

## SPECIAL ARTICLE

# Is majority of requests by anesthesiologists for cardiologist consultation unjustified?

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## ABSTRACT

Preoperative consultation of surgical patient by cardiologist is intended to treat an inadequately treated cardiac condition before undergoing surgery. This can yield in terms of new therapy, lead to optimization of the patients' cardiac comorbidity, impact significantly in terms of perioperative management and potentially reduce postoperative adverse cardiac events. However, judicious use of preoperative consultation request is required both for avoiding unnecessary consultation, investigation and delay in proceeding with surgery as well as cost effective health care delivery. This mini review is aimed at finding the practice patterns of anesthesiologists' preoperative requests for cardiology consultations. Different clinical situations faced in preoperative evaluation of cardiac patients planned for non-cardiac surgery with regard to the need for preoperative cardiac consultation and a step wise approach for determining the probable need of request is also presented.

**Key words:** Anesthesia; Analgesia; Referral/consultation, Preoperative; Anesthesiologist; Cardiologist, Non-cardiac surgery

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## INTRODUCTION

Preoperative anesthesia check up (consultation) has become an integral part of perioperative care for surgical patients. Observational studies examining the clinical utility of preoperative consultation suggest that it reduces postoperative length of stay.<sup>1,2</sup> Many a time anesthesiologist needs to refer the patient to other specialty / super specialty health discipline for consultation and request for cardiologists consultation is also one of them. The purposes of a cardiology consultation are to treat an inadequately treated cardiac condition before surgery, to provide data to use in anesthesia management, and possibly to diagnose a medical condition before surgery which can yield in terms of new therapy impacting perioperative management.<sup>3,4</sup>

It is well known to health care providers that overuse, underuse and misuse are very important concerns in health care delivery which can lead to

patients receiving inappropriate or unnecessary care.<sup>5</sup> Unnecessary referral / consultation even lead to delay in risk stratification / fitness declaration and increases hospital stay.<sup>6,7</sup> This mini review is aimed at finding the practice patterns of anesthesiologists' preoperative requests for cardiology consultations. It is also tried to summarize the justified requests which is expected to help anesthesiologists in rationalizing practices.

## PREOPERATIVE CARDIOLOGY CONSULTATION PRACTICES

Preoperative cardiology consultation request is mostly given in patients with known or suspected cardiovascular disease planned for non-cardiac surgery. The common cardiac co morbid diseases leading to consultations are hypertension, coronary artery disease, atrial fibrillation, congestive heart failure etc.<sup>8</sup> The precise frequency of preoperative cardiology consultation is difficult to figure out as preoperative consultation services are variable

## requests for cardiologist consultation

among different hospitals.<sup>8</sup> Cardiology consultation is also likely to be same and it may even vary among anesthesiologists of same hospital. A study including 13,673 patients undergoing a variety of common procedures (primarily low-risk surgeries) had found that 1.28% of the patients received preoperative cardiology consultation.<sup>9</sup> In another observational study with relative smaller participants but including intermediate and high risk surgeries as well have found that the rate of referral by anesthesiologists to cardiologist was 5.33%.<sup>6</sup> Similarly, the frequencies of cardiology referral / consultation among all the preoperative medical referrals / consultations are also variable. It was reported as 5.7% in facilities having family physicians to 33 – 40% in facilities without family physician.<sup>6,9,10</sup> This indicate that the request of preoperative cardiology consultation is quite prevalent and an area of concern.

The reason for request for preoperative cardiology consultation is also variable. In a retrospective review of cardiology consultations at a university hospital, it was found that 53.47% just asked for an “evaluation,” 39.11% asked for a “clearance,” and 4.46% did not specifically request anything and only 2.97% posed a specific question.<sup>11</sup> Incidental and insignificant findings in electrocardiogram and even preoperative risk stratifications have also been shown as reason behind preoperative cardiology consultation.<sup>6,12</sup> As a result, the cardiologist often makes broadly inclusive, general remarks (like ‘patient cleared for surgery, patient can be taken up with high-risk, use invasive hemodynamic monitoring etc’) about perioperative management of the patient and may recommend preoperative diagnostic work-up.<sup>7,13</sup>

