Overview of the principles of medical consultation and perioperative medicine

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INTRODUCTION — Internists are often asked to evaluate a patient prior to surgery. The medical consultant may be seeing the patient at the request of the surgeon, or may be the primary care physician assessing the patient prior to consideration of a surgical referral. The goals of this evaluation are to determine the risk to the patient of the proposed procedure and to minimize known risks. These goals are achieved by the following:

- Identifying unrecognized comorbid disease and risk factors for medical complications of surgery
- Optimizing the preoperative medical condition
- Recognizing and treating potential complications
- Working effectively as a member of the preoperative team (including surgical and anesthesia colleagues)

Internists and hospitalists leaving training sometimes feel unprepared to consult on patients requiring surgery [1,2]. However, it is worthwhile to develop an optimal consultation technique since this will increase the chance that the recommendations of the consultant are followed.

The general principles of medical consultation, including techniques that optimize the interaction between referring physicians and consultants, and effects of anesthesia, are reviewed here. Specific issues in preoperative consultation (such as evaluating pulmonary risk, cardiovascular risk, etc) and perioperative medication management are discussed separately. (See "Preoperative medical evaluation of the healthy patient" and "Estimation of cardiac risk prior to noncardiac surgery" and "Perioperative medication management".)

EFFECT ON SURGICAL OUTCOMES — Several investigators have studied whether internist care of surgical patients is beneficial. These studies have shown that internists identify medical conditions that are related to surgical outcome and often recommend interventions for these conditions [3-5]. In addition, consultants occasionally cancel or delay surgery so that medical conditions can be optimized [5-7].

Physician satisfaction with case management arrangements is high when measured [6].

Studies report conflicting findings regarding the effect of medical consultation on utilization or cost measures. Two cohort studies demonstrated a decrease in length of stay when an internist routinely cared for patients after thoracic surgery [9] or hip fracture surgery [10], while another showed similar or increased costs and length of stay for consulted patients [11]. Another retrospective cohort study demonstrated a slight reduction in overall hospital costs, but no change in length of stay, after implementation of a hospitalist case management service for neurosurgical patients [8].
Similarly, it is unclear if medical consultation has an impact on perioperative mortality. In the cohort of neurosurgical patients, no mortality difference was observed after implementation of a hospitalist comanagement service [8]. In another large retrospective cohort study of patients undergoing elective intermediate to high risk surgery, analysis of matched pairs found that medical consultation was associated with slightly higher 30 day and one year mortality rates and longer average length of stay [12]. Patients receiving medical consultation had a higher disease burden, which was adjusted in multivariable analysis. However, differences in risk between those selected for medical consultation and those not selected may account for the difference in mortality rates. The association of medical consultation with mortality was small, and further studies are needed to determine the impact of medical consultation on surgical outcomes.

Overall, strong evidence showing clear improvements in resource use or patient outcomes is lacking. Nevertheless, the practice of medical consultation is widespread and, assuming consultants make evidence-based recommendations that improve surgical outcomes, it is reasonable to infer that consultation will improve the care of the surgical patient if consultative recommendations are implemented.

GENERAL PRINCIPLES — An effective and satisfactory medical consultation can be performed when the consultant follows some general principles [13]:

- Determine the question and respond to it.
- Establish the urgency of the consultation and provide a timely response.
- "Look for yourself"; confirm the history and physical examination and check test results.
- Be as brief as appropriate; be definitive and limit the number of recommendations.
- Be specific, including medication details.
- Provide contingency plans; anticipate potential problems and questions.
- Honor thy turf; don't steal other physician's patients.
- Teach with tact; consult, don't insult.
- Talk is cheap and effective; direct verbal communication is crucial.
- Follow-up to ensure that recommendations are followed.

Needs of the requesting physician

Reasons for consultation — A consultation is a request made to another physician to give his or her opinion on the diagnosis or management of a particular patient. The requesting clinician may seek consultation for surgical risk assessment, approval for anesthesia or surgery, advice on diagnostic problems or management issues in the perioperative period, confirmation of a plan or assessment and reassurance, or documentation for medical legal reasons. The role of the consultant should be defined through communication with the referring physician. Surgeons more often desire "comanagement" by internists in which the internist is asked to assume the management of specific aspects of the patient's care including order writing [14]. However, unless a standing arrangement exists for comanagement, the surgeon needs to explicitly communicate this to the consultant.

