

The attitude of the general public towards pre-operative assessment and risks associated with general anesthesia

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Purpose: To survey the general public's attitude towards preoperative assessment and commonly perceived fears about general anesthesia.

Methods: A province wide telephone survey was conducted in Alberta. General and regional anesthesia were defined, a scenario involving major knee surgery was described, and participants were asked to choose between regional and general anesthesia. Respondents used a seven-point scale to rate the importance of seeing an anesthesiologist preoperatively and were questioned about the timing of such a visit. Attitudes towards commonly perceived fears associated with anesthesia were also assessed.

Results: A total of 1,216 people were surveyed. Over 30% of respondents felt that it was very important to see an anesthesiologist preoperatively, with a total of over 60% attributing a high degree of importance to this. Fifty percent felt that this assessment should occur on the day prior to surgery. A preference for regional or general anesthesia was not expressed in the situation. Approximately 20% of respondents were very concerned about brain damage, waking up intraoperatively and memory loss. Twelve percent were concerned about dying intraoperatively. Nine percent expressed concern about postoperative pain, with 12% reporting being concerned about nausea and vomiting.

Conclusions: The general public considers anesthetic assessment on the day prior to surgery an important part of preoperative preparation. Fears of brain damage, death and intraoperative awareness associated with general anesthesia remain prevalent, suggesting that preoperative education of patients should address these concerns. The general population was less concerned about realistic fears such as nausea, vomiting and postoperative discomfort.

Objectif : Étudier l'attitude générale du public à propos de l'évaluation préopératoire et des craintes qui entourent ordinairement l'anesthésie générale.

Méthode : Une enquête téléphonique panprovinciale a été menée en Alberta. On a défini l'anesthésie générale et régionale et décrit le scénario comportant une intervention majeure du genou, puis on a demandé aux participants de choisir le type d'anesthésie. Les répondants ont utilisé une échelle en sept points pour estimer l'importance d'une rencontre préopératoire avec l'anesthésiologiste et pour déterminer le meilleur moment d'une telle visite. On a aussi évalué les craintes habituelles engendrées par l'anesthésie.

Résultats : L'enquête a porté sur 1 216 personnes. Plus de 30 % ont considéré la visite préopératoire très importante et un total de plus de 60 %, éminemment importante. Cinquante pour cent ont jugé que cette évaluation devait avoir lieu le jour précédent l'intervention. Aucune préférence n'a été exprimée entre l'anesthésie régionale ou générale. Environ 20 % étaient très préoccupés par les lésions cérébrales, la possibilité de se réveiller pendant l'opération et la perte de mémoire. Chez 12 %, on a noté la peur de mourir pendant l'intervention ; 9 % appréhendaient les douleurs postopératoires et 12 %, les nausées et les vomissements.

Conclusion : Le grand public considère l'évaluation anesthésique réalisée le jour précédent l'intervention comme une part importante de la préparation préopératoire. Les craintes de lésions cérébrales, de mort et de conscience peropératoires associées à l'anesthésie générale demeurent répandues, ce qui incite à donner des informations préopératoires qui tiennent compte de ces préoccupations. Cependant, des incidents plus réalistes comme les nausées, les vomissements et l'inconfort postopératoire inquiètent moins la population.

RATIONALIZATION of hospital services has resulted in a reduction in the number of in-patient surgical beds and the introduction of pre-admission clinics (PAC) and same day surgery. This has allowed significant savings to be made in both perioperative expenditure and

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unproductive bed utilization and occupancy. The pre-admission process has also resulted in an increased throughput of patients in the operating suite and decreased rates of case cancellation, with resultant increased operating suite efficiency.^{1,2} While this paradigm shift may be effective from a fiscal and resource management perspective; the response of the general public has not been assessed.

Anesthesiologists have traditionally seen patients the night before scheduled procedures. The same day admission process does not allow for this practice. Prior to the introduction of PAC this may have resulted in a large number of surgical cancellations, which would be inconvenient for patients and wasteful of limited hospital resources. Alberta has a large rural population so we realized that some patients might consider attendance at a PAC inconvenient and unnecessary, particularly because of the distances involved.

While we were in no doubt that it was important to see patients preoperatively, it was decided to seek public opinion on this issue. It was also hoped that a strong case for anesthetic presence in our PAC could be presented.