### ARE ALL PREOPERATIVE CARDIOLOGY CONSULTATION REQUESTS JUSTIFIED?

The value of preoperative cardiology consultation cannot be underestimated, but it is uncertain whether these consultations reach their expected goals.<sup>14</sup> Preoperative cardiology consultation also seems to be overused.<sup>12,15</sup> Although, previous study has shown that assigning the anesthesiologist with the responsibilities of deciding which patients need further evaluation has been associated with a 73% decrease in preoperative consultations,<sup>16</sup> anesthesiologists are still asking inappropriate / unnecessary cardiology consultations.<sup>6</sup> In a prospective observational study, it was found that 3 out of 4 cardiology referral (75%) was not required / inappropriate.<sup>6</sup>

Examining the cardiology consultation requests in 712 patients scheduled for elective surgery, Aslanger et al. found that the cardiologists revealed an abnormality in 67.8% and recommended further work up in 58.7% of the patients. However, they contributed to the clinical course in only 36.9%. It was also found that when the algorithm was applied to ‘routine pre-operative evaluation’ requests lacking a specific question, only 7.6% of these consultation requests required further investigation.<sup>15</sup> Another study evaluating the indication of the requests for preoperative cardiac consultation for in patients undergoing non-cardiac surgery found that only 26.5% of the requests were according to the 2009 ACC/AHA guidelines.<sup>17</sup>

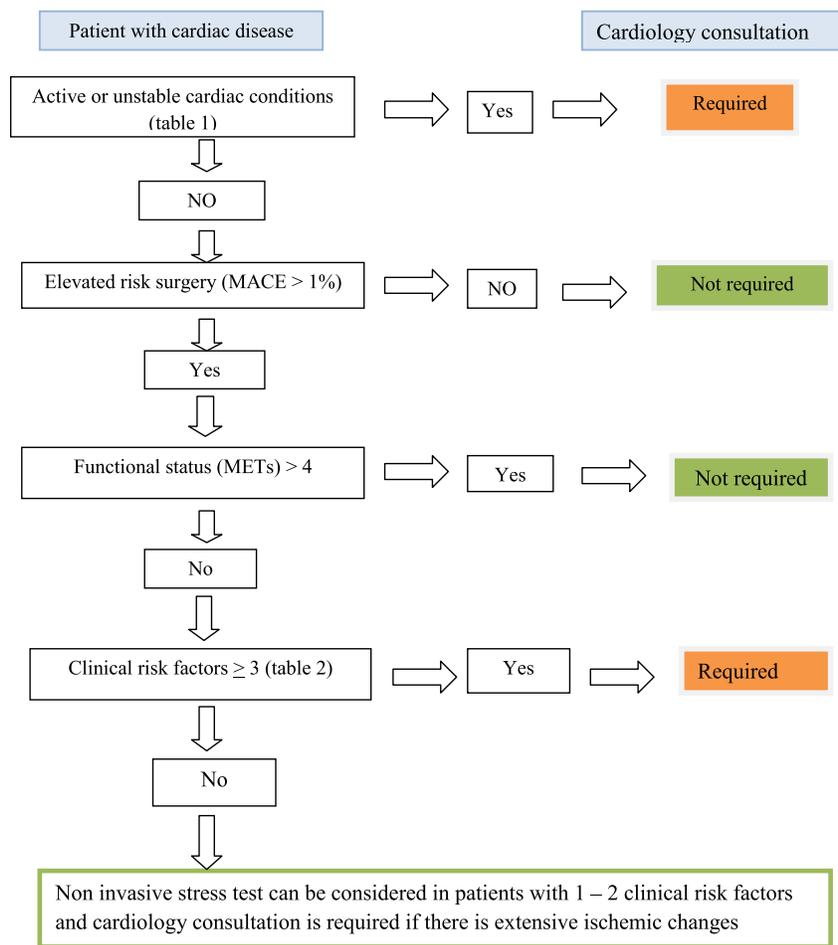
A study with 100 patients of positive cardiac history and symptoms and signs suggestive of cardiac disease, screened by anesthetist and referred to single cardiologist for cardiac risk stratification and further treatment (if required) found that only 16% were identified as high risks and only one patient needed further intervention; even though 55% patients had cardiac co morbidities.<sup>12</sup> Evaluating the effect of preoperative cardiology consultation

