Deficits in Retention for Verbally Presented Medical Information

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ABSTRACT

Background: Anesthesiologists deliver large quantities of verbal information to patients during preoperative teaching. Basic principles of cognitive psychology dictate that much of this information is likely to be forgotten. Exactly how much and what type of information can be retained and recalled remains an open question.

Methods: With Institutional Review Board approval, 98 healthy, educated volunteers viewed a brief video containing a preoperative explanation of anesthetic options and instructions. Subjects were then asked to engage in free and cued recall of information from the video, and to complete a recognition task. We developed a coding scheme to objectively score the free and cued recall tasks for the quantity of information recalled relative to the quantity presented in the video. Data are presented as descriptive statistics.

Results: Subjects spontaneously recalled less than 25% of the information presented. Providing retrieval cues greatly enhanced recall: Subjects recalled 67%, on average, of the material queried in the cued recall task. Performance was even stronger on the multiple-choice test (83% of items correctly answered), indicating that the information was initially encoded. The category of information that was consistently least-remembered was presurgical medication instructions.

Conclusions: Under realistic conditions for recall, most medical instruction given to patients will not be recalled, even if it is initially encoded. Given the limits of short-term memory, clinicians should carefully consider their patterns of information giving. Improvement of memory performance with cues for retrieval indicates that providing printed instructions for later review may be beneficial.

What We Already Know about This Topic

- Many pieces of information and instruction (50–100) are presented to patients by anesthesiologists during their preoperative visit
- Previous studies of how well patients remember this information have used multiple-choice tests or prompted responses, yet in the real world, unprompted free recall is more important

What This Article Tells Us That Is New

- In healthy college students who watched a 5-min video of a preoperative visit, free recall of information was very poor (fewer than 25% of items) compared with cued recall or multiple choice testing
- Anesthesiologists should carefully meter the amount of information provided, and should provide written or other cues to help recall of important preoperative instructions

INSTRUCTIONAL discourse with patients requires difficult balances. Healthcare providers must communicate medical details at the level of the patient's verbal intellect and health literacy, using combinations of nonscientific and scientific terminology. Providers must be informative while also establishing empathic rapport; they must balance the well-rounded educational script against what is particularly anxiety-provoking or salient to the patient. The preoperative interview provides anesthesiologists the opportunity to educate patients about preoperative preparation, the anesthesiologist's role, and the content and risks of the anesthetic plan. However, the goals of information provision are compromised by the limits of human memory. The purpose of this manuscript is to establish a reasonable upper limit estimate – in healthy subjects – of memory for the kinds of perioperative information conveyed verbally during preanesthetic patient education.

Patients want information and providers want to be informative, but too much information may undermine these objectives. One study of information-giving practices has shown that during preanesthetic consultations with anesthesiologists, patients were routinely verbally given 50–100 pieces of information.[1] Previous studies have shown that patients do not recall much of what they are taught, even after repetition.[2–5]

All of these prior studies measured recognition – a simple form of retrieval. Recall, which involves an active search process for the desired data, is a more difficult task than recognition.[6] For example, the question, "What medication are you currently taking?" is a recall question. Recall may fail in

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a range of ways. Consider a hypothetical patient who has recently starting taking the drug Dilantin. The patient likely knows that she is taking medication, but recall of details without support may be difficult. Asking the patient what medications she takes might well yield answers such as "pills for seizures" or "it begins with a D." In contrast, with recognition, previously learned information is simply identified as familiar. When choices are provided as part of the question, recognition of the correct information is all that is required.[6] For example, "Are you taking Dilantin, Tegretol or Valproate?" taps the recognition of previously acquired information.

The dyadic interaction between clinician and the recipient of information strongly influences the amount of information given.[7] Systematically assessing the "what" and "how" of memory through observation in the clinical setting becomes nearly impossible.[7–9] The first answers to the questions of how learning and memory work in the perioperative period must come from experimental designs that allow for the exclusion/control of potentially confounding variables. Establishing the basic parameters of content memory will then allow for informed interpretation of data from more ecologically valid field studies.

