

Clinician spoken plain language in healthcare encounters: a qualitative analysis to assess measurable elements

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Abstract

Purpose: Good communication and use of plain language in healthcare encounters improves outcomes, including emotional health, symptom resolution, and functional status. Yet there is limited research on how to measure and report spoken plain language, which is the use of familiar, clear language. The authors aimed to describe key and measurable elements of spoken plain language that can be assessed and reported back to clinicians for self-reflection.

Methods: The authors conducted a secondary analysis of transcripts from recorded encounters between breast cancer surgeons and patients with early-stage breast cancer. Two coders used a hybrid qualitative analysis with a framework based on US Federal Plain Language Guidelines. To develop major themes, they examined (1) alignment with the Guidelines and (2) code frequencies within and across transcripts. They also noted minor themes.

Results: From 74 transcripts featuring 13 surgeons, the authors identified two major themes representing measurable elements of spoken plain language: (1) clinicians had a propensity to use both explained and unexplained medical terms, and (2) clinicians delivered information using either short turns (one unit of someone speaking) with one topic or long turns with multiple topics. There were three minor themes that were not indicative of whether or not clinicians used spoken plain language. First, clinicians regularly used absolute risk communication techniques. Second, question-asking techniques varied and included open-ended, close-ended, and comprehension checks. Third, some clinicians used imagery to describe complex topics.

Conclusions: Clinicians' propensity to use medical terms with and without explanation and parse encounters into shorter or longer turns are measurable elements of spoken plain language. These findings will support further research on the development of a tool that can be used in medical education and other settings. This tool could provide direct and specific feedback to improve the plain language practices of clinicians in training and beyond.

Introduction

Effective clinical practice relies on high-quality communication.^{1,2} Using plain, accessible, and truthful language when speaking to patients is a fundamental requirement of good clinical practice.³ However, little attention has been given to the assessment of clinician spoken language. Research and guidance on use of plain language in healthcare communication has focused to date on written text.^{4,5} Yet within the context of healthcare delivery, verbal language is much more important for ensuring clear communication and high quality care.^{6,7} Use of clear verbal language in healthcare encounters leads to improved adherence, emotional health, symptom resolution, functional status, and pain control.⁸⁻¹⁰ A lack of clear communication leads to misunderstanding, lower patient satisfaction, and, in some cases, litigation.¹¹⁻¹⁴ Encounters related to cancer require particular attention to clear communication given the complex and emotive nature of cancer care.^{15,16}

We define clinician spoken plain language as clinicians' use of familiar, clear language to communicate when speaking with patients. Other terms for this include "oral literacy", "listenability", or "aural demand" however these terms obscure the actor (clinician) in the exchange.^{7,17,18} The term "clinician spoken plain language" in this work focuses on clinicians as the transmitters of information within the encounter and patients or their caregivers as the receivers of information.¹⁹ It clearly identifies clinicians as users of the words and removes the suggestion that patients are the problem because they fail to understand the words correctly.

Analyzing and improving clinician spoken plain language has important implications for all patients, especially those with lower literacy or lower health literacy who might benefit most. Health literacy is the ability of individuals to take in and use health information in order to make healthcare decisions.²⁰ When compared to patients of higher health literacy, those with lower health literacy report more difficulties understanding and accurately exchanging with their clinicians, particularly around technical explanations of medical conditions.²¹ Lower health literacy is prevalent worldwide.^{22–26} In the United States, only 12% of the adult population has proficient health literacy, based on proficiency-based measurement.²⁷ Therefore, improving clinician spoken plain language has significant potential to improve healthcare communication metrics.

We found no published research that has determined how to assess spoken plain language at the clinician level and deliver this information back to clinicians. Some prior research has reported relationships between language complexity and patient and caregiver-reported outcomes such as satisfaction, anxiety, and understanding.^{28,29} Other work focuses on general recommendations or assessments for using plain language.^{17,18}

To fill this gap, we aimed to (1) describe the key elements of clinician spoken plain language when communicating with patients newly diagnosed with breast cancer and (2) identify the measurable elements clinician spoken plain language that can be delivered back to clinicians for self-reflection.