Of the nine ethical principles pertaining to consultation published by the American Medical Association (AMA) [15], three pertain to the referring physician:

- Consultations are indicated on request, in doubtful or difficult cases, or when they enhance the quality of medical care.
- Consultations are primarily for the patient's benefit.
- A consult request should be sent to the consulting physician unless a verbal description of the case has already been given.
Effective communication is the foundation underlying the art of medical consultation; the manner in which the question or information is phrased can influence the consultant's response. The "routine" consult request, for example, will generate a different response than the request for specific advice on the management of preoperative congestive heart failure.

A requesting physician should state clearly the questions to be answered by the consultant; it is the consultant's role to understand the reason for the consultation. However, this is often not the case. In one study, for example, disagreement occurred between the primary physician and the consultant about the primary reason for consultation in 14 percent of cases [16]. A study of preoperative cardiology consultations noted that over half of the consult requests were for "evaluation," 40 percent for "medical clearance," and no specific reason clarified for 5 percent [17]. In another report of preoperative consultations in diabetic patients, no specific question was asked in 24 percent, and consultants ignored explicit questions in another 12 percent [18]. Given the high frequency of misunderstanding between consultants and referring physicians, direct communication is important and likely will prevent misinterpretation.

Efforts should be made to discuss potentially controversial recommendations with the team; inflammatory notes should not be left in the chart. Given the high frequency of misunderstanding between consultants and referring physicians, direct communication is important and likely will prevent misinterpretation.

Traditionally, consultative advice should be specific to the question asked [16]. If the consultant identifies areas of concern distinct from the original reason for the consult, permission from the requesting physician should be sought before discussing this in the consult note. However, only 41 percent of surgeons in one survey believed that internal medicine consultants should limit themselves to a specific question [14].

**Implications of clearing a patient** — A commonly stated purpose of a preoperative consultation request is to "clear" a patient for surgery [17,19]. This statement may incorrectly imply that the procedure carries no risk for the particular patient, when all patients are potentially at some risk when they undergo anesthesia and surgery. Thus, a consultant should avoid use of the phrase "cleared for surgery" [20]. Instead, the consultant seeks factors that might put the patient at higher than average risk and proposes plans to reduce this risk. Risks are specific to the individual patient, the type of procedure proposed, and the type of anesthesia selected. If no such risks are present, the consultant's final statement is that the patient is at average risk for the proposed surgery.

In referrals in which the consultant is requested to "clear" the patient or in referrals in which no specific question is asked, the consultant can presume that the request is to provide a more global preoperative evaluation as follows:

- What is wrong and how bad is it? — Assess overall risk, including risk of cardiac and pulmonary morbidity. (See "Estimation of cardiac risk prior to noncardiac surgery" and "Evaluation of preoperative pulmonary risk".)

- Is the patient in his or her optimal medical condition for the procedure or should further treatment or tests be done? — Decide whether further interventions are indicated to decrease the stated risk [21,22]. (See "Estimation of cardiac risk prior to noncardiac surgery".)

- What can we do to prevent known complications? — Make recommendations about prophylaxis for venous thromboembolism [23], endocarditis [24], and, possibly surgical wound infection [25]. Many surgeons view surgical wound infection prophylaxis as their domain, but consultants who notice that surgical wound prophylaxis is not being given should consider providing recommendations. (See "Prevention of venous thromboembolic disease in surgical patients" and "Antimicrobial
What should we do concerning perioperative medications? — Make recommendations about perioperative management of the patient's usual outpatient medications \[26,27\]. (See "Perioperative medication management".)

Performing the consultation — The experienced consultant should be able to identify the pertinent medical problems, integrate this information with the physiologic stresses of anesthesia and surgery (see above), anticipate potential perioperative problems, assess a patient's risk and need for further interventions, and communicate effectively with the surgeon and anesthesiologist.

Responsibilities of the consultant — Six of the AMA's ethical principles of consultation address the responsibilities and role of the consultant [15]:

- One physician should be in charge of the patient's care.
- The attending physician has overall responsibility for the patient's treatment.
- The consultant should not assume primary care of the patient without consent of the referring physician.
- The consultation should be done punctually.
- Discussions during the consultation should be with the referring physician and only with the patient by prior consent of the referring physician.
- Conflicts of opinion should be resolved by a second consultation or withdrawal of the consultant; however, the consultant has the right to give his or her opinion to the patient in the presence of the referring physician.