Several previous studies have surveyed patient fears concerning general anesthesia, usually on the preoperative night. It was felt that this survey instrument, the largest survey of public opinion on anesthesia related issues to date, would be an ideal tool to gain insight into the public's attitudes on these issues in a non-threatening environment.

Methods

The Alberta Survey is an annual province wide telephone survey administered by the Population Research Laboratory (PRL), the survey research arm of the University of Alberta. This is a random sample survey of households in the province of Alberta that enables academic researchers, government departments, non-profit organizations, and the private sector to explore a wide range of public policy issues in an on-going research framework (Table I). Our topic was one component of the survey.

All questions and survey instructions were submitted to a University Research Ethics Committee to ensure suitability for administration to the general public.

General and regional anesthesia were defined and a case scenario involving the respondent requiring major knee surgery was described. Respondents were asked to use a seven-point scale to rate how important they felt it was to see an anesthesiologist preoperatively. They were also asked when they felt it was most appropriate to see the anesthesiologist. Other questions included whether they had a preference for regional or general

TABLE I Subject areas included in the 1996 Alberta survey

| |
|--|
| 1. Socio-demographic characteristics of population. Household composition, age, gender, marital status, education, income, religion, political party preference, ethnicity, employment status, home ownership, and sample areas. |
| 2. Golden Bears and Pandas (sports teams) events at the University of Alberta (Edmonton sample only). |
| 3. Advertising inserts with household utility statements (Calgary sample only). |
| 4. Health care issues: <ol style="list-style-type: none"> Information on health care and medical research. Fears about general anesthesia and regional anesthesia. Ethical concerns about blood products. Effects of health care budget cuts. Supplementary health care insurance. Guiding principles of the Canada Health Act. Role of the federal government in the health care system. |
| 5. Education issues: <ol style="list-style-type: none"> Right to establish and operate a school board for minority faith. Removal of an elected board of school trustees. |
| 6. Relationship of health and poverty. |

anesthesia, and what their attitudes were to a number of common fears associated with general anesthesia. Responses to questions were of a closed nature to allow computerized collation of the data.

The population designated for interview was all persons 18 yr of age or older who, at the time of the survey, were living in a dwelling unit in Alberta that could be contacted by direct telephone dialling. Representative samples were chosen to cover the province: the cities of Edmonton and Calgary, and the remainder of the region. A minimum sample size of 400 or more for each area of the province was deemed necessary to permit analysis of each area as a separate entity. Respondents were selected by random dialling of numbers from a computer-generated database that is maintained by the PRL. This ensured that respondents had an equal chance of being contacted whether or not their household was listed in a telephone directory. Duplicate numbers, nursing homes and collective dwellings were excluded from the study. A single respondent was chosen from each household, and was asked to participate in the 30-min interview. Gender equality was obtained by using careful selection guidelines, as previous surveys had indicated that 60% of the time, the first household contact was female. These guidelines attempted to question a male member of the household, only selecting a female when the male was either unwilling to be interviewed or not available.

The survey instrument consisted of three components:

1. A standardized introduction.

TABLE II Calculation of weights

| <i>Sample area</i> | <i>1991 population 20+ yr</i> | <i>Percentage of population</i> | <i>Sample size</i> | <i>Percentage of sample</i> | <i>Weighting factor</i> | <i>Weighted sample</i> |
|--------------------|-------------------------------|---------------------------------|--------------------|-----------------------------|-------------------------|------------------------|
| Edmonton | 447,120 | 25.31 | 405 | 33.3 | 0.760049 | 307.82 |
| Calgary | 511,660 | 28.96 | 407 | 33.5 | 0.864472 | 351.84 |
| Other Alberta | 807,750 | 45.73 | 404 | 33.2 | 1.37741 | 556.47 |
| Total | 1,776,530 | 100 | 1216 | 100 | 1216 | |

TABLE III Age distributions for Alberta

| <i>Age groups</i> | <i>Postcensal 1994</i> | <i>Survey group</i> |
|-------------------|------------------------|---------------------|
| 20-29 | 22.0 | 16.5 |
| 30-39 | 27.2 | 29.1 |
| 40-49 | 20.0 | 22.6 |
| 50-59 | 12.2 | 13.8 |
| 60+ yr | 18.6 | 18.1 |
| Total | 100.0 | 100.0 |

Index of dissimilarity: 6.0*

* Index of dissimilarity represents the proportion of households that would have to move to a different category to make the distributions identical. The index can vary from 1 to 100. Any index less than 10 indicates that their distributions are similar.

