eAppendix A. Guideline Summary for Preoperative ECG

Guideline	*Summary of recommendations*
American College of Cardiology/ American Heart Association, 2007[A1]	ECG is recommended for: Patients with known heart disease, peripheral vascular disease, or cerebrovascular disease who are undergoing intermediate- or high-risk surgery Patients with one or more clinical risk factors (e.g., coronary artery disease, history of congestive heart failure, cerebrovascular disease, diabetes mellitus, renal insufficiency) who are undergoing vascular surgery ECG is reasonable for: Patients with no clinical risk factors who are undergoing vascular surgery Patients with one or more clinical risk factors who are undergoing intermediate-risk surgery ECG is not indicated for asymptomatic patients undergoing low-risk surgery
American Society of Anesthesiologists, 2002[A2]	ECG may be indicated for patients with cardiovascular risk factors
European Society of Cardiology and European Society of Anaesthesiology, 2009[A3]	ECG is recommended for patients with risk factors who are undergoing intermediate- or high-risk surgery ECG may be considered for: Patients with risk factors who are undergoing low-risk surgery Patients with no risk factors who are undergoing intermediate-risk surgery ECG is not indicated for patients with no risk factors who are undergoing low-risk surgery
Institute for Clinical Systems Improvement, 2012[A4]	ECG is recommended for patients older than 65 years Consider ECG for: Patients of any age with diabetes, hypertension, chest pain, congestive heart failure, smoking history, peripheral vascular disease, inability to exercise, or morbid obesity Patients with new signs or symptoms of cardiovascular disease ECG is not recommended for asymptomatic patients undergoing low-risk surgery unless medical assessment reveals a high-risk patient

continued

ASA = American Society of Anesthesiologists; ECG = electrocardiography.

**—ASA patient classifications: 1 = healthy patient; 2 = patient with mild systemic disease; 3 = patient with severe systemic disease.*

†—Surgical grades: 2 = intermediate; 3 = major; 4 = major+.

eAppendix A. Guideline Summary for Preoperative ECG *(continued)*

Guideline	*Summary of recommendations*
UK National Institute for Clinical Excellence, 2003[A5]	ECG is recommended for: Patients of any age who are undergoing cardiovascular surgery ASA class 1 patients* older than 80 years ASA class 1 patients* older than 60 years who are undergoing grade 3 or 4 surgery† ASA class 2 and 3 patients* with cardiovascular disease ASA class 2 patients* older than 60 years with comorbid renal disease who are undergoing grade 3 or 4 surgery† ASA class 3 patients* older than 40 years with comorbid renal disease who are undergoing grade 4 surgery† ASA class 2 patients* with comorbid respiratory disease who are older than 80 years and are undergoing grade 3 or 4 surgery,† or who are older than 60 years and are undergoing grade 4 surgery† ASA class 3 patients* with comorbid respiratory disease who are older than 60 years and are undergoing grade 2 or 3 surgery,† or who are older than 40 years and are undergoing grade 4 surgery† Consider ECG for: ASA class 1 patients* older than 16 years who are undergoing neurosurgery ASA class 1 patients* older than 40 years who have clinical indications ASA class 2 patients* with comorbid respiratory disease who are older than 40 years, regardless of surgical risk, or who are older than 16 years and are undergoing grade 3 or 4 surgery† ASA class 3 patients* with comorbid respiratory disease ASA class 2 patients* older than 40 years or ASA class 3 patients* of any age with comorbid renal disease

ASA = American Society of Anesthesiologists; ECG = electrocardiography.

**—ASA patient classifications: 1 = healthy patient; 2 = patient with mild systemic disease; 3 = patient with severe systemic disease.*

†—Surgical grades: 2 = intermediate; 3 = major; 4 = major+.

Information from:

A1. Fleisher LA, Beckman JA, Brown KA, et al.; American College of Cardiology; American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the 2002 Guidelines on Perioperative Cardiovascular Evaluation for Noncardiac Surgery); 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 [published corrections appear in J Am Coll Cardiol. *2007;50(17):e242 and* J Am Coll Cardiol. *2008;52(9):793-794].* J Am Coll Cardiol. *2007;50(17):e159-e241.*

A2. American Society of Anesthesiologists Task Force on Preanesthesia Evaluation. Practice advisory for preanesthesia evaluation. Anesthesiology. *2002;96(2):485-496.*

A3. Poldermans D, Bax JJ, Boersma E, et al.; Task Force for Preoperative Cardiac Risk Assessment and Perioperative Cardiac Management in Non-cardiac Surgery; European Society of Cardiology (ESC). Guidelines for pre-operative cardiac risk assessment and perioperative cardiac management in non-cardiac surgery. Eur Heart J. *2009;30(22):2769-2812.*

A4. Institute for Clinical Systems Improvement. Health care guideline: preoperative evaluation. 10th ed. Bloomington, Minn.: Institute for Clinical Systems Improvement; 2012.

