



Complete Summary

GUIDELINE TITLE

General approach to the patient. In: I guidelines for perioperative evaluation.

BIBLIOGRAPHIC SOURCE(S)

Committee on Perioperative Evaluation (CAPO), Brazilian Society of Cardiology.
General approach to the patient. In: I guidelines for perioperative evaluation. Arq
Bras Cardiol 2007;89(6):e175-86. [34 references]

GUIDELINE STATUS

This is the current release of the guideline.

** REGULATORY ALERT **

FDA WARNING/REGULATORY ALERT

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory information has been released.

- [February 28, 2008, Heparin Sodium Injection](#): The U.S. Food and Drug Administration (FDA) informed the public that Baxter Healthcare Corporation has voluntarily recalled all of their multi-dose and single-use vials of heparin sodium for injection and their heparin lock flush solutions. Alternate heparin manufacturers are expected to be able to increase heparin products sufficiently to supply the U.S. market. There have been reports of serious adverse events including allergic or hypersensitivity-type reactions, with symptoms of oral swelling, nausea, vomiting, sweating, shortness of breath, and cases of severe hypotension.

COMPLETE SUMMARY CONTENT

** REGULATORY ALERT **

SCOPE

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INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT

CATEGORIES

IDENTIFYING INFORMATION AND AVAILABILITY

DISCLAIMER

SCOPE

DISEASE/CONDITION(S)

Any condition requiring surgery

GUIDELINE CATEGORY

Evaluation
Management
Prevention
Risk Assessment
Treatment

CLINICAL SPECIALTY

Anesthesiology
Cardiology
Endocrinology
Gastroenterology
Hematology
Nephrology
Pulmonary Medicine
Radiology
Surgery

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

- To refine and unify the terminology used by the entire multidisciplinary team, including the patients and their family
- To establish new routines, change indication for surgery according to the information obtained during the perioperative evaluation

TARGET POPULATION

Any patient who requires surgery

INTERVENTIONS AND PRACTICES CONSIDERED

1. Medical history
2. Physical examination, with emphasis on:
 - Identifying preexisting or potential heart disease
 - Defining severity and stability of heart disease
 - Identifying comorbid disease
3. Assessment and perioperative treatment of comorbid diseases (thyroid hormone replacement, antithyroid therapy, blood transfusions, thrombosis)

- prophylaxis, corticosteroids, respiratory physiotherapy, continuous positive airway pressure, deep vein thrombosis prophylaxis)
4. Appropriate use of additional tests, including electrocardiogram, chest x-ray, full blood count, hemostasis/coagulation tests, serum creatinine
 5. Use of algorithms to direct clinical evaluation

MAJOR OUTCOMES CONSIDERED

- Perioperative complications
- Perioperative mortality

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

- A. Sufficient evidence from multiple randomized trials or meta-analyses
- B. Limited evidence from single randomized trial or non-randomized studies
- C. Evidence only from case reports and series
- D. Expert opinion or standard of care

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The participants of these guidelines were chosen among health sciences specialists with hands on and academic experience, thus being characterized as clinical researchers.

The adopted methodology and evidence levels were the same as those used in earlier documents by the Brazilian Society of Cardiology.

Recommendations

- The guidelines must be based on evidences.
- Class division must be used when applicable.
- Degrees of recommendation must be used when applicable, according to the levels of evidence.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Degree or Class of Recommendation

Class I: Conditions for which there is evidence for and/or general agreement that the procedure/therapy is useful and effective

Class II: Conditions for which there is conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of performing the procedure/therapy

Class IIa: Weight of evidence/opinion is in favor of usefulness/efficacy

Class IIb: Usefulness/efficacy is less well established by evidence/opinion

Class III: Conditions for which there is evidence for and/or general agreement that the procedure/therapy is not useful/effective and in some cases may be harmful

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not stated

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The definitions for levels of evidence (A-D) and classes of recommendation (I-III) are provided at the end of the "Major Recommendations" field.