Methods

We followed the COnsolidated criteria for REporting Qualitative research (COREQ) guidelines while reporting this analysis.³⁰

Data source

Parent trial

This secondary analysis used transcripts of recordings we collected from September 2017 to February 2019 during the *What Matters Most* study, a cluster three-arm randomized controlled trial of the impact of two encounter decision aids for early-stage breast cancer surgery (NCT03136367).^{31,32} The study recruited women at four sites (7 clinics) in the United States.

Participants

Patients could choose whether or not to have their initial surgical encounter recorded as they consented to take part in the trial. Patients were eligible if they were at least 18 years old, had a biopsy-confirmed diagnosis of stage I-IIIa breast cancer, and surgeons determined they could choose between mastectomy or breast conserving surgery. Sixteen surgeons consented to participate in the trial. Nine of the surgeons received training in shared decision making before

the trial began. We collected patient and surgeon demographic information as a part of their involvement in the trial.

Recording and transcribing procedures

To help preserve blinding, when a patient consented a researcher activated the device out of sight so that the recording status was invisible to the surgeon. An external company transcribed the recordings using a set of guidelines (see Supplemental Digital Content, Appendix 1) Two researchers removed identifiable information to anonymize the transcripts for analysis.

Selecting transcripts for analysis

We excluded transcripts where the patient did not speak English because the conversations occurred with the support of an interpreter. Given there are no established guidelines for this type of analysis regarding the number needed to reach saturation, we used interview guidelines as a proxy where data saturation is typically achieved in 6-12 interviews.³³ We randomly selected eight transcripts per participating surgeon or all available per surgeon if there were less than eight.³¹ Other people in the transcript were not included in the analysis, such as family members, friends, patient advocates, or resident clinicians as we were focused on the two people who had agreed to be included in the analysis. We report collection and calculation methods for patient and surgeon demographic data elsewhere.^{31,34}

Data analysis

Analysis framework

We conducted a dual independent, hybrid (deductive with inductive elements),³⁵ framework qualitative analysis using Atlas.ti Mac software (Version 8.4.13 to Version 9.0.15).³⁶ Given no existing framework for spoken plain language exists, we based our analysis on the US Federal Plain Language Guidelines, an established set of recommendations for written plain language used frequently in healthcare and non-healthcare settings.^{35,37,38}

Developing and piloting the codebook

Two researchers did the coding: RWY, a White, female PhD student with an MPH and five years of experience in qualitative and quantitative research, and RH, a White, male MPH student new to qualitative research. Neither coder participated in data collection. Before coding, RWY and RH, with team input, developed a codebook based on the Federal Plain Language Guidelines (Table 1). They predefined medical terms (“technical jargon”) as any medical word or phrase that might not be understood without an explanation by most patients, using previous literature on understanding medical terms.^{39,40}

The coders piloted the codebook on three transcripts, assessed it for usability, and made changes. They added complementary codes to ensure clarity around positive examples (to use when spoken plain language was present) and negative examples (to use when spoken plain language was not present). For example, the code “avoid technical jargon” became two codes: “technical

jargon with explanation” and “technical jargon without explanation”. Other changes included removing codes that did not contribute meaningful information; for example, they removed the code for contractions since they are ubiquitous in spoken language.

Coding and analysis

The coders met weekly to discuss potential new codes. New codes included ones to distinguish between question types: biomedical (“When did you go through menopause?”), open-ended (“What about that has helped you make that decision?”), asking for questions (“What questions do you have?”), or quick checks for understanding (“Okay?”). The final codebook is available in the Supplemental Digital Content, Appendix 2. Sometimes they coded transcripts twice in order to focus on different elements e.g., one read for word use and one read for turn structure. A turn is one unit of speech in a conversation where people are taking turns speaking. Saying ‘okay’ or another phrase would have led to a break in the turn.

After coding, the coders independently proposed a set of initial themes.^{35,41,42} They focused on potential themes that were salient across the dataset and both: (1) aligned with the Federal Plain Language guidelines and (2) were potentially measurable based on sufficient frequency across transcripts. They also used memos written during the coding process to inform themes. They met with a third team member (GE) to deliberate on major and minor themes. Themes developed that met the above criteria (salience, alignment with the guidelines, and potentially measurable) became major themes. They categorized all other themes as minor themes based on being noteworthy in the analysis but not measurable elements that can be delivered back to clinicians.

To complete member checking and confirm our findings, we shared major themes with a sample of trial surgeons.