A patient getting ready to report for surgery in the morning has to rely on recalled information, but most of the prior work on patient memory for instructions uses recognition tasks such as true/false or multiple-choice testing to assess memory.[2,3,5] Our work seeks to begin to bridge the gap between prior work and the patients' lived experience. Specifically, we seek to establish baseline data regarding the quantity and nature of information that can be learned and recalled from a brief, nonacute preoperative anesthesia consultation under better-controlled conditions than can be created in face-to-face interviews.

Materials and Methods

This study was approved by the Institutional Review Board at Suffolk University (Boston, Massachusetts). Written informed consent was obtained from every subject.

Subjects in this study were college students enrolled in courses in the psychology department who received an incentive for participation. Incentives for the study included earning 1 h of research credit for Suffolk University undergraduate psychology courses, receiving extra credit for a student's psychology course grade (as determined by each professor), or receiving $10 for participation.

Design and Procedure

We created a short preoperative teaching video featuring an anesthesiologist explaining the presurgical, anesthetic, and postsurgical instructions involved in the removal of a ganglion cyst, along with deliberate insertion of details about the surgical procedure and its historical antecedents. The style and content of the monologue were patterned after the actual interview transcripts from our previous work.[1] In existing class group settings of 8–16, subjects watched the 5-min preoperative teaching video. The anesthesiologist in the video addresses the camera as if it were the patient, and the information is presented in monologue form. The video was played once through without interruption. Subjects were not permitted to take notes during the viewing. After viewing the video, each subject independently completed three written memory tasks in sequential order: free recall, cued recall, and recognition.

The transcript of the video and the complete instruments for all three recall tasks are given in the appendix.

Free Recall. The free recall task consisted of one open-ended recall question.

Cued Recall. The cued recall task consisted of 10 open-ended questions about the identity of the disorder, anesthesia options, presurgical instructions, immediate postoperative instructions, and pain management recommendations.

Recognition. The final measure of recall was a 10-item multiple-choice test about the facts presented in the video.

Coding System

Free Recall Task. The transcript of the video was coded for informational units. A total of 80 discrete pieces of information were delivered in the 5-min video. A quantity score for the free recall task was calculated by summing the number of units of information accurately provided in the subject's written response. The free recall score could range from 0 to 80.

Each freely recalled unit of information was further categorized according to face content into one of six primary content categories:

1. Diagnosis
2. Anesthetic options
3. Presurgical instructions for eating and drinking
4. Presurgical medication instructions
5. Recovery room information
6. Postoperative pain management

Each of these categories was then scored on three separate dimensions (table 1): presence, completeness, and accuracy.

Cued Recall Task. Each response to the 10 open-ended questions was scored for completeness according to the criteria detailed in table 2. The cued recall score could range from 0 to 20.

A blinded second coder coded 25% of all data. Analysis of interrater reliability was done at the level of the overall score for the free recall task, and at the level of category or item for the cued recall task. Coding/scoring for the free recall and cued recall tasks had excellent interrater reliability, as assessed by computing the Pearson correlation coefficient ($r = 0.99$).

Recognition Task. Each correct answer on the recognition task received one point. The recognition score could range from 0 to 10.

Statistics

Data are analyzed and presented as descriptive statistics. No observations were missing. Descriptive results are presented as mean and SD (SD). Performance across assessment tasks

Table 1. Primary Content Category Scoring System for the Free Recall Task

Scale	Scoring Key	Total Possible Points for Each Content Category
Presence	0 = absence of the category in response 1 = presence of the category in response	1
Completeness	0 = no mention of the category in the response 1 = brief mention of the category in the response 2 = multipart answer yet incomplete in the response 3 = complete response in the category	3
Accuracy	0 = incorrect response 1 = partially correct and partially incorrect 2 = completely accurate response	2

(free recall, cued recall, and multiple choice) was compared using a 3-level one-way ANOVA on the arcsine transformation of the proportions. *Post hoc* comparison of means was accomplished using a Tukey *post hoc* test. Interrater reliability was assessed by simple correlation of responses (Pearson correlation coefficient). For all inferential statistics, standard convention was followed, whereby $P < 0.05$ was used as a cutoff to designate statistical significance. Statistical analyses were performed in Statistica (StatSoft, Tulsa, OK).

