

General Anesthesia

Current preoperative testing practices in ambulatory surgery are widely disparate: a survey of CAS members

[Les pratiques courantes de tests préopératoires en chirurgie ambulatoire sont grandement disparates : une enquête auprès des membres de la SCA]

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Purpose: Routine preoperative testing has been criticized as having little impact on perioperative outcomes. The purpose of this study is to identify the current practice of preoperative testing in ambulatory surgery.

Methods: A standard questionnaire was sent to all active members of the Canadian Anesthesiologists' Society (CAS). The study inquired into the anesthesiologist's preoperative testing practice in healthy patients and patients with stable medical conditions undergoing ambulatory surgery.

Results: Of 1,335 mailed questionnaires, a total 617 respondents who reported their participation in ambulatory surgical care were received. Eighty percent [95% confidence interval (CI) 76.5–83.2] of the respondents indicated that, if testing had to be ordered in asymptomatic patients undergoing low-risk ambulatory surgery, it would be due to the patient's clinical indications while others indicated it would be the result of following institutional guidelines (15.1%, 95% CI 12.2–17.9), and even fewer attributed it to a 'routine' testing practice (0.5%, 95% CI 0–1.14). Forty-four percent (95% CI 39.8–47.8) of the anesthesiologists indicated that age alone is not a criterion when they required a preoperative electrocardiogram (ECG) while others reported various cut-points (> 65; > 55; > 45; > 40 yr) for ECG ordering for asymptomatic patients undergoing the low-risk ambulatory surgery. About 40% (95% CI 35.7–43.5) of the anesthesiologists had no specific concern about eliminating preoperative testing in ambulatory surgery.

Conclusion: Our survey has documented marked disparities in the practices of preoperative testing. A large proportion of the anesthesiologists indicated that age alone is not a criterion for preoperative

ordering of ECG. Many anesthesiologists had no concern about eliminating preoperative testing in low-risk ambulatory surgery.

Objectif : La pratique courante de tests préopératoires a été critiquée pour n'avoir que peu d'impact sur les résultats périopératoires. Le but de notre étude est de définir la pratique courante de ces tests en chirurgie ambulatoire.

Méthode : Un questionnaire standard a été posté à tous les membres actifs de la Société canadienne des anesthésiologistes (SCA). L'enquête a porté sur la pratique de tests préopératoires demandés par les anesthésiologistes en chirurgie ambulatoire pour des patients sains ou d'état médical stable.

Résultats : Des 1 335 anesthésiologistes sondés, 617 ont signalé leur participation à la chirurgie ambulatoire. Quarante pour cent [intervalle de confiance de 95 % (IC) 76,5–83,2] ont indiqué que si des tests devaient être faits pour des patients asymptomatiques devant subir une opération à faible risque en chirurgie ambulatoire, ils seraient guidés par les indications cliniques tandis que d'autres suivraient les lignes directrices institutionnelles (15,1 %, IC de 95 % 12,2–17,9) et peu l'attribuerait à une pratique de routine (0,5 %, IC de 95 % 0–1,14). Quarante-quatre pour cent (IC de 95 % 39,8–47,8) des anesthésiologistes ont indiqué que l'âge seul n'était pas un critère pour demander un électrocardiogramme préopératoire (ECG), mais d'autres établissaient diverses limites (> 65; > 55; > 45; > 40 ans) pour demander un ECG chez des patients asymptomatiques en chirurgie ambulatoire à faible risque. Environ 40 % (IC de 95 %

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35,7–43,5) n'avaient aucun souci particulier à éliminer les tests préopératoires en chirurgie ambulatoire.

Conclusion : Notre enquête a documenté des disparités marquées dans la pratique des tests préopératoires. Une grande proportion des anesthésiologistes a indiqué que l'âge seul n'est pas un critère pour demander un ECG préopératoire. De nombreux anesthésiologistes n'avaient aucun souci à éliminer les tests préopératoires en chirurgie ambulatoire à faible risque.

CURRENT literature has consistently demonstrated that 'routine' preoperative testing has little, if any, impact on perioperative outcomes particularly in asymptomatic patients undergoing low-risk ambulatory surgery.^{1–9} Many suggest that such 'routine' testing can be completely eliminated while others advocate a 'selected' or 'indicated' testing based upon the patient's medical status. Different jurisdictions have developed different institutional policies regarding preoperative evaluation. In Ontario, preoperative ordering of an electrocardiogram (ECG) varied from 10 to 60% for intermediate- and low-risk elective surgical procedures among 108 institutions across the province.^A

The Ontario study concluded that patients undergoing low or intermediate-risk elective surgical procedures had experienced a relatively high rate of preoperative ECGs while many (e.g., based upon age alone) were unnecessary and should be eliminated. These findings are consistent with previous observational studies.^{10–21} Recently, a well-designed randomized controlled trial showed that preoperative testing can be completely eliminated in cataract surgery without adverse impact on perioperative patient outcomes.²² It is uncertain whether such a conclusion can be extrapolated to low-risk ambulatory surgery.