TABLE IV Sample breakdown

| | <i>Number</i> | <i>Percentage</i> |
|-----------------------|---------------|-------------------|
| Completed interviews | 1216 | 67.1 |
| Incomplete interviews | 31 | 1.7 |
| Refusals | 409 | 22.6 |
| Language problems | 55 | 3.0 |
| No contacts | 102 | 5.6 |
| Total | 1813 | 100.00 |

2. Questions that reflected the specific research interests of the University researchers and outside agencies participating in the study.
3. Demographic questions.

The questionnaire was pretested by trained interviewers on a total of 49 randomly selected households. Interviewer comments were reviewed (e.g., confusing wording, inadequate response categories, question order effect, etc.) and any necessary modifications to the final questionnaire were made prior to administering the survey.

Following the pretest, an electronic questionnaire was constructed for data collection. This was loaded into a Computer-Assisted Telephone Interviewing system, which randomly allocated telephone numbers to the interviewing stations. Both the questions and

instructions were presented to the interviewer on the computer screen, and responses were entered directly into the computer. This helped ensure uniformity in interview approach.

Interviewing took place over a three-week period, primarily during weekend or evening hours. Interviewers were instructed to make a minimum of ten call back attempts before declaring a number as a "no contact" if their first attempt in establishing contact was unsuccessful. Upon making contact the interviewer introduced himself/herself, verified the telephone number, and then asked screening questions for selecting the respondent. Respondents were advised that their participation was voluntary, their responses would be kept completely confidential and that they could terminate the 30-min interview at any time. Ten percent of respondents were re-contacted by supervisors for interviewing validation. A team of specially trained interviewers made call backs to reluctant householders to further explain the purpose of the survey and to re-request an interview. This increased the response rate by approximately nine percent.

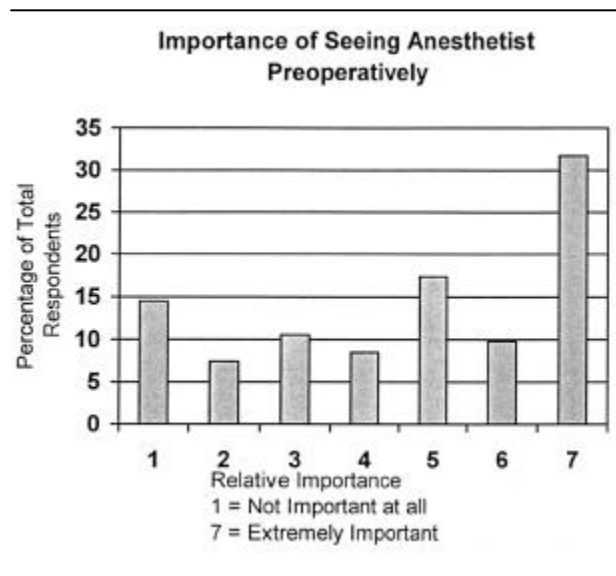
The data were tabulated and cleaned using the Statistical Package for the Social Sciences (SPSS) 6.1 for Windows. The cleaning process included wild-code, discrepant value, and consistency checks to eliminate any inconsistencies or invalid responses to questions. As the final sample sizes obtained for the three areas surveyed were not proportional to the Alberta population they represent, weighting was necessary in order to combine the samples for a provincial survey (Table II). A comparison of this survey's age distributions with that of the Statistics Canada 1994 Preliminary Postcensal Estimates demonstrated that the samples adequately reflected the populations from which they were drawn (Table III).

Results

A total of 1,216 of 1,813 eligible respondents contacted participated in the survey, resulting in a response rate of 67.1% (Table IV). Non-participation