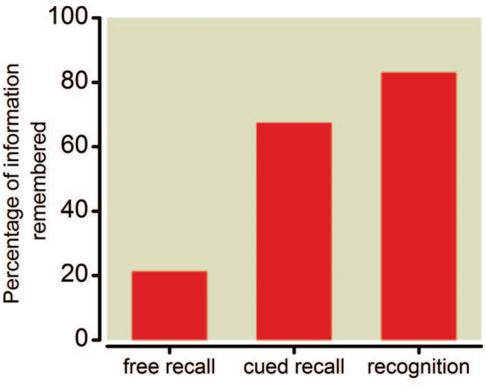

Fig. 1. Performance on recall tests with increasing support, as a percentage of the total possible score.

Results

There were 38 men and 60 women, ranging in age from 18 to 54 yr (mean = 24, SD = 6.8) in the study sample. The ethnic breakdown of the sample was: 76% white (n = 75), 6% Latino (n = 6), 5% black (n = 5), 5% Asian (n = 5), and 6% other (n = 7).

Our main result is shown graphically in figure 1. Recall is poor without supports, but improves as more support is provided. Free recall scores ranged from 1 to 33 (total possible range of 0–80) with a mean of 17 units of information

Table 2. Scoring Worksheet for the Cued Recall Task

Question	Question Topic	Scoring Key	Total Points
1	Anesthesia type	1 point for regional, 1 point for general	2
2	Rapport building	1 point for mention of banging wrist on something	1
3	Diagnosis	1 point for ganglion (or any word that sounds similar to) 1 point for cyst (or bump on wrist)	2
4	Fasting instructions	1 point for no eating 1 point for no drinking 1 point for after midnight	3
5	Nonsteroidal antiinflammatory drug management	1 point for one week time frame 1 point for avoid aspirin (or any other nonsteroidal antiinflammatory agent's name) 1 point for Tylenol is safe	3
6	Other medications	1 point for (other meds) ok to take 1 point for with a sip of water	2
7	Arrival time	1 point for 2 h prior	1
8	Recovery room	1 point for mention of recovery room 1 point for about 2 h	2
9	Driving after anesthesia	1 point for do not drive 1 point for mention of escort 1 point for 24 h	3
10	Postop pain management	1 point for take pain medication	1

Specific questions (1–10) are given in the appendix.

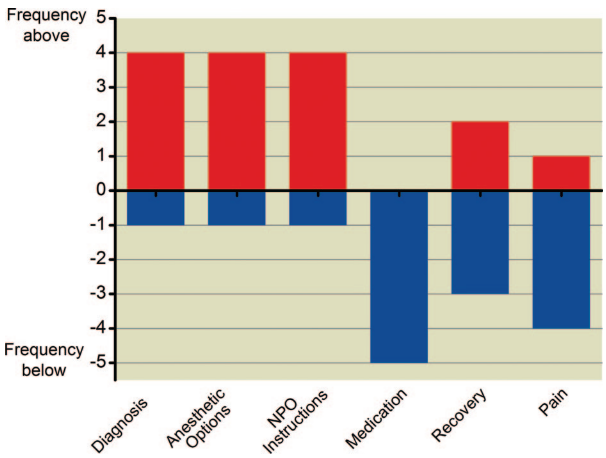

Fig. 2. Specific recall of information by category *versus* median recall of all information contained in the video. Relative position of the information in the video is indicated by position on the x-axis. Mean scores for each of the five memory variables (free recall presence, free recall completeness, free recall accuracy, cued recall, recognition) for each of the six categories of information (diagnosis, anesthetic options, NPO instructions, medication, recovery, and pain management) were compared with the median performance on each memory variable. NPO = *non per os* (nothing by mouth).

(SD = 7.2, range = 1–33). This represents an average recall of 21.3% of the 80 items in the script.

After data collection began, one ambiguous question was revised in the cued recall section. Only data from the correct version was retained, resulting in a sample size for this inventory of 71 subjects. Mean score on cued recall task was 13.5 (SD = 2.9). Subjects accurately recalled 67.4% of the video content when provided with cues to aid retrieval.