Avoiding anesthetic recommendations — As a consultant, the physician should restrict advice to his or her area of expertise. For internists, this usually includes general internal medicine or cardiology and various aspects of perioperative medicine, depending upon experience. Only the anesthesiologist should make recommendations as to the type of anesthesia. The internist may be one of several consultants, and he or she should coordinate and integrate the recommendations of these subspecialty consultants, but should not take control away from the referring physician. On the other hand, the consultant's understanding of anesthetic techniques and physiology can help ensure a safe anesthetic experience and adequate postoperative analgesia with fewer complications.

Avoiding issues not related to the procedure — In contrast to the general internist's usual initial visit, which includes performing a comprehensive history and physical examination with multiple risk factor assessment and preventive health maintenance, the perioperative consultation should focus only upon the issues relevant to the current surgery. These immediate concerns must be evaluated in terms of their severity, the planned surgical procedure, the patient's perioperative risk, and the need for further testing or intervention. Any other issues can be addressed after surgery or during a subsequent outpatient visit, and the consultant should make arrangements for appropriate follow-up to assure continuity of care after discharge.

Most internists agree with this approach. However, some believe that this encounter may be the only time a patient has seen a physician and therefore want to do as much screening and education as possible. The disadvantage of this latter approach is that the referring physician can become bogged down with a long list of recommendations that may be ignored.

Discussion with the patient — Many patients are interested in knowing the consultant's opinion at the end of the consultation visit. Unless the consultant is the patient's primary care physician, he or she...
should not express an opinion as to whether surgery should proceed. The final decision is best made by the surgeon in conjunction with the patient.

Consultants differ in whether any estimate of the risk of perioperative medical complications should be communicated to the patient. Some choose to provide an estimate while others prefer to defer that discussion to the surgeon or anesthesiologist.

**COMPLIANCE WITH CONSULTANT RECOMMENDATIONS** — Studies that have examined the compliance of referring physicians with the recommendations of consultants have found that compliance ranges from 54 to 95 percent depending upon the setting [28-32].

The following factors or advice have been shown to improve compliance with the medical consultant’s recommendations (Table 1):

- As discussed previously, the central reason for the consultation request needs to be clearly stated, understood, and addressed [16,30,32].

- The consultant should respond in a timely fashion [34]. Urgent consultations should be seen promptly, and elective consultations should be answered so as not to cause a delay in surgery. In general, all consultations should be done within 24 hours, and preferably the same day as requested. Any anticipated delays should be communicated immediately to the referring physician.

- The consultant’s recommendations should be definitive, prioritized, and precise [16,18,28,33,34]. The number of recommendations should be limited when possible, preferably to five or fewer [30,31,35]. Recommendations identified as “crucial” or “critical” are more likely to be followed [29-31,35].

- The consultant should use definitive language [16,18,28,33,34] and specify relevant recommendations [18,28,34]. Recommendations for medications should specify the drug name, dose, frequency, route of administration, and duration of therapy [18,33,35]. Alternatives to a recommended therapy should be mentioned if available.

- Therapeutic recommendations are more likely to be followed than diagnostic recommendations, but recommendations to start therapy may be less likely to be followed than those to continue or discontinue therapy [30,33].

- Direct verbal communication with the requesting physician is preferable to communicating via the chart [16,18,31].

- Frequent follow-up visits documented with progress notes are key in improving compliance with the consultant’s recommendations [33,35]. How often a consultant needs to see a patient will depend upon the patient’s medical problems and type of surgery. When the consultant no longer needs to follow the patient, he should write a note indicating that he is signing off the case. He should also make arrangements to assure continuity of care for medical problems after the patient is discharged.

These principles were illustrated in a report that analyzed 202 general medical consultations to assess the extent of compliance with the consultant’s initial recommendations [30]. Multivariate analysis found that the clinical severity of the patients’ illnesses and the type and number of recommendations were all predictors of compliance. There was a significant increase in compliance in severely ill patients; with each severity level, compliance was higher when five or fewer recommendations were made. Compliance decreased from 96 percent in severely ill patients with small consultation lists to 79 percent in those with
large lists. Compliance was greatest with recommendations involving medications, and least with those requiring direct physician and nursing action, suggesting that the consultant must carefully follow-up the latter recommendations.

Comanagement — In many settings, the consultant steps beyond the usual role of consultant and writes orders in the medical record; this practice is known as comanagement. The prevalence of comanagement is unknown but, in the authors’ opinion, quite high, especially with the increasing numbers of hospitalists. Comanagement is seen most often in orthopedic surgery patients.