Ethical approval

The Committee for the Protection of Human Subjects at Dartmouth College approved this research (STUDY00030157).

Results

Transcript sample

From 622 patients that entered the trial, there were 311 available transcripts across 13 surgeons. Three surgeons had no available transcripts due to low consenting patient volume or because their clinic flow prevented recording. We excluded 19 transcripts with patients who did not speak English. From the remaining 292 transcripts, we analyzed 74 transcripts. See Figure 1 for additional details.

Demographic details

Patients were an average of 59 years (standard deviation 11.6), 72% (n=54) were non-Hispanic White, and 20% (n=15) were non-Hispanic Black. Just over a third (36%, n=27) had a high school degree or less, 52% (n=39) had an annual household income of less than \$50,000, and

51% (n=38) had adequate health literacy based on their response to the single-item health literacy screener.⁴³ Surgeons were mostly female (77%, n=10), had finished medical school an average of 24 years ago, and had been at their current medical facility for an average of 11 years. See Table 2.

Major themes

From our analysis, we identified two major themes (Table 3).

Major Theme 1: Clinician use of medical terms was common, however some successfully explained the terms and some did not.

The most salient theme was the consistent use of medical terms. Every encounter had medical terms. All had at least one unexplained medical term and most had at least one explained medical term. The frequency of medical terms and the propensity to explain or not explain them seemed key to assessing and delivering results on clinician spoken plain language. In member checking, clinicians confirmed this finding.

In the following quote, a surgeon introduces and explains the term HER2 from a breast cancer biopsy pathology:

“The third marker that we’re really interested in has a funny name called HER2 and HER2 is just a protein that we have on every cell in our body but some breast cancers

amplify or create extra copies of that HER2, which is an important feature. Now, yours is negative and that's the best-case scenario as well." 7053

Here, another surgeon introduces HER2 and does not explain what a positive or negative result would mean:

"The other thing that's still not back yet is what's called HER2. This is a gene in breast cancer. Essentially, we start with immunohistochemistry, and that's how we figured these out, specifically looking at things under the microscope. If it's neither clearly positive nor negative, you get this equivocal score, and then they send it out for additional testing. So that's where it is. It's out for additional testing." 7076

Major Theme 2: Some surgeons regularly used short sentences ("phrases"), short paragraphs ("chunks"), and one topic per turn while others did not.

Some encounters contained repeated use of short turns with one topic per turn while others had long turns and multiple topics per turn (Table 3). These patterns were most obvious when surgeons were delivering health information. Parsing key health information into short turns and only covering one topic at a time was a key feature of successful plain language across transcripts and something that can be measured and delivered back to clinicians. Study surgeons confirmed this finding in member checking.

Here, a surgeon introduces the the topic of surgical options in one turn using 71 words:

“The first big decision we always have is what kind of surgery and there are two options. We can do a full mastectomy where we remove the whole breast and the cancer comes with it, or we can do a lumpectomy where we take out just the cancer and save the rest of the breast. Now importantly, there is no difference in survival or recurrence between those two. They’re equally effective.” 7312

In other encounters, there were much longer turns with more than one topic per turn. Here is an excerpt from a surgeon introducing the two surgical options and other topics using 1,120 words (see Appendix 3 in the Supplemental Digital Content that shows the full speech turn):

“I’m just going to go through the two options side-by-side.... [1,096 words] ...What sort of questions do you have so far before I move on?” 7007

Shorter and single-topic turns also often went along with use of shorter phrases. Here a surgeon describes radiation using mostly short phrases in a short turn:

“Radiation is a really big nuisance. The standard is Monday through Friday for up to six weeks, so it’s really annoying. Now, there are shorter courses of radiation, we just don’t know what you’re eligible for at this stage in the game. So I always tell people to expect the worst.” 7076

Alternatively, here is a surgeon using longer phrases within a longer turn:

“Sometimes, what the radiologist will do is actually on this side, they might even put two wires in so that I know exactly where they begin and end as opposed to in the middle. So, it’s same exact thing, take the picture and what we’re going for is to get all those microcalcifications out, but in your question, which is important is since the calcifications are not the DCIS – it’s all we can go by because we can’t see or feel it otherwise. Even though it’s three centimeters of calcification, it could be that you only have a centimeter of DCIS or it could be that you have eight centimeters of DCIS and we just can’t see it.”