Results on the multiple-choice test indicate that subjects were generally able to recognize information presented within the video (mean = 8.3, SD = 1.2), indicating that most of the information was heard and understood. Reported as the percentage of the 98 subjects who answered each item correctly, the best recognized topics included the following: identifying the medical disorder as a ganglion cyst (99% accurate recognition); stopping all food and fluids after midnight before surgery (94.9% accurate recognition); staying in the recovery room for about 2 h after surgery (94.9% accurate recognition); and treating postsurgical pain with prescription pain medication (94.9% accurate recognition). Least recognized topics included: recognition of the ability to take some medication before surgery (34.3% accurate recognition) and the importance of avoiding aspirin before surgery (74.7% recognition).

Performance across these three assessment tasks (free recall, cued recall, and multiple choice) was statistically compared by using a 3-level one-way ANOVA on the arcsine transformation of the proportions. Results indicate a statistically significant effect of task type on performance, $F(2,266) = 423$, $P < 0.001$. A Tukey *post hoc* test for comparison of means showed statistically significantly different ($P < 0.001$ or less) performance between all tasks. Performance on the cued recall task was statistically significantly better than performance on the free recall task, and performance on the multiple choice task was statistically significantly better than both of the other tasks. Performances on the three tasks are not statistically significantly correlated, further indicating that the tasks are distinct memory assessments.

Analysis of Errors within Free Recall Responses

Certainly, absolute failure to recall is one type of memory error, but so also is the recollection of incorrect information. Errors of commission on the free recall task were assessed. Across the 98 free recall responses, a total of 25 commission errors were noted. Of these, 32% (8) involved an inaccurate recall of the eating and drinking instructions. The majority of these errors were linked to an incorrect timeframe for eating and drinking before surgery. For example, three subjects reported a 24-h period during which the patient should not consume any food or liquids.

20% (5) of the commission errors were mistakes in reporting which medications were safe to take before surgery. For example, the subject was unable to recall the one pain reliever (Tylenol) that is allowed before surgery and replaced it with a pain reliever (Aspirin) that the physician stated was unsafe:

Case 86: "No Aleve, Tylenol, Naparsin (*sic*), Motrin, Ibuprofen, or other antiinflammatory agent 1 week before. Aspirin is okay."

Additional medication errors included: generalizing the pain medication instructions to all medications (including prescription medications) and having inaccurate or missing timeframes on when to stop certain medicines.

Four, or 12%, of the errors involved inaccurate recall of postoperative restrictions about driving.

Information Recall Across Memory Tasks.

Mean scores for each of the five memory variables (free recall presence, free recall completeness, free recall accuracy, cued recall, recognition) for each of the six categories of information (diagnosis, anesthetic options, fasting instructions, medication, recovery, and pain management) were compared with the median performance for the entire video (fig. 2). Across all of the memory tasks, the general categories of information remembered best were the identity of the disorder, anesthetic options, and presurgical eating and drinking instructions. These three best-remembered categories of information happened to be the first three topics covered in the video.

Mean performance scores for these three categories were each above the median on four out of five of the measures.§

Presurgical medication instructions were the least-remembered across all of three of the memory tasks (below the

§ A Spearman rank order correlation between the number of information units per category and overall memory performance for each category was not statistically significant.

median on five out of five measures). Postoperative instructions and postsurgical pain management were below the median on four out of five measures. These categories were also the last to be presented in the video.

Discussion

This study demonstrates that free recall of verbally presented medical information is low, although not uniformly so. This is the main result of the study: In a free recall situation, not previously studied but representative of the conditions faced by actual preoperative patients, recall is poor. All of our subjects were fluent speakers of English who had completed at least some college. They were healthy at the time of the study, were participating voluntarily, and were aware that the purpose of the study was to investigate memory for medical information. Thus, we consider this subject pool to represent "optimal learners," or people we would expect to demonstrate the highest levels of memory performance. These optimal learners spontaneously recall less than a quarter of the information presented in a brief presurgical consultation video. This is a validation of the widely appreciated but heretofore rarely quantified understanding that preoperative patients recall little of what is explained to them. If healthy subjects not under stress recall so little, recall by actual patients must be even lower.