General Assessment - Comorbid Diseases

Thyroid Diseases

Recommendations (Mostbeck et al., 1998; Bennet-Guerrero et al., 1997; Pronovost & Parris, 1995; Graham et al., 2000; Murkin, 1982; Stehling, 1974)

Class I, Level of evidence D

- Assess all the risk factors of the patient
- Do not worry about subclinical hypothyroidism when thyroid stimulating hormone (TSH) <10 mU/dL
- Elective surgery should only take place when the thyroid function of the patient is normal
- Patients <45 years should be given the full L-thyroxine dose which is usually from 1.6 to 2.2 mcg/kg or from 100 to 200 mcg per day. It takes from 4 to 6 weeks of treatment for TSH levels to normalize
- Patients >45 years should start with a 25 to 50 mcg/day dose to be increased at every two-week intervals
- Coronary patients should start with a 15 mcg/day dose to be increased weekly until TSH normalizes
- Do not postpone surgery in patients with light hypothyroidism but start oral hormone replacement therapy
- Hypothermia prophylaxis, cardiovascular monitoring and hydrocortisone administration (100 mg at every 8 hours for 24 hours since adrenal insufficiency may occur) must be done in hypothyroid patients submitted to surgery
- The half-lives of thyroxine (T4) and triiodothyronine (T3) are 7 and 1.5 days respectively. Thus, a patient who is taking T4 does not need to take it on the day of surgery while the patient who is taking T3 does
- Radiograph the cervical region to determine if goiter is going to interfere with tracheal intubation

Recommendations for Patients with Severe Hypothyroidism or Myxedema Coma Undergoing Urgent Surgeries (Mostbeck et al., 1998; Bennet-Guerrero et al., 1997; Pronovost & Parris, 1995; Graham, Unger, & Coursin, 2000; Murkin, 1982; Stehling, 1974) **Class I, Level of evidence D**

- Administer 200 to 500 mcg of L-thyroxine or 40 mcg of intravenous T3 or 10 to 25 mcg of T3 at 8-hour intervals before surgery. This should correct hemodynamic and electrocardiographic changes. Divide the dose into 50% of T4 and 50% of T3 during the perioperative period
- Maintenance dose should be 40 to 100 mcg of T4 or 10 to 20 mcg of T3 given intravenously at 24-hour intervals
- Administer 100 mg of hydrocortisone at 6-hour intervals for a long period

- Start hormone replacement therapy by digestive route using the doses listed above as soon as possible

Hyperthyroidism

Recommendations (Mostbeck et al., 1998; Bennet-Guerrero et al., 1997; Pronovost & Parris, 1995; Graham, Unger, & Coursin, 2000; Murkin, 1982; Stehling, 1974) **Class I, Level of evidence D**

- Antithyroid medications: the most common are propylthiouracil (PTU) and methimazole. They inhibit the synthesis of thyroid hormones by preventing iodide oxidation and organification. When used in high doses, PTU has the additional advantage of inhibiting the peripheral conversion of T4 to T3, therefore it is used more often during the perioperative period. The standard dose is 100 mg at 8-hour intervals and the maximum dose is 400 mg at 8-hour intervals. Methimazole doses vary from 10 to 120 mg in a single daily dose. The dose should be reassessed at 4 to 6-week intervals.
- Beta-blockers: They are only used to control adrenergic signs and symptoms. They do not affect hormone levels. Propranolol is used most often at 10 to 80 mg at 6 to 8-hour intervals (1 mg intravenously during surgery). Esmolol can be given during surgery at a loading dose of 500 mcg/kg for 1 minute and a maintenance dose of 25 to 300 mcg/kg/min.

Recommendations for Urgent or Emergency Surgeries (Mostbeck et al., 1998; Bennet-Guerrero et al. 1997; Pronovost & Parris, 1995; Graham, Unger, & Coursin, 2000; Murkin, 1982; Stehling, 1974) **Class I, Level of evidence D**

- Antithyroid medications - PTU in high doses is the medication of choice (1000 to 1200 mg divided in 3 doses per day)
- Beta-blockers - intravenous is the preferred route of administration
- Iodine - can be used for a maximum of 10 days since the inhibition of iodine organification (Wolff-Chaikoff effect) is transient and after this time an escape phenomenon occurs and hyperthyroidism worsens. The most commonly used agent is Lugol's iodine. It contains 5% iodine and 10% potassium iodide. The dose varies from 0.1 to 0.3 mL at 8-hour intervals (3 to 5 drops)
- Iodinated contrasts - Sodium ipodate and iopanoic acid are used for compensation. They present two advantages: there is less escape and the peripheral conversion of T4 to T3 is inhibited. The dose is 500 mg at 8-hour intervals
- Corticosteroid - must be given when hyperthyroidism is not compensated during and after surgery because of elevated peripheral degradation of cortisol. The induction dose is 100 mg followed by 100 mg at 8-hour intervals for the first 24 hours
- Anesthesia - pay special attention to increased metabolism of anesthetic agents and intubation difficulty due to goiter (Mostbeck et al., 1998)
- Thyroid storm - is associated with mortality rates varying from 20% to 30%. Given the sudden nature of the signs and symptoms, treatment should begin right away even if laboratory tests have not yet confirmed the condition. See Table 4 of the original guideline document for supportive care and specific treatment recommendations to treat thyroid storm