TABLE V Demographic profile of respondents

| Characteristic | Edmonton | Calgary | Other Alberta |
|--|----------|---------|---------------|
| | % | % | % |
| <i>Education (yr in schooling)</i> | | | |
| Less than 12 yr | 14 | 12 | 17 |
| 12-15 | 57 | 53 | 60 |
| 16+ yr | 29 | 35 | 23 |
| <i>Employment status</i> | | | |
| Full-time | 53 | 59 | 58 |
| Part-time (no full time job) | 14 | 13 | 14 |
| Unemployed and looking for work | 8 | 6 | 4 |
| Not in labour force and not looking for work | 25 | 22 | 24 |
| <i>Home ownership</i> | | | |
| Own | 59 | 62 | 81 |
| Rent | 41 | 38 | 19 |
| <i>Income (Ca\$)</i> | | | |
| Median household income | 44,130 | 50,714 | 51,67 |
| Median individual income | 22,750 | 25,800 | 27,750 |
| <i>Gender (%)</i> | | | |
| Male | 50.1 | 49.1 | 49.9 |
| Female | 49.9 | 50.9 | 50.1 |
| <i>Median age in yr</i> | 40 | 38 | 43 |



FIGURE

was due to incomplete interviews, refusals, language problems and no contacts. Demographic data including education, employment data, income and gender are shown in Table V. The median age of respondents was 40.3 yr. There were no differences in percentages of males and females selected. Eighty percent of those interviewed had had an anesthetic, other than dental anesthesia, previously.

TABLE VI Respondent attitudes to perceived common fears about general anesthesia

| Fear of: | Very concerned | Somewhat concerned | Not at all concerned |
|-----------------------------------|----------------|--------------------|----------------------|
| | % | % | % |
| Death | 12.1 | 35.4 | 52.5 |
| Brain damage | 19.2 | 26.8 | 54.0 |
| Postoperative pain | 8.8 | 38.2 | 53.0 |
| Intraoperative awareness | 17.3 | 21.6 | 61.1 |
| Postoperative nausea and vomiting | 11.8 | 36.0 | 52.2 |
| Loss of control | 14.6 | 29.2 | 56.2 |
| Talking in sleep | 2.7 | 14.1 | 83.2 |
| Nudeness | 3.6 | 16.3 | 80.1 |
| Memory loss | 17.3 | 25.0 | 57.7 |
| Needle | 7.2 | 20.5 | 72.3 |
| Headache | 4.0 | 22.4 | 73.6 |

More than 30% of respondents felt that it was very important to see an anesthesiologist prior to surgery, with a total of over 60% attributing a high degree of importance to this (Figure). Fifty-one percent of the total respondents felt that such a visit should occur on the day prior to surgery, while 33.6% thought that they should be seen on the operative day. The remaining 15.5% felt that it was not necessary to be seen by an anesthesiologist.

No preference was expressed, when given a choice, with respect to regional (50.7%) or general (49.3%) anesthesia for major knee surgery.

Nineteen percent of respondents were very concerned about brain damage, while waking up during general anesthesia and memory loss were reported as significant concerns by 17.3% and 17.2% of those interviewed respectively. Twelve percent were very concerned about dying intraoperatively. Very few of the respondents were very concerned about postoperative pain (8.8%) or nausea and vomiting (11.8%).

The results of enquiries concerning other perioperative fears are summarized in Table VI.

Discussion

The primary goals of this survey were to investigate what importance patients attributed to preoperative assessment by an anesthesiologist and what they considered to be the optimum time for this assessment in relation to surgery. The results led to the continuation of the presence of an anesthesiologist in the PAC, as a majority of those surveyed felt that seeing an anesthesiologist preoperatively was important. Preoperative

TABLE VII Comparison of incidence of commonly perceived fears

| Group | Number of patients | Study design | Specific fears (%) | | | | | |
|------------------------|--------------------|----------------------------|--------------------|-----------|------|-----------------|-----------------|--------------|
| | | | Death | Awareness | Pain | Nausea/vomiting | Loss of control | Brain damage |
| Matthey <i>et al.</i> | 1,216 | Telephone interview | 47 | 38.9 | 47 | 49.8 | 43.8 | 46 |
| Shevde <i>et al.</i> | 800 | Preoperative questionnaire | 37 | 24 | 34 | 22 | 6 | |
| McCleane <i>et al.</i> | 247 | Preoperative questionnaire | 34 | 54 | 65 | 48 | 36 | |
| Hume <i>et al.</i> | 166 | Preoperative questionnaire | 43.3 | 51.8 | 38 | | | |