Performance under more guided memory tasks is markedly better. Memory retrieval cues are extremely beneficial. Reading a question or statement related to the presented information triggers more specific and complete memories. This result suggests that providing retrieval cues, such as written instructions or a night-before phone call, could be helpful.

Our study is subject to important limitations. First, the learning interlude is relatively contrived compared with actual preoperative assessment interviews. Certainly, most patients do not receive their preoperative education *via* a video presentation. However, the patient-provider interaction influences the amount of information given, as evidenced in our previous work.[7] Thus, we do achieve one very important degree of control by "locking down" the information content provided to patients, and this allows us to know precisely that the amount and content given is the same for each subject. A second limitation is that in our attempts to control the influence of dyadic interactions on the amount of information provided, we have introduced new limitations in that the teaching and testing environments are quite artificial relative to an actual medical encounter. In practice, these are likely to be somewhat offset by the fact that our "patients" might be considered "optimal learners," and their poor recall suggests that patients' recall is likely to be worse. A third limitation is that our video was brief compared with actual medical appointments. In a previous study of preoperative assessment appointments, the consultation time ranged from 30 to 90 min.[1] The amount of content in our video, however, was comparable to the 50–100 unique pieces recorded in those preoperative assessment appointments.[1] One might think that spreading the content out over a longer appointment provides more opportunity for repetition and reinforcement of information, but Sandberg *et al.*[1] found the incidence of memory-enhancing behaviors in the recorded interviews to be extremely low.

Another limitation of the study is that previous recall testing influences (improves) the results of further recall and recognition tasks. Given the simple nature of the recall tasks in this study, subsequent retesting of material almost certainly improves recall on later tests. The central observation of the study, that recall of information under natural conditions (*i.e.*, free recall) is poor, is unaffected by the retesting design. Because the free recall task was sequenced first, the observed performance is protected from any potential bias introduced by retesting. There is another apparent limitation of the sequenced experimental design. Specifically, we do not control for potential differences in difficulty between tasks. One could ask: "If there were 80 pieces of information (with varying relevance, as shown in the transcript of the video), why were students expected to spontaneously recall all pieces of information in the free recall task, 20 in the cued recall task and only 10 in the recognition task?" In other words, the conclusions of our study might be influenced by the level of difficulty of the tasks themselves. This is almost certainly true, but again, the central observation of the study, that recall of information under natural conditions (*i.e.*, free recall) is poor, is again unaffected by unknown differences in difficulty between tasks. To control for varying difficulty between tasks, the study could be repeated with multiple groups each receiving free recall, cued recall, or recognition tasks in different order. However, this was not the objective of our study.

Finally, experience and motivation in our subjects could have affected recall responses. Previous personal experience with preanesthesia consultation, surgery, and anesthesia was not assessed, and hence, not controlled. However, variation in these domains would either introduce variability into the responses or improve performance relative to naïve subjects, rather than impairing recall or recognition. On the other hand, one might be concerned that low motivation for the experimental task would negatively affect subject responses. We did not assess the subjects' motivation, but note that our subjects were volunteers or working for modest incentives while enrolled in a private, 4-yr university. It is probable that their motivation is representative of the typical adult learner.

The majority of what was remembered by the subjects in our study (despite the level of retrieval support of cues/recognition) was information presented near the beginning of the video: diagnosis and choices for anesthesia. A phenomenon known as the primacy effect can lead to better recall of items that are presented first in a series.[10] Of meaningful practical concern is the consistent difficulty subjects demonstrated accurately remembering instructions about taking medications before surgery.

What then should one do in the preanesthetic interview? Preoperative education is important for assuring a prepared patient on the day of surgery, and failure to follow instructions contributes to cancellations.[11] Medical practice research has highlighted the need to temper the information flow. A qualitative study by McGrath[12] examined physicians' perspectives on noncompliance with prescription drug directives. In unstructured interviews, the doctors asserted that more information is disadvantageous to communication not only because of time constraints, but also because of the psychological costs and risks to a patient's compliance. Furthermore, the study asserted that large quantities of information might lead to increased anxiety, additional symptoms/side effects, and confusion, which could result in nonadherence.[12] In simple terms, this is an admonition, practical or not, to limit rapport-building small talk during preanesthetic teaching. Our own work shows that, left to their own devices, clinicians consistently far exceed patients' expected short-term memory,[1] and this could be reduced with coaching.