6153

Minor themes

We identified three minor themes (Table 3).

Minor Theme 1: Risk communication was common and almost always involved absolute risk, rather than relative risk.

In the majority of encounters, clinicians talked about risk in absolute terms. This did not vary across encounters, making it unlikely to distinguish between successful and unsuccessful spoken plain language, and was also not aligned with the Federal Plain Language guidelines. Some surgeons used natural frequency: “about seven out of 100 women will have [lymphedema]” (7217). Others used percentages: “4% chance of it [coming] back in the breast in 10 years with a lumpectomy, maybe 2-3[%] with a mastectomy” (6153).

Minor Theme 2: Surgeons varied in the frequency and type of questions they asked.

The frequency and types of questions varied but asking questions did not align with the Federal Plain Language guidelines. Some questions were open-ended. These questions typically occurred toward the end of encounters: “What about that has helped you make that decision?” (7109). Some questions were used as opportunities for patients to confirm understanding. This typically occurred throughout the encounters: “That’s a favorable finding because we know that anti-hormone pills are very effective, okay?” (7107)

Minor Theme 3: Some surgeons occasionally used verbal imagery to explain complex topics.

A small number of transcripts included imagery or metaphors to help patients understand cancer growth, such as a “train leaving the station” (6706) or cancer “grow[ing] like roots” (7109). These instances were not frequent enough to be measurable across encounters.

Discussion

Summary of key takeaways

Using a novel framework analysis, we assessed features and measurability of clinician spoken plain language through an in-depth qualitative assessment of their use of language and turns.

Key, measurable elements of clinician spoken plain language that can be delivered back to clinicians include: 1) how clinicians use medical terminology and whether or not they explain it, 2) use of short turns with only one topic versus long turns with multiple topics. Minor themes not indicative of spoken plain language nor frequent enough to be included were regular use of absolute risk, a range from close-ended to open-ended question-asking behavior, and using imagery to describe concepts.

Results in context

Research on use of medical terminology in encounters is extensive.^{18,44-48} In a different study using 74 primary-care transcripts, 81% had at least one unexplained medical term and the 38 included clinicians tended to either always explain medical terms or always not explain medical terms.⁴⁹ Another study similarly found that clinicians tended to either explain or not explain medical terms.⁵⁰ A study of inpatient encounters found that 66% of encounters included medical terms where only 25% were explained.⁵¹ Given patients generally have low understanding of medical terms,^{39,40} they cannot fully engage when there is unexplained or excessive medical terminology in the encounter. In fact, several studies have found that higher rates of medical terminology in an encounter are associated with less interactive dialogue, lower patient satisfaction, and misinterpretation of information.^{46,52,53}

A smaller number of studies have assessed turn structure. In a study using simulated encounters, counselors had an average of 6.8 thoughts per turn but the range was 2.3-18.8.⁴⁶ In this analysis, more clinician thoughts per turn was associated with lower patient satisfaction. The Flesch-

Kincaid reading score determines syllables per word and words per sentence to assess text readability and can be linked to our assessment of phrase (“sentence”) length.^{54,55} Two separate analyses determined that lower Flesch-Kincaid reading scores (i.e., lower ratio of syllables per word and shorter phrases/sentences), when applied to encounter transcripts, was associated with higher patient satisfaction.^{7,14,24} Many researchers have used Flesch-Kincaid to assess spoken language and almost universally the scores are low (i.e., “easy to read” texts) when measured using the full encounter transcripts.^{7,14,29} Additional research on using Flesch-Kincaid on encounter transcripts is therefore appropriate and might be applied to these transcripts in the future to compare the findings.

Most of the tools used to measure clinician communication skills include components found in this analysis such as language choice or use of medical terminology,^{56–58} and language complexity.^{59–61} These tools provide broad or categorical assessments of the clinician’s language use. They support our findings that simple language and explanations of medical terminology improve clarity. However, they do not specifically quantify clinician use of the elements of spoken plain language.^{62–64}

Limitations and strengths

We identified four distinct limitations. Our findings may not be generalizable to clinicians who are not breast surgeons or those not included in this analysis given the qualitative approach. Importantly, we did not include clinician gender or age as we anonymized the transcripts for this analysis. Both characteristics have been shown to have an impact on communication skills.^{65–68}

For example, female clinicians tend to exhibit better communication skills.⁶⁵⁻⁶⁸ Looking at these attributes might have affected the salience of the final themes however it was required to ensure the anonymity of the analysis given the small sample size. Future analysis will address this limitation. One coder knew the included surgeons due to working with them in the parent trial. We limited our analysis to the transcripts to ensure anonymity and therefore could not assess factors such as speed, the use of pauses, or non-verbal elements which may also contribute to spoken plain language.