To understand the current practices of preoperative testing and collect baseline data to help us plan a future multicentre randomized controlled study aimed at eliminating these tests in low-risk ambulatory surgery, we conducted a survey of active members of the Canadian Anesthesiologists' Society (CAS).

Methods

After Institutional Research Ethics Board approval, a standard questionnaire with a cover letter and a return envelope was sent to all CAS members. Since the survey

TABLE Anesthesiologists' demographic characteristics and their main concern* if preoperative laboratory testing is eliminated in healthy or medically stable patients undergoing low-risk ambulatory surgery

<i>Years in practice</i>	<i>%</i>	<i>95% Confidence interval</i>
0–4	8.8	6.5–11.1
5–9	16.5	13.6–19.5
10–19	40.8	36.9–44.8
≥ 20	33.8	30.0–37.6
<i>Types of hospital</i>		
Teaching	51.4	47.4–55.4
Community	48.6	44.6–52.6
<i>Others</i>		
<i>Practice setting</i>		
Urban/suburban	91.6	89.4–93.8
Rural	8.4	6.2–10.6
<i>Main concern*</i>		
1 Adverse patient outcomes	27.7	24.1–31.3
2 Medico-legal reasons	19.7	16.5–22.9
Both 1 and 2	7.3	5.2–9.4
3 Others	5.7	3.8–7.5
4 None	39.6	35.7–43.5

is about ambulatory surgery, we required those members who are involved in outpatient anesthesia care to fill out the questionnaire. Based upon previous surveys, ten items were developed to address different aspects of the testing practice (Appendix, available as Additional Material at www.cja-jca.org). The questionnaire was kept short in order to achieve a better response rate. Basically, the survey has three groups of questions: a) The anesthesiologist's general test ordering fashion; b) The practice of preoperative ECG testing in patients undergoing low-risk ambulatory surgery (e.g., knee arthroscopy, hysteroscopy, breast biopsy); c) The anesthesiologist's awareness of the 2002 American College of Cardiology/American Heart Association (ACC/AHA) guideline updates.²³ Data were presented with frequency tables and bar/pie charts using Microsoft® Excel 2000. All descriptive statistical analyses were carried out using SPSS-PC 11.0 for Windows, (SPSS Inc., Chicago, IL, USA).

Results

Of 1,335 mailed questionnaires, a total 617 respondents who reported their participation in ambulatory care were received. The data analysis was based upon 592 completed questionnaires, which represents 96.4% of the total eligible respondents. The demographic characteristics of the respondents are shown in the Table.

A Hux JE, Garfinkel S, Jacka RM. Marked inter-hospital and inter-provider variation in routine preoperative testing. 2004 (submitted).

Preoperative testing in asymptomatic patients undergoing low-risk ambulatory surgery

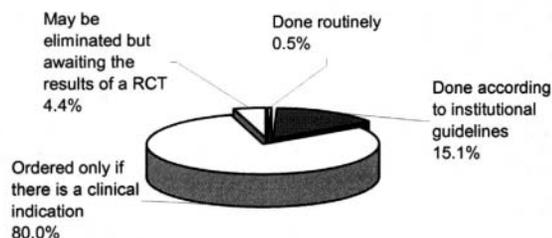


FIGURE 1 Preoperative testing in asymptomatic patients undergoing low-risk ambulatory surgery. RCT = randomized controlled trial.

The majority of the respondents [80.0%, 95% confidence interval (CI) 76.5–83.2] indicated that, if testing had to be ordered in asymptomatic patients undergoing low-risk ambulatory surgery, it would be due to the patient's clinical indications while others said it would be the result of following institutional guidelines (15.1%, 95% CI 12.2–17.9), and even fewer attributed it to a 'routine' testing practice (0.5%, 95% CI 0–1.14); (Figure 1). A similar pattern was seen in patients with stable medical conditions (e.g., diabetes, class II angina); (Figure 2).

Forty-four percent (95% CI 39.8–47.8) of the respondents indicated that age alone is not a criterion for ECG ordering in asymptomatic patients undergoing low-risk ambulatory surgery, while others reported a variety of age cut-points for ECG ordering (Figure 3). As for other indications for ECG ordering, most reported (62.5%, 95% CI 58.6–66.4) a previous history of heart disease or presence of risk factors for heart disease (Figure 4).

Nearly 40% (95% CI 35.7–43.5) of the respondents did not have any specific concern about eliminating preoperative testing in low-risk ambulatory surgery (Table). Fifty-one percent (95% CI 47.9–56.0) of the respondents were aware of the 2002 ACC/AHA guideline updates regarding preoperative ECG in asymptomatic patients undergoing low-risk operative procedures. A similar proportion of anesthesiologists were aware of Schein *et al.*'s multicentre randomized controlled study, which shows that preoperative testing can be eliminated safely.²²

Preoperative testing in patients with stable medical conditions undergoing low-risk ambulatory surgery

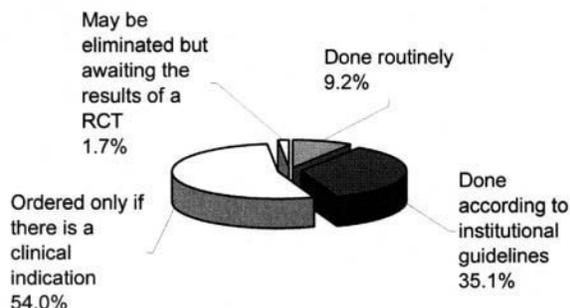


FIGURE 2 Preoperative testing in patients with stable medical conditions undergoing low-risk ambulatory surgery. RCT = randomized controlled trial.