Although not arising directly from the results presented in this manuscript, the following discussion is well grounded in cognitive psychology and may help anesthesiologists become better teachers.[13] There are very few cues from patients that let providers know they have gone too far with giving information. In fact, behavioral feedback from patients is rather misleading. Providers are likely to rely on immediate evidence of comprehension as a measure of a patient's information intake capacity. When a patient nods, smiles, or does not ask a question, the provider infers that the information has been understood. Reception and comprehension of information, however, are not indicators for memory for that same information. Comprehension is a necessary but not sufficient precursor to memory. To be recalled, information must be transferred from working memory to long-term memory, and then the patient (interacting with their setting and supports) must generate sufficient retrieval cues to bring the information forward. The recommendation that emerges from this scenario is again well grounded in cognitive psychological theory[13]: minimize task demands and enhance the likelihood of recall by providing the patient with a specific set of written instructions for future reference. This reduces the task from free recall of numerous facts to simply remembering to keep and refer to the instructions. A well-designed perioperative system should then provide multiple memory supports, such as night-before reminder phone calls, emails, or text messages to review instructions or help the patient remember to consult their written checklist.

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Appendix

Video Transcript

1: I'm really glad that you were able to make it here today.
2: I'm sorry that it was so hard to find my office. It is tucked away in the back here.
3: So, I'm the anesthesiologist and
4: we are going to get you ready for surgery.
5: We will talk a little about some anesthetic plans.
6: I'm sure you've learned from the surgeon that
7: what you have is called a ganglion
8: cyst.
9: And it is actually pretty interesting.
10: Ganglion cysts are these little outgrowths from the synovial capsule
11: that surrounds your wrist – or yours is on your wrist, coming up from your wrist.
12: Basically it is an outgrowth from the joint capsule.
13: It is a cyst that is filled with joint fluid.
14: And these are pretty cool. Back in the day before we could do surgery on them, we still got them.
15: Every once in a while, people would bang themselves on some object
16: and it would hurt like crazy, but the cyst would go away.
17: And doctors noticed this phenomenon, probably because they have their own ganglion cysts, so this led to the recommendation (before surgical treatment) that you simply whack them.

18: In fact, people used to use the family Bible to whack the ganglion cyst.
19: I know it sounds crazy, but it did work and it – they – would go away.
20: But I gather that you are going to have surgery to have your ganglion taken care [of].
21: I think that is probably better than whacking it with a big book.
22: But it is a painful process.
23: They are going to have to make an incision
24: and dissect down to the base of the ganglion.
25: Cut it off
26: and sew over the hole so it won't come back.
27: And you will need anesthesia for that.
28: So there are two choices for anesthesia.
29: You can have regional anesthesia
30: or general anesthesia.
31: Regional anesthesia involves making the body part, in this case your arm, numb for the duration of surgery.
32: It will stay numb for some period afterwards.
33: General anesthesia is a medical term for going to sleep with medications
34: we give through intravenous injection.
35: And you stay asleep until it is time to wake up
36: and we turn the drugs off and you wake up.
37: Regardless of the choice of anesthesia, there are a few things that you have to do before surgery.
38: By the way, the choice of anesthesia you can really make on the day of surgery.
39: That's a decision you can make with the anesthesiologist that takes care of you on the day of surgery.
40: And that won't be me.
41: It will be a different individual.
42: So anyway, going back to the preparation for anesthesia, what you need to do are about three things.
43: First of all, nothing to eat
44: or drink before surgery – that is midnight the night before surgery.
45: No more to eat or drink, okay –
46: nothing by mouth from midnight on until after surgery.
47: Of course, if you need to take medications,
48: then you can take medications with a sip of water.
49: Now there are some medications that you should avoid in the upcoming period.
50: For a week before the surgery,
51: you should avoid aspirin
52: and all other drugs from a class of medications called nonsteroidal antiinflammatory agents.
53: And those drugs would include aspirin itself,
54: or Motrin,
55: Aleve,
56: Naprosyn,
57: ibuprofen.
58: All of those drugs you should not take for the week before surgery.
59: Tylenol is safe though.
60: Now, on the day of the surgery,
61: you should show up 2 h before the scheduled surgery time.
62: And you get the scheduled surgery time from the surgeon's office, if they haven't already given it to you.
63: Call them and they'll tell you when to show up for surgery.
64: After surgery, the recovery from anesthesia is a little bit different depending on which anesthetic technique you've chosen –
65: regional or general anesthesia.
66: Either way, you'll go to the recovery room
67: and you'll be there for about 2 h after surgery.
68: So you should expect that you'll be ready to leave after 2 to 3 h [when] your surgery is scheduled to start.
69: And you should have an escort ready to pick you up at that time.
70: And the reason you should have an escort is that
71: it is not safe to drive after you have had anesthesia.
72: You should not drive
73: for 24 h after you have had anesthesia.
74: Now, let's see. When you leave the hospital, you'll be leaving with a prescription for pain medication that your surgeon gave you.
75: Each surgeon has different preferences for what kind of medication they use.
76: So I can't really tell you much about what that medication will be.
77: However, I will advise you that no matter what they prescribe, it will be safe for you take it.
78: And you shouldn't be a hero and try not to take the pain medication.
79: Take plenty of pain medication.
80: It is most important that you be comfortable after surgery as you recover. And that is really, just about it as far as the anesthetic and postsurgical choices go.