Renal Impairment

The risks for postoperative complications are well defined in renal failure patients and all patients with preoperative creatinine greater than 1.5 mg/dL should be assessed by a nephrologist. Always bear in mind that creatinine is not a very sensitive marker for renal function. Therefore, creatinine below 1.5 mg/dL does not necessarily mean that renal function is normal, especially among the elderly and those with reduced muscle mass. Perioperative assessment is an opportunity to be in contact with the patient and the clinical and surgical teams and plan actions that will prevent the deterioration of renal function and later retard the progression of chronic renal failure.

Refer to the original guideline document for further discussion of renal impairment.

Blood Disorders

Recommendations for Red Blood Cell (RBC) Transfusions (Madjdpour & Spahn, 2005)

- Symptomatic individuals should receive enough blood to minimize their symptoms; **Class I, Level of evidence D**
- Hemoglobin below 7.0 g/dL in patients with acute anemia; **Class I, Level of Evidence A**
- In cases of acute coronary disease, hemoglobin should be kept around 9.0 and 10.0 g/dL; **Class I, Level of Evidence D**

Recommendations for Platelet Transfusion **Class I, Level of Evidence B**

- Platelet count below 50,000/mm³
- Platelet count below 100,000/mm³ if surgery is neurological or ophthalmologic

Recommended Perioperative Procedures for Noncardiac Surgeries in Patients with Other Blood Conditions

1. Sickle-Cell Disease (sickle-cell anemia [SS], sickle-hemoglobin C disease [SC], or sickle-beta plus thalassemia [Sbetathal]) **Class I, Level of Evidence C**
 - Increase hemoglobin to 10 g/dL by RBC transfusion. If hemoglobin $\geq$ 9 g/dL, ask a specialist
 - Monitor hematocrit, peripheral perfusion and oxygenation before surgery
 - Monitor blood pressure, heart rhythm and rate, oxygenation and body temperature during surgery, avoiding hypothermia
 - Monitor hydration, oxygenation and body temperature after surgery (The management of sickle cell disease. National Institute of Health/National Heart, Lung, and Blood Institute/Division of Blood Diseases and Resources. 2002.)
2. Primary Antiphospholipid Syndrome **Class I, Level of Evidence C**
 - Perioperative thrombosis prophylaxis in patients taking anticoagulant medications

- Postoperative thrombosis prophylaxis in patients who are not taking anticoagulant medications (Middeldorp et al., 2001)
3. Congenital Thrombophilia **Class I, Level of Evidence C**
 - Perioperative thrombosis prophylaxis in patients taking anticoagulant medications
 - Postoperative thrombosis prophylaxis in patients who are not taking anticoagulant medications. Doses will vary according to the type of congenital thrombophilia (Middeldorp et al., 2001)
 4. Hemophilia **Class I, Level of Evidence B**
 - Perform laboratory tests to determine if inhibitors are present
 - During surgery, correct the coagulation factor deficiency by infusion of the specific factor
 - After surgery, maintain the plasma levels of the lacking factor for as long as necessary. Infusion time will vary according to type and classification of surgery (minor/major)
 - Keep plasma levels of the lacking factor under strict control with the aid of laboratory tests (Arun & Kessler, 2001)
 5. Von Willebrand Disease **Class I, Level of Evidence B**
 - During surgery, correct the plasma level of the lacking factor with factor VIII/von Willebrand factor concentrates
 - After surgery, factor VIII and von Willebrand factor levels and activities will vary according to type and classification of surgery
 - Depending on the type of surgery and results of the desmopressin acetate (DDAVP) test, consider using this medication (Mannucci, 1998)

Adrenal Insufficiency (AI)