We have some notable strengths. We grounded our analysis in a framework of plain language,³⁸ using previously accepted guidelines that have been shown to help understanding. This strengthens our findings and makes them more relevant for future use. The coders were not deeply familiar with the disease topic before beginning the coding process therefore they had no knowledge on most of the health information being presented. We likely met saturation well before coding was complete, based on the frequency of code use and lack of new codes emerging.

Conclusions

Spoken plain language can be assessed with the goal of delivery back to clinicians based on the propensity to use medical terms with or without explanation and explanation of health information in short turns with single topics or long terms with multiple topics. These items are eminently measurable within and across encounters. These findings will be used as we develop approaches to measuring spoken plain language that can provide clinicians feedback on their use of spoken plain language. Future tools can be incorporated into medical education for trainees

and established clinicians. Our results raise the possibility that communication skills assessments could include direct and specific results on these measurable elements which would help clinicians in training and regular practice learn how they use spoken plain language. Eventually, a feedback system could be established to allow for improvements where needed. Future research using a dataset with a more varied group of clinicians will include an assessment of how clinician characteristics such as gender and age affect the degree to which spoken plain language is used.

Disclosures

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Disclaimers

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Ethical approval

The Committee for the Protection of Human Subjects at Dartmouth College approved this research (STUDY00030157).

Previous presentations

Not applicable.

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Figure Legends

Figure 1. This flow diagram shows how we determined the set of transcripts to include in our analysis, starting with the total number of patients that consented to the parent trial from September 2017 to February 2019. The final sample was selected to ensure distribution across included clinicians and that saturation within each clinician would be reached.