Permission of the surgeon or surgical team is required before a consultant writes orders. Some surgeons work predominantly with a few medical consultants in whom the expectation is that orders will be written. The advantage to the consultant in writing orders is that it guarantees compliance. A potential disadvantage of this practice is duplicate or conflicting orders if the consultant or surgeon is not knowledgeable about all orders in the chart. In addition, if a consultant writes orders in a chart, and a malpractice suit is brought, the culpability of any consultants may be higher than if they provided only recommendations.

Role of hospitalists — Hospitalists are assuming a larger role in the United States in preoperative medical consultation and perioperative management. Hospitalist medical consultants often undertake additional responsibilities, including serving as co-managers. They are concerned with processes of care, patient safety measures, and adherence to practice guidelines. Additionally, they function as liaisons between the surgical care team and the patient’s primary care clinician, coordinate hospital care, and facilitate discharge planning and follow-up [36]. The hospitalist model of care for orthopedic surgery patients has resulted in a decreased time to consultation and time to surgery, and a trend toward decreased length of stay and lower hospital costs [28,37-39].

INFORMATION FOR PATIENTS — UpToDate offers two types of patient education materials, “The Basics” and “Beyond the Basics.” The Basics patient education pieces are written in plain language, at the 5th to 6th grade reading level, and they answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials. Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are written at the 10th to 12th grade reading level and are best for patients who want in-depth information and are comfortable with some medical jargon.

Here are the patient education articles that are relevant to this topic. We encourage you to print or e-mail these topics to your patients. (You can also locate patient education articles on a variety of subjects by searching on “patient info” and the keyword(s) of interest.)

- Basics topic (see “Patient information: Questions to ask if you are having a procedure or surgery (The Basics)”)

SUMMARY

- No study has shown a decrease in perioperative morbidity associated with medical consultation. Nevertheless, the practice of medical consultation is widespread and, assuming consultants make evidence-based recommendations that improve surgical outcomes, it is reasonable to infer that consultation will improve the care of the surgical patient if consultative recommendations are implemented. (See ‘Effect on surgical outcomes’ above.)

- The role of the consultant should be defined through communication with the referring physician. A requesting physician should state clearly the questions to be answered by the consultant. Advice
should be specific to the questions asked. Given the high frequency of misunderstanding between consultants and referring physicians, direct communication is important and likely will prevent misinterpretation. (See 'Reasons for consultation' above.)

- A commonly stated purpose of a preoperative consultation request is to "clear" a patient for surgery. This statement may incorrectly imply that the procedure carries no risk for the particular patient, when all patients are potentially at some risk when they undergo anesthesia and surgery. Thus, a consultant should avoid use of the phrase "cleared for surgery." (See 'Implications of clearing a patient' above.)

- The experienced consultant should be able to identify the pertinent medical problems, anticipate potential perioperative problems, avoid addressing issues outside of the consultant's area of expertise or issues unrelated to the procedure, assess a patient's risk and need for further interventions, and communicate effectively with the surgeon and anesthesiologist. (See 'Performing the consultation' above.)

- Compliance with consultant recommendations improves with increasing severity of the patient illness and when fewer recommendations are made by the consultant. The number of recommendations should be limited when possible, preferably to five or fewer. The consultant should respond in a timely fashion (<24 hours) and make precise, relevant recommendations. (See 'Compliance with consultant recommendations' above.)

- When the consultant no longer needs to follow the patient, a note should be written indicating that he or she is signing off the case. Arrangements should be made to assure continuity of care for medical problems after the patient is discharged. (See 'Compliance with consultant recommendations' above.)

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REFERENCES


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**GRAPHICS**

**Factors that influence or improve compliance with consultant recommendations**

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<thead>
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<th>Prompt response (within 24 hours)</th>
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<tr>
<td>Limit number of recommendations (≤5)</td>
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<td>Identify crucial or critical recommendations (versus routine)</td>
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<td>Focus on central issues</td>
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<tr>
<td>Make specific relevant recommendations</td>
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<tr>
<td>Use definitive language</td>
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<td>Specify drug dosage, route, frequency, duration</td>
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<td>Frequent follow-up including progress notes</td>
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<td>Direct verbal contact</td>
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<td>Therapeutic (versus diagnostic) recommendations</td>
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<td>Severity of illness</td>
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