consultation usually takes place within one to two weeks of the scheduled procedure. This is performed by a member of the anesthesia staff, as part of an integrated process, which also involves the formal surgical admission, the preoperative nursing admission, laboratory tests and sub-specialty consultation where appropriate. The pre-admission process considerably improves bed utilization and allows some patients to be admitted the day before their proposed surgery if it is felt that a potential problem (e.g., complex medical problem, difficult airway etc.) warrants them being seen by the anesthesiologist responsible for the case. Unfortunately, it is generally not possible for patients to be seen in the PAC on the day prior to surgery for logistical reasons. It should be noted, however, that while 51% of respondents felt that it was preferable to see the anesthesiologist the day before surgery, the survey options did not include any times prior to this. We are thus unable to comment on whether an earlier visit would have been preferred. In addition, the survey referred to “the anesthesiologist”, which would imply that the patient would be seen by the operative anesthesiologist. Responses may have been different had the survey explicitly referred to “any anesthesiologist”.

The results of this survey support Lonsdale’s finding, in a study comparing Scottish and Canadian populations, that patients rated meeting the anesthesiologist preoperatively as their highest priority.³ Conway *et al.* also found that preoperative consultation increased patient satisfaction with the standard of perioperative care, and decreased anxiety about anesthesia.

A study by Shevde *et al.* found that 69% of patients had a preference for general anesthesia over regional anesthesia.⁴ However; this study questioned a number of patients undergoing a wide variety of surgical procedures on the preoperative day. Furthermore as his study population was 62% female, and they found that

women tended to express higher levels of concern on a number factors concerning anesthesia, these factors may have contributed to the higher percentage of patients expressing a preference for general anesthesia. The current survey result of 49.3% probably reflects the fact that we chose a single case scenario that was readily amenable to a regional anesthetic technique and that our study population was 50% female.

Previous studies have shown that the incidences of many common fears about anesthesia vary widely between patient populations chosen and the type of survey instrument used (Table VII).⁵⁻⁷ The number of respondents stating that they would be very concerned about intraoperative death was lower than that reported in three other large studies which reported the incidence as varying from 34% to 43.4%. However, when scores for patients expressing any degree of concern about intraoperative death are combined, the incidence of 47% was noticeably higher.

Similarly, combined scores for concerns about awareness, postoperative pain and nausea and vomiting were considerably higher than those expressed by Shevde’s group, though fewer patients had expressed high degrees of concern. These other studies all used preoperative questionnaires administered to patients on the preoperative night. As the respondents in the current survey were not hospital in-patients, but randomly chosen members of the public, they would not have been concerned about the prospect of imminent surgery. In addition, as a simple three-point scale was used, which asked respondents to state whether they would be very concerned, somewhat concerned or not at all concerned, these fears may be under-represented in the results. When the figures for any degree of concern are combined, many of the fears more closely approximate the findings of these other studies.

The risk of awareness would appear to be a major concern among members of the general public. Nearly

40% of the respondents stated that they would have some degree of concern about this. This clearly represents a failure on the part of anesthesiologists to adequately educate the public, as large clinical surveys indicate an incidence of explicit awareness of <0.3% for general surgery.^{8,9}

In conclusion, the general public places a high priority on meeting with their anesthesiologist preoperatively. This meeting affords patients the opportunity to voice any specific fears and anxieties that they may have about their anesthetic. It also allows the anesthesiologist discuss the choice of anesthetic technique and analgesic options with patients, get appropriate informed consent, and reassure them about real and perceived, though rare, risks involved in the administration of anesthesia.

Alberta survey questionnaire (anesthesia section)

The next set of questions are on anesthesia but first I will read some definitions:

An anesthesiologist is a physician with special training who is responsible for your care when you are having an operation.

There are two main types of anesthesia:

- a. General anesthesia is a state in which you are completely unconscious for the duration of the procedure. This state is usually achieved by injecting medications through a needle into a vein.
- b. Regional anesthesia involves an injection of numbing medicine (novocain) in your back, arm, leg or neck which causes numbness in a large area of your body (therefore it is called regional anesthesia). The numbness usually lasts for two or three hours and allows surgery to be carried out painlessly. You do not usually go to sleep, however, many patients prefer to be sedated. Spinal and epidural anesthesia are examples of regional anesthesia that involves an injection of 'numbing medicine' in your back.

1. If you were scheduled to have major surgery on your knee, would you prefer general anesthesia or regional anesthesia?

| | |
|--------------------------|---|
| General anesthesia | 1 |
| Regional anesthesia | 2 |
| Don't know (volunteered) | 3 |
| No response | 0 |

2. I'm going to read you a list of fears that people may have about general anesthesia. For each item, please tell me if you are Very Concerned, Somewhat Concerned, or Not at All Concerned.