Figure 1. Determining Transcripts for Inclusion in Secondary Analysis

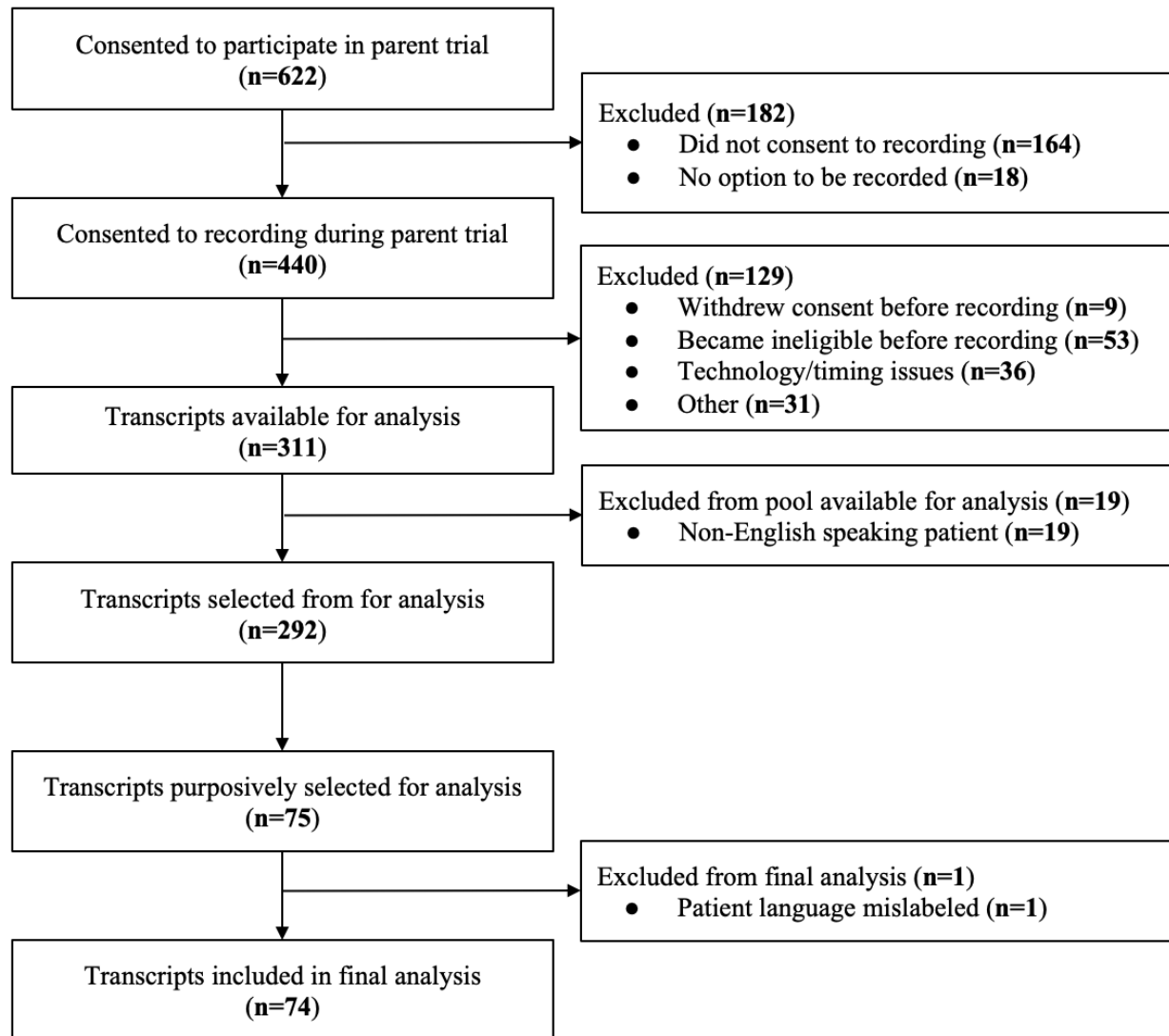


Table 1. Code and theme development based on Federal Plain Language guidelines³⁸

Federal Plain Language Section	Final Spoken Plain Language Code(s)	Theme from Qualitative Analysis
Avoid jargon	Uses technical jargon w/out check or explanation Uses technical jargon w/ check or explanation	Major Theme 1: Clinician use of medical terms was common, however some successfully explained the terms and some did not.
Minimize abbreviations	Uses abbreviation with explanation Uses abbreviation w/out explanation	
Omit unnecessary words	Does not use unnecessary redundant words ^a Uses unnecessary redundant words ^a Does not use excess modifiers Uses excess modifiers Uses repetitive concepts	
Dealing with definitions	Uses uncommon word	
Have a topic sentence	Does not begin turn with topic phrase Begins turn with topic phrase	
Cover only one topic in each paragraph	Uses one topic within turn Uses more than one topic within turn	Major Theme 2: Some surgeons regularly used short sentences (“phrases”), short paragraphs (“chunks”), and one topic per turn while others did not.
Write short paragraphs	Uses short turn Does not use short turn	
Use transition words	Uses transition word Does not use transition word	
Place the main idea before exceptions and conditions	Does not begin phrase with main idea	

Write short sentences	Uses short phrase Does not use short phrase	Minor Theme 3: Some surgeons occasionally used verbal imagery to explain complex topics.
Use short, simple words	Uses simple clear language Does not use simple clear language	
	Put in common terms	
Use examples	Uses example to clarify	No themes generated.
Use simplest verb	Does not use present tense	
Don't turn verbs into nouns	Noun placement is not clear	
Use active voice	Does not use active voice	
	Uses active voice	
Avoid double negatives	Uses double negative or exception to exception	
Avoid hidden verbs	Uses hidden verb	
Use the same terms consistently	Uses the same words for the same thing Does not use the same words for the same thing	
Use pronouns	Uses clear (we/you) pronoun	No themes generated.
	Does not use clear (we/you) pronoun	
Use 'must' to indicate requirements ^a	Uses must ^a Does not use must ^a	
Use contractions when appropriate ^a	Uses contractions ^a Does not use contraction ^a	
Keep subject, verb, and object close ^a	None	
Place words carefully ^a	None	

Use lists ^a	None	
Use tables ^a	None	
Consider using illustrations ^a	None	
Use emphasis to highlight important concepts ^a	None	
Minimize cross-references ^a	None	
Design your document for easy reading ^a	None	
^a Omitted from final codebook		