Discussion

Our survey has documented marked disparities with regard to preoperative laboratory testing in asymptomatic patients or patients with stable medical conditions undergoing low-risk ambulatory surgery. A large proportion of the respondents (44%) indicated that age alone is not a criterion for preoperative ECG while others applied a variety of age cut-points for the test. The most frequently used cut-point was age > 55 or 65 yr. McKinley *et al.*'s survey (1996) shows a similar pattern of ECG ordering according to age with the most frequent cut-point at > 40 yr.²⁴ Their survey included 182 teaching hospitals and 270 non-teaching hospitals in the U.S. and Canada. The practice of ordering preoperative ECG at different age categories may explain the varied rates of ECG use amongst the hospitals in Ontario.^A As reported, the high vs low rate of ECG utilization has not corresponded with any recognizable difference in perioperative patient outcomes between institutions. The Ontario study therefore suggested that preoperative ECG might have been largely overused in many practices. Based upon our survey, this seemed to be an issue not only in Ontario but also for the rest of Canada.

The new ACC/AHA guideline updates indicate that 'routine' ECG in the asymptomatic male > 45 yr of age or female > 55 yr of age is not supported unless combined with two or more atherosclerotic risk factors.²³ The new guidelines also advise that 'routine' preoperative ECG in asymptomatic patients undergoing low-risk operative procedures is not useful and in

Age alone as a criterion for preoperative ordering of ECG in asymptomatic patients undergoing low-risk ambulatory surgery

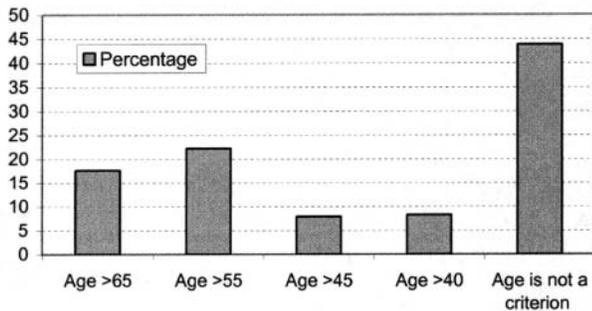


FIGURE 3 Age alone as a criterion for preoperative ordering of an electrocardiogram (ECG) in asymptomatic patients undergoing low-risk ambulatory surgery.

Indications for preoperative ordering of ECG in patients undergoing low-risk ambulatory surgery

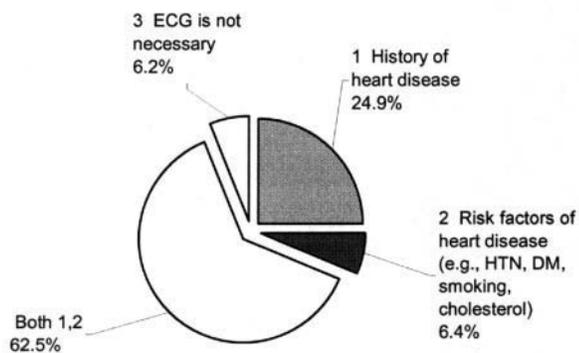


FIGURE 4 Indications for preoperative ordering of an electrocardiogram (ECG) in patients undergoing low-risk ambulatory surgery.

some cases may be harmful. Our survey shows that, unfortunately, only half of the respondents have acknowledged their awareness of these new updates. The lack of awareness may have largely impacted on those anesthesiologists' testing practices with respect to preoperative ECG.

The majority of anesthesiologists indicated that their test ordering practices were based on their own

clinical judgement. With ECG ordering, for example, the anesthesiologists' clinical judgements seemed varied. Many took into account both previous history of heart disease and risk factors for heart disease, while others simply relied on the patient's previous history. This may explain the inconsistencies in the preoperative testing practices observed.

There are several methodological limitations to this survey. First, the survey measures the respondents' perceptions of our concerns in preoperative testing through their answers to those questions. The responses may not necessarily reflect their actual practices. Second, the survey was designed to target all anesthesiologists who participate in ambulatory surgical care. However, only active CAS members were investigated.

In summary, our survey has documented marked disparities in the practices of preoperative testing. A large proportion of anesthesiologists indicated that age alone is not a criterion for preoperative ordering of ECG. Many of them had no concern about eliminating preoperative testing in low-risk ambulatory surgery.

Acknowledgement

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