Signs and Symptoms of AI

- Hypotension and hemodynamic shock (that may be resistant to vasopressors) with multiple organ failure
- Hypoglycemia
- Tachycardia
- Electrolyte disturbances: hyponatremia, hyperkalemia (in primary adrenal insufficiency), hypercalcemia, acidosis
- Decreased cardiac contractility
- Anemia, eosinophilia and neutropenia
- Nausea, emesis, weakness, orthostatic hypotension, dehydration, abdominal or flank pain (acute adrenal hemorrhage), fatigue, weight loss
- Vitiligo, skin color changes, hypogonadism, hypothyroidism.
- AI should be suspected when hypotension and unexplained, refractory or hypovolemic shock occur during or after surgery, or when there is discrepancy between the condition of the patient and severity of the disease, high fever without apparent cause (negative cultures) or refractory to antibiotic therapy, unexplained mental changes, apathy or depression without a specific psychiatric disorder. These cases should be regarded and treated as acute AI and confirmed later; **Class I, Level of Evidence C**

Recommendations for Identification of Patients at Risk for AI

- Confirm the diagnosis with tests that are appropriate for patients at risk of AI. It is advisable to have an endocrinologist involved; **Class I, Level of Evidence B**
- If tests are necessary to confirm AI, use dexamethasone as it does not interfere with the tests; **Class I, Level of Evidence C**
- If untreated hypothyroidism and AI coexist, replace AI hormones first; **Class I, Level of Evidence C**
- Mineralocorticoid supplementation is not necessary since corticosteroid supplementation doses for surgical stress have mineralocorticoid activity; **Class I, Level of Evidence C**
- If it is impossible to confirm the diagnosis before surgery, the following corticosteroid supplementations are recommended; **Class IIa, Level of Evidence D**
 - General Recommendations (Salem et al, 1994; Cooper & Stewart, 2003; Axelrod 2003)
 - High corticosteroid supplementation doses are not necessary to prevent acute AI
 - High doses may increase the likelihood of complications such as hypertension and diabetic decompensation; **Class IIa, Level of Evidence C**
 - Mild Surgical Stress
 - Double or triplicate corticosteroid dose in patients with established AI and chronic users. Bear in mind that adrenal suppression may occur rapidly with high doses or even after a long time of corticosteroid discontinuation (up to 48 months) **Class IIa, Level of Evidence C.**
 - If the oral route in fasting subjects is not possible, administer 50 mg of intramuscular or intravenous hydrocortisone right before surgery followed by 25 mg of hydrocortisone twice daily or equivalent (dexamethasone 0.75 mg twice daily). Reduce to the regular dose after 24 hours or as soon as stress is over; **Class IIa, Level of Evidence C**
 - Patients who have not been diagnosed with AI but it is highly suspected, proceed with treatment for AI; **Class IIb, Level of Evidence C**
 - Moderate Surgical Stress
 - Administer 25 mg of intramuscular or intravenous hydrocortisone or equivalent at 8-hour intervals on the day of surgery. Reduce the dose daily by 50% until the regular dose is reached; **Class IIa, Level of Evidence C**
 - High Surgical Stress
 - Administer 50 mg of intramuscular or intravenous hydrocortisone or equivalent at 6-hour intervals on the day of surgery and maintain this dose until the metabolic stress is over. Metabolic stress usually lasts 48 hours following surgeries without complications (infections or other intercurrents). Then reduce the dose daily by 50% until the regular dose is reached; **Class IIa, Level of Evidence C**
 - Cushing's Syndrome Special Situation
 - It is advisable for an endocrinologist to be involved
 - Start corticosteroid therapy as soon as the patient arrives at the ICU or on the day following surgery

- In these cases, some groups will only replace hormones if there are signs or symptoms of acute AI or laboratory tests confirming the need for hormone replacement therapy

Obesity

Severity of obesity can be characterized by degrees

Obesity grade 1: Body mass index (BMI) 30-34.9 kg/m²

Obesity grade 2: BMI 35-39.9 kg/m²

Obesity grade 3: BMI ≥40 kg/m²

Preoperative Assessment According to Body Mass Index (BMI) and Surgery Classification

A. Obesity of Any Grade and Low-Risk Surgery

- Same assessment as that for nonobese individuals; **Class IIa, Level of Evidence D**