(General anesthesia - state in which you are completely unconscious for duration of procedure)

- a. *Fear of death.* Would you say...

| | |
|--------------------------|---|
| Very Concerned | 1 |
| Somewhat Concerned | 2 |
| Not at All Concerned | 3 |
| Don't know (volunteered) | 4 |
| No response | 0 |

- b. *Fear of ... (general anesthesia)*

| | |
|--------------------------------|---|
| Brain damage. Would you say... | |
| Very Concerned | 1 |
| Somewhat Concerned | 2 |
| Not at All Concerned | 3 |
| Don't know (volunteered) | 4 |

| | |
|--|---|
| No response | 0 |
| c. <i>Fear of ... (general anesthesia)</i> | |
| Pain afterwards. Would you say... | |
| Very Concerned | 1 |
| Somewhat Concerned | 2 |
| Not at All Concerned | 3 |
| Don't know (volunteered) | 4 |
| No response | 0 |
| d. <i>Fear of ... (general anesthesia)</i> | |
| Waking up in the middle of the operation. Would you say... | |
| Very Concerned | 1 |
| Somewhat Concerned | 2 |
| Not at All Concerned | 3 |
| Don't know (volunteered) | 4 |
| No response | 0 |
| e. <i>Fear of ... (general anesthesia)</i> | |
| Nausea and vomiting. Would you say... | |
| Very Concerned | 1 |
| Somewhat Concerned | 2 |
| Not at All Concerned | 3 |
| Don't know (volunteered) | 4 |
| No response | 0 |
| f. <i>Fear of ... (general anesthesia)</i> | |
| Loss of control. Would you say... | |
| Very Concerned | 1 |
| Somewhat Concerned | 2 |
| Not at All Concerned | 3 |
| Don't know (volunteered) | 4 |
| No response | 0 |
| g. <i>Fear of ... (general anesthesia)</i> | |
| Talking in your sleep. Would you say... | |
| Very Concerned | 1 |
| Somewhat Concerned | 2 |
| Not at All Concerned | 3 |
| Don't know (volunteered) | 4 |
| No response | 0 |
| h. <i>Fear of ... (general anesthesia)</i> | |
| Nudeness. Would you say... | |
| Very Concerned | 1 |
| Somewhat Concerned | 2 |
| Not at All Concerned | 3 |
| Don't know (volunteered) | 4 |
| No response | 0 |
| i. <i>Fear of ... (general anesthesia)</i> | |
| Memory loss. Would you say... | |
| Very Concerned | 1 |
| Somewhat Concerned | 2 |
| Not at All Concerned | 3 |
| Don't know (volunteered) | 4 |
| No response | 0 |
| j. <i>Fear of ... (general anesthesia)</i> | |
| The needle. Would you say... | |
| Very Concerned | 1 |
| Somewhat Concerned | 2 |
| Not at All Concerned | 3 |
| Don't know (volunteered) | 4 |
| No response | 0 |
| k. <i>Fear of ... (general anesthesia)</i> | |
| Headache. Would you say... | |
| Very Concerned | 1 |
| Somewhat Concerned | 2 |
| Not at All Concerned | 3 |
| Don't know (volunteered) | 4 |
| No response | 0 |

3. Using a 7-point scale where 1 is NOT IMPORTANT AT ALL and 7 is EXTREMELY IMPORTANT (and you can choose any number between 1 and 7), how important is it for you to see the anesthesiologist before the surgery?

| | | | | | | | | | |
|---------------|---|---|---|---|---|---|-----------|-------|----------|
| Not Important | | | | | | | Extremely | Don't | No |
| At All | | | | | | | Important | Know | Response |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 8 | 0 |

4. If, given a choice, would you prefer to talk to the anesthesiologist: (READ)
- | | |
|----------------------------|---|
| The day before the surgery | 1 |
| The day of the surgery | 2 |
| Not at all | 3 |
| Don't know (volunteered) | 4 |
| No response | 0 |
5. Have you ever had an anesthetic, excluding dental anesthesia?
- | | |
|-------------|---|
| Yes | 1 |
| No | 2 |
| No response | 0 |
-

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