Table 2. Patient and surgeon characteristics from the included sample

Characteristic		
Patient Participants		n^a = 74
Age in years, mean (SD)^a		59 (11.6)
Race/Ethnicity, n (%)		
	Non-Hispanic Black	15 (20%)
	Hispanic	4 (5%)
	Asian	1 (1%)
	Non-Hispanic White	54 (72%)
	Missing	1 (1%)
Highest education level, n (%)		
	Never attended high school	1 (1%)
	Some high school	9 (12%)
	High school diploma (GED ^a or equivalent)	17 (23%)
	Some college	14 (19%)
	2-year degree	11 (15%)
	4-year degree or higher	23 (31%)
Health literacy, n (%)^b		
	Inadequate health literacy	36 (48%)
	Adequate health literacy	38 (51%)
	Missing	1 (1%)
Insurance^c		
	Public or Uninsured	20 (27%)
	Private	55 (73%)
Annual household income, n (%)		
	0 to \$24,999	22 (29%)
	\$25,000 to \$49,999	17 (23%)
	\$50,000 to \$99,999	20 (27%)
	\$100,000 or more	4 (5%)

	Missing	12 (16%)
Surgeon Participants		n = 13
Site, n (%)		
	A	24 (32%)
	B	15 (20%)
	C	6 (8%)
	D	30 (40%)
Female, n (%)		10 (77%)
Years since graduating medical school, mean (range)		24 years (10-44)
Years at current site, mean (range)		11 (<1 to 30)

^a Abbreviations: n=number, SD=standard deviation, GED=general education degree

^b Measured using the Single Item Literacy Screener, a subjective measure of health literacy⁴³ and dichotomized using top-box scoring to indicate adequate health literacy.

^c Public insurance = Medicaid or Medicare without supplemental insurance; private insurance = private/employer insurance (including Tricare) or Medicare with supplemental insurance.

Table 3. All major and minor themes with example quotes for each theme

Theme	Example Quotes
Major theme 1: Clinician use of medical terms was common, however some successfully explained the terms and some did not.	
Use of medical terms when surgeons are introducing the type of cancer the patient has	Example of explaining medical terms: <i>“You have an invasive ductal carcinoma and it’s moderately differentiated. What does all that mean? When you think about the breast, it’s made up of milk glands ... and milk ducts. ... That means your breast cancer started in one of these milk ducts and it grew and it grew and it grew and it broke out.”</i> (7147) Example of not explaining medical terms: <i>“That’s what they biopsied. When the pathology came back, it came back as this, invasive mammary carcinoma, and these neuroendocrine features is just their description of what it looks like, but it is a type of breast cancer.”</i> (6040)
Use of unnecessary medical terms while explaining the sentinel lymph node biopsy	Example of using unnecessary medical terms (technetium colloid): <i>“Right. So, what we do is...we put some radioactive material in and it’s about a 15-second injection. The radioactive material has a very short half-life called technetium colloid, and then we either do it the day before or that morning depending on the schedule. Sometimes we do it the day before so that we can get you on early in the morning. Then when you’re sleeping, I put some blue dye in and so that it just optimizes my finding the lymph node.”</i> (8003) Example of not using unnecessary medical terms: <i>“Yes, sentinel like S-E-N-T-I-N-E-L and then sentinel really is just a way of saying the first guardian spot essentially. So, when the radiologist ... inject[s] the breast with a clear liquid which has this really low-dose radioactivity tagged to it. The liquid in everybody drains out through the lymph channels and when it finds that sentinel node or the first node closest to the breast, what the radioactive liquid does is get stuck in that node like it’s in a filter.”</i> (6034)
Major theme 2: Some surgeons regularly used short sentences (“phrases”), short paragraphs (“chunks”), and one topic per turn while others did not.	