B. Obesity Grades 1 and 2 and Intermediate or High-Risk Surgery

- Complete medical history and physical examination
- Clinical assessment of obstructive sleep apnea; **Class I, Level of Evidence B**
- Electrocardiogram (ECG); **Class IIa, Level of Evidence B**
- Fasting glucose; **Class IIa, Level of Evidence B**
- Creatinine determination if the patient is diabetic, hypertensive or has a history of renal disease; **Class IIb, Level of Evidence C**
- Polysomnography in selected patients; **Class IIb, Level of Evidence C**
- Resting and overnight non-invasive oximetry if apnea score is intermediate or high in the clinical scoring system or if diagnosis of sleep apnea has been confirmed by polysomnography; **Class IIb, Level of Evidence D**
- Echocardiographic assessment of diastolic function if there are signs or symptoms that suggest CHF; **Class IIb, Level of Evidence D**

C. Obesity Grade 3 and Intermediate or High-Risk Surgery

- Electrocardiogram; **Class IIa, Level of Evidence B**
- Fasting glucose; **Class IIa, Level of Evidence B**
- Creatinine determination if the patient has diabetes, hypertension or a history of renal disease; **Class IIa, Level of Evidence C**
- Echocardiographic assessment of diastolic function; **Class IIa, Level of Evidence D**
- Resting and overnight oximetry; **Class IIb, Level of Evidence D**

Observations

- Additional tests such as coagulation studies, noninvasive tests for cardiac ischemia, chest x-ray and pulmonary function tests are not mandatory and

should not be done routinely during the preoperative assessment of obese individuals. Additional tests are selected according to medical history. **Class IIa, Level of Evidence B**

- Restrictive and mixed bariatric surgeries are considered intermediate-risk surgeries

Recommendations to Reduce Risk

- Smoking cessation 6 weeks before surgery (Moller et al., 2002); **Class I, Level of Evidence B**
- Respiratory physiotherapy; **Class IIa, level of Evidence D**
- If patient has sleep apnea confirmed by polysomnography or if apnea risk score is high, consider using continuous positive airway pressure (CPAP) during the preoperative period in patients who do not use it and do not discontinue its use in patients who do; **Class IIa, Level of Evidence B**

Intraoperative Recommendations

- Monitor blood pressure with an inflatable cuff that is appropriate for obese individuals or in a different location (forearm) adjusted for obese patients (Pickering et al., 2005); **Class I, Level of Evidence B**
- Induce anesthesia with the patient in the reverse Trendelenburg position; **Class IIa, Level of Evidence B**
- The use of sevoflurane general anesthesia results in faster extubation and a better initial recovery period **Class IIa, Level of Evidence B**
- Perform pre-oxygenation in the sitting or elevated head position; **Class IIa, Level of Evidence B**
- Use the rapid-sequence induction of anesthesia with application of cricoid pressure during intubation; **Class IIa, Level of Evidence B**
- Make sure that the stretcher can accommodate obese patients and watch out for pressure sores; **Class IIa, Level of Evidence D**
- Invasive pressure monitoring should be done whenever necessary; **Class IIb, Level of Evidence D**

Postoperative Recommendations

- CPAP in cases of confirmed sleep apnea (Lojander et al., 1996); **Class I, Level of Evidence B**
- Use oximetry to monitor oxygenation in patients with hypoxemia before and during surgery and suspect of respiratory system diseases (sleep apnea, alveolar hypoventilation); **Class IIa, Level of Evidence B**
- High risk patients with comorbidities, patients who had failure on postoperative airway extubation program, patients who suffered complications during surgery or super obese patients (BMI >70 kg/m²) should remain in the ICU after surgery (Helling, 2005); **Class IIa, Level of Evidence C**
- Maintain normal blood volume; **Class IIa, Level of Evidence D**
- Perform continuous oximetry during recovery from anesthesia (**Class IIb, Level of Evidence C**), determine oxygen saturation after recovery from anesthesia (if it is normal it does not need to be measured again) and perform overnight oximetry (in cases of intermediate or high-risk surgeries); **Class IIb, Level of Evidence D**

- All patients submitted to intermediate or high-risk surgeries are to undergo respiratory physiotherapy; **Class IIa, Level of Evidence D**
- Deep vein thrombosis (DVT) prophylaxis
 - Encourage ambulation and use prophylactic heparins; **Class I, Level of Evidence B.**
 - When indicated, both the low-molecular-weight heparin and unfractionated heparin can be used in regular regimens (Hamad & Choban 2005). If patient's weight >100 kg, consider monitoring factor Xa activity; **Class IIa, Level of Evidence B**
 - Higher doses (40 mg of enoxaparin at 12-hour intervals) result in less thromboembolic events and can be useful (Scholten, Hoedema, & Scholten, 2002); **Class IIa, Level of Evidence B**