A5. National Institute for Clinical Excellence. Preoperative tests: the use of routine preoperative tests for elective surgery. http://www.nice.org.uk/nicemedia/pdf/CG3NICEguideline.pdf. Accessed December 12, 2012.

eAppendix B. Guideline Summary for Preoperative Chest Radiography

Guideline	*Summary of recommendations*
American College of Physicians, 2006[B1]	Chest radiography may be appropriate for patients previously diagnosed with chronic obstructive pulmonary disease or asthma
American College of Radiology, 2008[B2]	Chest radiography is usually appropriate for: Patients with acute cardiopulmonary findings on history or physical examination Patients older than 70 years who have chronic cardiopulmonary disease and have not had chest radiography in the previous six months
American Society of Anesthesiologists, 2002[B3]	Consider chest radiography for: Patients who smoke Patients with a history of recent upper respiratory infection Patients with chronic obstructive pulmonary disease Patients with cardiac disease However, if these conditions are chronic and stable, preoperative chest radiography is not necessarily indicated
Institute for Clinical Systems Improvement, 2012[B4]	Chest radiography may be considered for patients with signs or symptoms suggesting new or unstable cardiopulmonary disease
UK National Institute for Clinical Excellence, 2003[B5]	Chest radiography is recommended for: Patients of any age who are undergoing cardiovascular surgery ASA class 2 patients* with cardiovascular disease who are undergoing grade 4 surgery† ASA class 3 patients* with cardiovascular disease who are undergoing grade 2, 3, or 4 surgery† ASA class 3 patients* with respiratory disease Consider chest radiography for: ASA class 1 patients* older than 60 years who are undergoing grade 4 surgery† or neurosurgery ASA class 2 patients* with respiratory disease who have a change in symptoms or might need ventilator support ASA class 2 patients* with cardiovascular disease ASA class 3 patients* with cardiovascular disease or respiratory disease ASA class 2 or 3 patients* with renal disease who are undergoing grade 3 or 4 surgery,† or who are older than 60 years and are undergoing any surgery

ASA = American Society of Anesthesiologists.

**—ASA patient classifications: 1 = healthy patient; 2 = patient with mild systemic disease; 3 = patient with severe systemic disease.*

†—*Surgical grades: 2 = intermediate; 3 = major; 4 = major+.*

Information from:

B1. Qaseem A, Snow V, Fitterman N, et al.; Clinical Efficacy Assessment Subcommittee of the American College of Physicians. Risk assessment for and strategies to reduce perioperative pulmonary complications for patients undergoing noncardiothoracic surgery. Ann Intern Med. *2006;144(8):575-580.*

B2. American College of Radiology. ACR Appropriateness Criteria: routine admission and preoperative chest radiography. http://www.acr.org/~/media/ACR/Documents/AppCriteria/Diagnostic/RoutineAdmissionAndPreoperativeChestRadiography.pdf. Accessed December 12, 2012.

B3. American Society of Anesthesiologists Task Force on Preanesthesia Evaluation. Practice advisory for preanesthesia evaluation. Anesthesiology. *2002;96(2):485-496.*

B4. Institute for Clinical Systems Improvement. Health care guideline: preoperative evaluation. 10th ed. Bloomington, Minn.: Institute for Clinical Systems Improvement; 2012.

B5. National Institute for Clinical Excellence. Preoperative tests: the use of routine preoperative tests for elective surgery. http://www.nice.org.uk/nicemedia/pdf/CG3NICEguideline.pdf. Accessed December 12, 2012.

