013.	http://www.ichom.org/files/proms/SAQ-7.pdf		Not appraised	**--> Content of the SAQ.**
118	IV / D / 4 / b	PROMIS	Cella D, Riley W, Stone A, Rothrock N, Reeve B, Yount S, Amtmann D, Bode R, Buysse D, Choi S, Cook K, Devellis R, DeWalt D, Fries JF, Gershon R, Hahn EA, Lai JS, Pilkonis P, Revicki D, Rose M, Weinfurt K, Hays R; PROMIS Cooperative Group. The Patient-Reported Outcomes Measurement Information System (PROMIS) developed and tested its first wave of adult self-reported health outcome item banks: 2005-2008. J Clin Epidemiol. 2010 Nov; 63(11): 1179-94. PMID: 20685078	http://dx.doi.org/10.1016/j.jclinepi.2010.04.011	OBJECTIVES: Patient-reported outcomes (PROs) are essential when evaluating many new treatments in health care; yet, current measures have been limited by a lack of precision, standardization, and comparability of scores across studies and diseases. The Patient-Reported Outcomes Measurement Information System (PROMIS) provides item banks that offer the potential for efficient (minimizes item number without compromising reliability), flexible (enables optional use of interchangeable items), and precise (has minimal error in estimate) measurement of commonly studied PROs. We report results from the first large-scale testing of PROMIS items. STUDY DESIGN AND SETTING: Fourteen item pools were tested in the U.S. general population and clinical groups using an online panel and clinic recruitment. A scale-setting subsample was created reflecting demographics proportional to the 2000 U.S. census. RESULTS: Using item-response theory (graded response model), 11 item banks were calibrated on a sample of 21,133, measuring components of self-reported physical, mental, and social health, along with a 10-item Global Health Scale. Short forms from each bank were developed and compared with the overall bank and with other well-validated and widely accepted ("legacy") measures. All item banks demonstrated good reliability across most of the score distributions. Construct validity was supported by moderate to strong correlations with legacy measures. CONCLUSION: PROMIS item banks and their short forms provide evidence that they are reliable and precise measures of generic symptoms and functional reports comparable to legacy instruments. Further testing will continue to validate and test PROMIS items and banks in diverse clinical populations.	1/B	Test cohort reflected demographics proportional to US population, not individual subsets of population. **→ Validates the PROMIS tool to measure patient-related outcomes.**
119	IV / D / 4 / c	Anti-Platelet Medication	The Joint Commission. Surgical Care Improvement Project (SCIP). Specifications manual for national hospital inpatient quality measures v4.3b. (2014)	http://www.jointcommission.org/surgical_care_improvement_project/		Not appraised	**→ The Joint Commission standard for anti-platelet medication at discharge.**
120	IV / D / 5	Opioids	Washington State Department of Labor and Industries. Guideline for prescribing opioids to treat pain in injured workers. Effective July 1, 2013.	http://www.lni.wa.gov/claimsins/Files/OMD/MedTreat/FINALOpioidGuideline010713.pdf	The Washington State Department of Labor & Industries (L&I, or the department) is officially adopting the Interagency Guideline on Opioid Dosing for Chronic Non-Cancer Pain as developed by the Agency Medical Directors' Group (AMDG Guideline) and revised in June 2010 [1]. The AMDG Guideline represents the best practices and universal precautions necessary to safely and effectively prescribe opioids to treat patients with chronic non-cancer pain. This guideline is a supplement to both the AMDG Guideline and the Department of Health's (DOH) pain management rules, and provides information specific to treating injured workers covered by Washington State workers' compensation [3]. Both the AMDG Guideline and this guideline are intended for use by health care providers, the department, insurers, and utilization review staff. This guideline was developed in 2011-2012 by the Industrial Insurance Medical Advisory Committee (IIMAC) and its subcommittee on chronic non-cancer pain. It is based on the best available clinical and scientific evidence from a systematic review of the literature and a consensus of expert opinion. The IIMAC's primary goal is to provide standards that ensure the highest quality of care for injured workers in Washington State.	Tier-2 Source	Recommends postoperative use of opioids should be limited to no longer than six weeks. Also provides recommendations for perioperative management of patients on chronic opioid therapy. **→ L&I guide to use of opioids.**