Additional Tests

Recommendations for Requesting an ECG (Eagle et al., 2002; Garcia-Miguel, Serrano Aquilar, & Lopez-Bastida, 2003)

Class I

- All patients older than 40 years or all patients with a history of and/or physical examination abnormalities that suggest cardiovascular disease regardless of age
- Patients with a recent episode of ischemic chest pain or considered to be at high risk after algorithmic assessment
- Patients with diabetes

Class IIa

- Asymptomatic obese patients

Class III

- Routinely request an ECG for asymptomatic individuals who will be submitted to low-risk surgeries

Recommendations for Requesting a Chest X-ray (Eagle et al., 2002; Garcia-Miguel, Serrano Aquilar, & Lopez-Bastida, 2003)

- Request a chest x-ray for patients with a history of chest-related abnormalities or those with chest-related abnormalities detected during the physical examination; **Class I, Level of Evidence D**

Recommendations for Requesting Full Blood Count (FBC): Class I, Level of Evidence D

- Request a FBC for all patients older than 65 years
- Request a FBC when anemia is suspected during physical examination or when chronic diseases associated with anemia are present
- Request a FBC for all patients who will be submitted to moderate/high-risk surgeries if a need for transfusion is anticipated

Recommendations for Requesting Hemostasis/Coagulation Tests: Class I, Level of Evidence D

- Request test for all patients on anticoagulation therapy
- Request test for all patients with liver failure
- Request test for all patients with coagulation disorders
- Request for all patients who will be submitted to intermediate or high-risk surgeries

Determination of Serum Creatinine: Class I, Level of Evidence D

- Determine serum creatinine in all patients older than 40 years
- Determine serum creatinine in all patients with kidney disease, diabetes mellitus, hypertension, liver failure and/or heart failure and whose serum creatinine has not been determined in the last 12 months
- Determine serum creatinine for all patients who will be submitted to intermediate or high-risk surgeries

Definitions:

Levels of Evidence

- A. Sufficient evidence from multiple randomized trials or meta-analyses
- B. Limited evidence from single randomized trial or non-randomized studies
- C. Evidence only from case reports and series
- D. Expert opinion or standard of care

Class of Recommendation

Class I: Conditions for which there is evidence for and/or general agreement that the procedure/therapy is useful and effective

Class II: Conditions for which there is conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of performing the procedure/therapy

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Class IIb: Usefulness/efficacy is less well established by evidence/opinion

Class III: Conditions for which there is evidence for and/or general agreement that the procedure/therapy is not useful/effective and in some cases may be harmful

CLINICAL ALGORITHM(S)

The original guideline document contains a clinical algorithm for perioperative evaluation of cardiovascular risk of noncardiac surgeries.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

[References open in a new window](#)

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for most of the recommendations (see the "Major Recommendations" field).

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Reduction of risk for perioperative complications and mortality
- Prevention of perioperative complications
- Prevention of perioperative mortality

POTENTIAL HARMS

Adverse effects of propylthiouracil and methimazole are rarely severe: skin rash, fever, itching and arthralgia, transient elevation of liver enzymes and leucopenia. More severe and less frequent complications that require discontinuation of medication are agranulocytosis (0.5%), severe hepatitis, lupus-like syndrome and thrombocytopenia.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- Data or scientific evidences are not always available to allow all the different situations to be analyzed. As customary in medical practice, minute analysis of the patient and problem and the common sense of the team must prevail.
- The surgical intervention does not finish when the patient is bandaged or leaves the operating room. The concept of the word *perioperative* includes the need for a postoperative surveillance whose intensity is determined by the individual level of risk of the patient.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Clinical Algorithm

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Staying Healthy

IOM DOMAIN

Effectiveness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Committee on Perioperative Evaluation (CAPO), Brazilian Society of Cardiology. General approach to the patient. In: I guidelines for perioperative evaluation. Arq Bras Cardiol 2007;89(6):e175-86. [34 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2007

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Brazilian Society of Cardiology

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Brazilian Society of Cardiology

GUIDELINE COMMITTEE

Not stated

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Support: Committee on Perioperative Evaluation (CAPO), Brazilian Society of Cardiology

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the [*Journal of Arquivos Brasileiros de Cardiologia*](#).

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

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