#### Box 1: Active or unstable cardiac conditions. (Adapted from 2014 ESC/ESA and 2007 ACC/AHA guideline for non-cardiac surgery)<sup>20,22</sup>

- Myocardial infarction within past 30 days and residual myocardial infarction
- Unstable and severe angina pectoris of Canadian Cardiovascular Society class III & IV
- Acute / new onset / decompensated or worsening heart failure
- Significant cardiac arrhythmias (higher grade atrioventricular blocks, atrial fibrillation with fast ventricular rate, new onset ventricular tachycardia, symptomatic bradycardia etc)
- Severe / symptomatic valvular heart disease like aortic stenosis and mitral stenosis

#### Box 2: Clinical risk factors for cardiac surgery. (Adapted from 2014 ESC/ESA and 2007 ACC/AHA guideline for non-cardiac surgery)<sup>20,22</sup>

- History of ischemic heart disease (angina pectoris and/or previous myocardial infarction)
- Compensated or prior heart failure
- Stroke or transient ischemic attack
- Serum creatinine > 2 mg/dl or an estimated creatinine clearance of < 60 cc/min/1.73 m<sup>2</sup>
- Diabetes Mellitus



**Figure 1:** Stepwise flow chart for preoperative cardiac consultation request for elective surgery (MACE- Major adverse cardiac events, METs- Metabolic equivalent of Tasks) adapted from 2014 ACC/AHA and 2014 ESC/ESA guideline for cardiac evaluation for non-cardiac surgery.

prior to elective aortic aneurysm repair on patient morbidity, it was found that although those patients who had a preoperative cardiology consult were at greater risk, there were no decrease in postoperative cardiac complications.<sup>18</sup> These clearly indicate that requesting a cardiology consultation in all patients having cardiac co morbidities / undergoing major and high risk surgeries does not change anesthetic management and postoperative outcome much and thus preoperative consultation in all patients cannot be accepted or justified.

### WHEN TO REQUEST A CARDIOLOGY CONSULTATION?

The preoperative request for consultation by other specialty should probably be governed

by the same rule as for preoperative investigations and should be asked if only it is going to change anesthetic management of the patient. It is recommended that the preoperative investigation should be based on the history, physical examination, perioperative risk assessment, and clinical judgment,<sup>19</sup> anesthesiologist should ask for cardiology or other specialty consultation based on the patients history, physical examination, functional capacity (as judged clinically by metabolic equivalents of task), co morbid conditions and type of the indexed surgery and its risk estimate. European Society of Cardiology (ESC) and the European Society of Anaesthesiology (ESA) recommend a multidisciplinary expert team for pre-operative evaluation of patients with known or high risk of cardiac disease undergoing high-risk non-cardiac surgery.<sup>20</sup> In their guideline ESC and ESA also recommends regarding cardiovascular assessment and management of cardiac patients planned for non-cardiac surgery.<sup>20</sup>

Literature has clearly shown that in terms of perioperative management—other than the management of perioperative acute coronary syndromes—the cardiology consultation has little to add and even non-cardiac surgery can be done in patients with severe aortic stenosis.<sup>4,15</sup> Therefore the decision for preoperative cardiac assessment or cardiology consultation probably can be best derived from the stepwise approach to perioperative cardiac assessment and treatment algorithm for coronary artery disease provided by American college of cardiology (ACC) and American heart association (AHA).<sup>21</sup> It is clear from the ESC/ESA and ACC/AHA guideline that the further cardiac evaluation of patients planned for non-cardiac surgery should be based on cardiac conditions, type and urgency of the surgery, estimated perioperative risk of major adverse cardiac events on the basis

## requests for cardiologist consultation

**Table 1: Possible clinical situations with suggested preoperative cardiologist consultation request for elective non-cardiac surgery. (Prepared from 2014 ESC/ESA and 2014 ACC/AHA guideline for non-cardiac surgery and Parks review)<sup>3,20,21</sup>**