Free Recall Task

Please use the information from the previously viewed video to answer the following questions.

Assume you are in the role of the patient when answering the questions.

1. Write down as much of the important information from the video as you remember.

Cued Recall Task

Please use the information from the previously viewed video to answer the following questions.

Assume you are in the role of the patient when answering the questions.

1. What are your choices for anesthesia?
2. Historically, before surgical treatment, what did people notice to be helpful to solve your current problem?
3. What is the name of medical problem/disease you are being treated for?
4. What were the instructions about eating and drinking before surgery?
5. What were all of the recommendations about pain medications before surgery?
6. What were the recommendations about other medications before surgery?
7. What time should you show up for surgery?
8. Immediately after the surgery, what typically happens?
9. What were the instructions for driving postsurgery?
10. What do you do if you experience pain after the surgery?

Recognition Task

Please use the information from the previously viewed video to answer the following questions.

Assume you are in the role of the patient when answering the questions. Please circle only one answer.

1. The name of the medical problem discussed in the video was:
   a. Ganglion Cyst
   b. Basal Ganglia
   c. Lesion of the wrist
2. What types of anesthesia did the physician propose for the problem?
   a. Regional anesthesia
   b. General anesthesia
   c. The type where you go to sleep through IV medications
   d. All of the above
3. Before surgery, you should remember to do the following:
   a. Stop taking all medications
   b. Eat or drink after midnight
   c. Exercise and eat healthy
   d. Do not eat or drink after midnight
4. The following medications should be avoided before surgery:
   a. Tylenol
   b. Aspirin
   c. Birth control pills
   d. All pain relievers
5. Should you take any medication before surgery?
   a. Yes
   b. No
   c. The physician did not discuss this point.
6. What time should you arrive for the surgery?
   a. At the scheduled surgery time
   b. 20 min before scheduled surgery time
   c. 2 h before scheduled surgery time
   d. 3 h before scheduled surgery time
7. Immediately after the surgery, you should:
   a. Be in the recovery room for about 2 h after surgery
   b. Be able to leave on your own right away
   c. Be able to drive home on your own 2 h after surgery
   d. Expect to stay overnight and return home the next day
8. Driving after surgery is recommended:
   a. At any time postsurgery
   b. Only after 2 h of recovery
   c. After 1 week of recovery time
   d. After 24 h of recovery time
9. Postsurgical pain:
   a. Should be treated with prescribed pain medication
   b. Should not be treated with any pain medication in case of complications
   c. Should be minimally treated with only low doses of pain medication
   d. Should be tolerated and ignored
10. Grapefruit juice:
    a. When taken with pain medication may increase chances of postsurgical complications
    b. May disrupt liver functioning
    c. Should be avoided before and after surgery
    d. The physician did not discuss this point.