eAppendix C. Guideline Summary for Preoperative Electrolyte Measurement

Guideline	*Summary of recommendations*
American Society of Anesthesiologists, 2002[C1]	Preoperative electrolyte measurement could be considered if: Abnormal results would change perioperative management Patient is at risk of abnormal results based on history and physical examination (e.g., liver or renal disease, use of certain medications)
Institute for Clinical Systems Improvement, 2012[C2]	Electrolyte measurement can be considered for: Patients taking digoxin Patients taking diuretics Patients taking angiotensin-converting enzyme inhibitors or angiotensin receptor blockers
UK National Institute for Clinical Excellence, 2003[C3]	Electrolyte measurement is recommended for: All patients with a known renal comorbid condition All patients undergoing neurosurgery or cardiovascular surgery All patients older than 40 years who are undergoing grade 4 surgery† ASA class 3 patients* with cardiovascular disease ASA class 2 patients* with cardiovascular disease who are undergoing grade 3 or 4 surgery† ASA class 2 patients* older than 60 years with cardiovascular disease who are undergoing grade 2 surgery† ASA class 2 patients* with comorbid respiratory disease who are undergoing grade 4 surgery† ASA class 2 patients* older than 60 years who have comorbid respiratory disease and are undergoing high-intermediate–risk surgery ASA class 3 patients* with comorbid respiratory disease who are undergoing high-intermediate– or high-risk surgery Electrolyte measurement is not recommended for: ASA class 1 patients* younger than 40 years who are undergoing low-risk surgery ASA class 1 patients* younger than 16 years who are undergoing low-intermediate–risk surgery ASA class 2 patients* with comorbid respiratory disease who are younger than 60 years and are undergoing low-risk surgery, or who are younger than 40 years and are undergoing low-intermediate–risk surgery

ASA = American Society of Anesthesiologists.

**—ASA patient classifications: 1 = healthy patient; 2 = patient with mild systemic disease; 3 = patient with severe systemic disease.*

†*—Surgical grades: 2 = intermediate; 3 = major; 4 = major+.*

Information from:

C1. American Society of Anesthesiologists Task Force on Preanesthesia Evaluation. Practice advisory for preanesthesia evaluation. Anesthesiology. *2002;96(2):485-496.*

C2. Institute for Clinical Systems Improvement. Health care guideline: preoperative evaluation. 10th ed. Bloomington, Minn.: Institute for Clinical Systems Improvement; 2012.

C3. National Institute for Clinical Excellence. Preoperative tests: the use of routine preoperative tests for elective surgery. http://www.nice.org.uk/nicemedia/pdf/CG3NICEguideline.pdf. Accessed December 12, 2012.

eAppendix D. Guideline Summary for Preoperative Urinalysis

Guideline	*Summary of recommendations*
American Society of Anesthesiologists, 2002[D1]	Urinalysis is recommended for: Patients with new urinary symptoms Patients undergoing urologic surgery Patients undergoing surgery with implantation of foreign material
UK National Institute for Clinical Excellence, 2003[D2]	Urinalysis is recommended for: Patients with new urinary symptoms Patients undergoing urologic surgery Urinalysis is not recommended for children younger than 16 years who are undergoing grade 1 or 2 surgery* For all other patients, the panel could not come to consensus

**—Surgical grades: 1 = minor; 2 = intermediate.*

Information from:

D1. American Society of Anesthesiologists Task Force on Preanesthesia Evaluation. Practice advisory for preanesthesia evaluation. Anesthesiology. *2002;96(2):485-496.*

D2. National Institute for Clinical Excellence. Preoperative tests: the use of routine preoperative tests for elective surgery. http://www.nice.org.uk/nicemedia/pdf/CG3NICEguideline.pdf. Accessed December 12, 2012.

eAppendix E. Guideline Summary for Preoperative Glucose Measurement

Guideline	*Summary of recommendations*
American Society of Anesthesiologists, 2002[E1]	Consider random glucose measurement for: Patients with endocrine, renal, or hepatic disorders Patients taking certain medications or alternative therapies (unspecified)
UK National Institute for Clinical Excellence, 2003[E2]	Random glucose measurement is recommended for: Patients older than 16 years who are undergoing cardiac surgery or neurosurgery Patients taking corticosteroids Patients taking diuretics Random glucose measurement is not recommended for: Asymptomatic patients younger than 16 years Patients with diabetes mellitus who are compliant with therapy

Information from:

E1. American Society of Anesthesiologists Task Force on Preanesthesia Evaluation. Practice advisory for preanesthesia evaluation. Anesthesiology. *2002;96(2):485-496.*

E2. National Institute for Clinical Excellence. Preoperative tests: the use of routine preoperative tests for elective surgery. http://www.nice.org.uk/nicemedia/pdf/CG3NICEguideline.pdf. Accessed December 12, 2012.