Clinical situations	Comments with regard to cardiac consultation
Controlled arterial Hypertension	Proceed with surgery
Uncontrolled arterial Hypertension	Proceed with surgery if blood pressure < 180 / 110 mmHg in adults. Consider escalation of dose. If uncontrolled with 3 drugs, request for cardiology consultation Postpone surgery and request cardiology consultation
Malignant arterial Hypertension	
Known case of Coronary Artery Disease, Heart Failure	Postpone surgery and refer to cardiologist for treating / optimization of cardiac condition
Acute / severe / decompensated	Proceed with surgery with risk stratification and reduction strategies / medication continued
Stable / optimized / chronic	
Unexplained, new onset dyspnea / chest pain	Request cardiologist consultation for ruling out /treating (if required) of active cardiac conditions
Post Percutaneous Transluminal Coronary Angioplasty / Coronary Artery Bypass Graft within 6 years	With asymptomatic stable / improved condition and good METs can be proceeded for surgery
Severe aortic stenosis symptomatic	Postpone high risk surgery, request consultation of cardiology and cardiac surgeon for valve replacement / balloon valvuloplasty
Severe aortic stenosis asymptomatic	Proceed with low and intermediate risk surgery. Request consultation if planned for high risk surgery
Severe Mitral stenosis	If with symptoms of severe pulmonary hypertension, postpone surgery and request cardiology consultation
Regurgitant valvular heart disease	Request consultation if there is symptoms and signs of severe heart failure / left ventricular dysfunction
Patients with prosthetic valve	Modify anticoagulation and proceed for surgery unless there is valve / ventricular dysfunction
Severe pulmonary arterial hypertension (PAH)	Request cardiology consultation for an optimized treatment regimen and proceed with PAH- specific medication continued
Arrhythmias / Dysrhythmia	Request consultation if acute, symptomatic and significant arrhythmias / or pacemaker is indicated before proceeding for surgery. Premature beats, fascicular blocks, bradycardia without symptoms, first degree and second degree Mobitz type I do not need request for cardiology consultation and can be proceed with surgery
Peripheral arterial disease	Request consultation if > 2 clinical risk factors are present
Patients with unknown functional capacity	Exercise stress testing may be reasonable to perform for major / elevated risk surgery
Drugs (Anticoagulant, beta blocker, anti-hypertensive, statin etc)	Manage as per guideline / recommendations. If beta blocker is indicated but patient is not amenable, request for cardiology consultation
Investigations (electrocardiogram, echocardiography, stress test, cardiopulmonary exercise testing etc)	Ask for the investigation if indicated. Cardiology consultation request is required only if the abnormality mandates active cardiac management before proceeding with surgery for better outcome
Risk stratification, Clearance	No. It is the anesthesiologists job / duty
Pacemaker in situ	Proceed as per recommendation. Go through documents

of the combined clinical/surgical risk, functional capacity etc.<sup>20, 21</sup> Active cardiac conditions and clinical cardiac risk factors are presented in Boxes 1 and 2 respectively.<sup>20,22</sup>

A suggested stepwise algorithm for determining the need of preoperative cardiology consultation

request Figure 1. As the reasons for request of preoperative cardiology consultations differ from hospital to hospital and even anesthesiologist to anesthesiologist, possible clinical situations with suggested preoperative cardiologic consultation requests for elective non-cardiac surgery are

presented in Table 1 based on the current literature, recommendations and guidelines.

It is very much clear that despite having evidence based guidelines inappropriate practices are still well prevalent. The maximum benefit of these recommendations and guidelines probably can be obtained by following and developing institutional / national adapted protocols.<sup>23</sup> In an era when anesthesiologists are claiming and considered as perioperative physicians, profession demands behavioral changes of anesthesiologists as well over and above the name change.<sup>15</sup> The post graduate training / residency program in anesthesiology should also be adapted accordingly and probably a posting in cardiology and internal medicine is also required for such change.

## CONCLUSION

Mere presence of a cardiovascular disease

does not warrant preoperative cardiology consultation. Stable cardiovascular disease patient can undergo non-cardiac surgery without preoperative cardiology consultation with appropriate perioperative medication and monitoring by anesthesiologist. A consultation request for risk stratification, clearance for surgery should not be done rather a request for preoperative cardiology consultation should be done if it is going to change the course of perioperative management.

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