eAppendix F. Guideline Summary for Preoperative CBC

Guideline	*Summary of recommendations*
American Society of Anesthesiologists, 2002[F1]	Consider CBC for: Patients with liver disease Patients at extremes of age Patients with a history of anemia or bleeding Patients with other hematologic disorders Type and invasiveness of the surgical procedure (not specified by the guideline)
Institute for Clinical Systems Improvement, 2012[F2]	CBC is recommended for: Patients with a history of anemia Patients with a history suggestive of recent blood loss
UK National Institute for Clinical Excellence, 2003[F3]	CBC is recommended for: Patients undergoing cardiovascular surgery Patients older than 60 years who are undergoing neurosurgery ASA class 2 or 3 patients* who have cardiovascular disease and are undergoing grade 3 or 4 surgery† ASA class 2 or 3 patients* older than 80 years who have respiratory disease and are undergoing grade 2 surgery† ASA class 2 or 3 patients* who have respiratory disease and are undergoing grade 3 or 4 surgery† ASA class 2 patients* who have renal disease and are undergoing grade 3 or 4 surgery† ASA class 3 patients* who have renal disease and are undergoing any type of surgery

ASA = American Society of Anesthesiologists; CBC = complete blood count.

**—ASA patient classifications: 1 = healthy patient; 2 = patient with mild systemic disease; 3 = patient with severe systemic disease.*

†—Surgical grades: 2 = intermediate; 3 = major; 4 = major+.

Information from:

F1. American Society of Anesthesiologists Task Force on Preanesthesia Evaluation. Practice advisory for preanesthesia evaluation. Anesthesiology. *2002;96(2):485-496.*

F2. Institute for Clinical Systems Improvement. Health care guideline: preoperative evaluation. 10th ed. Bloomington, Minn.: Institute for Clinical Systems Improvement; 2012.

F3. National Institute for Clinical Excellence. Preoperative tests: the use of routine preoperative tests for elective surgery. http://www.nice.org.uk/nicemedia/pdf/CG3NICEguideline.pdf. Accessed December 12, 2012.

eAppendix G. Guideline Summary for Preoperative Coagulation Testing

Guideline	*Summary of recommendations*
American Society of Anesthesiologists, 2002[G1]	Consider coagulation testing with platelet count for: Patients with a history of bleeding Patients with renal dysfunction Patients with liver dysfunction Type and invasiveness of surgical procedure (not specified by the guideline) Also recognize that anticoagulant medications may present additional perioperative risk
British Committee for Standards in Haematology, 2008[G2]	Bleeding history is recommended for all patients Coagulation testing is recommended for patients with positive bleeding history or a clear clinical indication for testing
Institute for Clinical Systems Improvement, 2012[G3]	Coagulation testing is recommended for: Patients with a history of coagulation abnormalities Patients taking anticoagulant medications Patients with a recent history suggesting coagulation problems Patients needing postoperative anticoagulation (baseline testing)
UK National Institute for Clinical Excellence, 2003[G4]	Coagulation testing is not recommended for: ASA class 1 patients* who are undergoing grade 1, 2, or 3 surgery† ASA class 1 patients* younger than 16 years who are undergoing grade 4 surgery† ASA class 2 adult patients* who have cardiovascular disease and are undergoing grade 1, 2, or 3 surgery† ASA class 3 adult patients* who have cardiovascular disease and are undergoing grade 1 or 2 surgery† ASA class 2 or 3 adult patients* who have respiratory disease and are undergoing grade 1, 2, or 3 surgery† ASA class 2 adult patients* who have renal disease and are undergoing grade 1 or 2 surgery† For all other patients, including those undergoing neurosurgery or cardiovascular surgery, there was no consensus regarding which patients should be tested

ASA = American Society of Anesthesiologists.

**—ASA patient classifications: 1 = healthy patient; 2 = patient with mild systemic disease; 3 = patient with severe systemic disease.*

†—Surgical grades: 1 = minor; 2 = intermediate; 3 = major; 4 = major+.

Information from:

G1. American Society of Anesthesiologists Task Force on Preanesthesia Evaluation. Practice advisory for preanesthesia evaluation. Anesthesiology. *2002;96(2):485-496.*

G2. Chee YL, Crawford JC, Watson HG, Greaves M; British Committee for Standards in Haematology. Guidelines on the assessment of bleeding risk prior to surgery or invasive procedures. Br J Haematol. *2008;140(5):496-504.*

G3. Institute for Clinical Systems Improvement. Health care guideline: preoperative evaluation. 10th ed. Bloomington, Minn.: Institute for Clinical Systems Improvement; 2012.

G4. National Institute for Clinical Excellence. Preoperative tests: the use of routine preoperative tests for elective surgery. http://www.nice.org.uk/nicemedia/pdf/CG3NICEguideline.pdf. Accessed December 12, 2012.