Use of short phrases	<i>"With a mastectomy with reconstruction, we refer you to plastic surgery. That's typically about four weeks. It feels like mental torture. I promise nothing bad happens in the meantime. There have actually been studies that have looked at this." (7084)</i> <i>"Lymph nodes are removed whether we do a lumpectomy or a mastectomy. That's standard to make sure there's been no spread. That does not vary between the two. Chemotherapy is recommended regardless of what kind of surgery we do. It has to do with the type of tumor, and because of that triple negative, I do think that's going to be needed. Typically, our drugs do cause hair loss." (7063)</i>
Use of long phrases	<i>"So, there are a couple of genes, there are other genes that they can test for also but they'll say – they put stuff into a computer program and it tells you what the risk is and so I'm just going to guess. I think it's probably pretty low for you just because your only risk – if you were 55, I wouldn't even necessarily talk to seeing these people very much, but maybe it will be 5% chance or something. Then you can decide, "Do I want to get tested to see if I have one of these mutations or not?" And then if you say yes, then you get your blood tested and sent off for it. But you would meet with our genetics counselor and these are two of the genes that are predisposed to people to breast cancer and they also are predisposed for ovarian cancer. So, if you have one of these genes, then there's an increased risk for ovarian cancer and a lot of women have prophylactic oophorectomies. They have their ovaries taken out prophylactically especially after they go through menopause if they have one of these two gene mutations." (6058)</i>
Use of short turns with one topic	<i>"The second thing, when we talk about what type of breast cancer you have is what grade it is, and really that's when they look at the cells under the microscope, how fast are the multiplying, how aggressive do they look. We grade them low, slow growing, not very aggressive, intermediate and high. You're just low." (6145)</i> <i>"I'm going to go over with you the advantages and disadvantages to each of these. That advantages to doing a lumpectomy is that we get to save your breast and it's less surgery. I would just make a small incision in your breast. I go in and I can feel the tumor. I take the tumor out with some normal tissue all around it and we saw you up and you go home. It's a same day surgery." (6146)</i>

Use of long turns with more than one topic	<i>“Yes. Ultimately, I don’t think there’s anything else on the side I need, so I’m going to go back to my own form. Typically, we know from a lumpectomy there’s radiation to talk about. Ultimately, we also want to talk about the treatment that gets into the rest of you because treatment in the breast and the lymph nodes doesn’t kill anybody. It’s cancer that spreads. That’s what makes breast cancer potentially fatal. We want a treatment that gets into your blood stream anywhere these cancer cells might try to be. Because your tumor is hormone-driven, a medical oncologist, who will be another part of the team taking care of you. A medical oncologist is definitely going to recommend anti-hormone pills for you. This, ultimately, will become your maintenance therapy for at least five years. These are pills that shut down the estrogen effect in your body to help reduce the risk of a cancer spreading anywhere else, and it actually reduces your risk of a second breast cancer as well. Any risk of a second breast cancer is very low. That just helps keep it low. The one thing that everybody worries about the most, I know, is chemotherapy. Chemotherapy, at this point in time, I can’t tell you if they would say yes or no. You’ve got some features that say yes, some features that say no. Right now, I’ve got that it’s possible. Hormone-fed cancers don’t necessarily need chemotherapy because you’re eligible for the anti-hormone pills. Some women have faster growing tumors who get more benefit for chemo. If your lymph nodes are okay and everything is still a little bit gray, what the oncologist may do is send out a tumor we removed with a lumpectomy for something called Oncotype DX. This is additional testing done on the tumor to help get a sense of your benefit from chemo. If your benefit is low, everybody is comfortable with no chemo. If your benefit from chemo is high, they’re going to recommend chemo. If it’s in the middle, then it’s a discussion of all the pros and the cons. At this point in time, chemo is definitely a possibility, but it’s not a sure thing. If chemo were recommended, that would be the thing that happens after surgery followed by radiation.” (7007)</i>
Minor Theme 1: Risk communication was common and almost always involved absolute risk, rather than relative risk.	
Use of risk communication techniques	<i>“I’m mucking up the way that fluid gets out, and sometimes about seven out of 100 women will have that problem when we do this small lymph node surgery. If we had to remove all the lymph nodes, about 30 women out of 100 get arm lymphedema when we remove all of them, but this is a small cancer. I don’t think we need to do that.” (7217)</i> <i>"It’s probably a difference of 4% chance of it to come back in the breast in 10 years with a lumpectomy, maybe two to three [%] with a mastectomy." (6153)</i>

Minor Theme 2: Surgeons varied in the frequency and type of questions they asked.

Use of open ended questions	<i>"...That's, overall, the nuts and bolts of mastectomy, lumpectomy. What sort of questions do you have so far before I move on?" (7007)</i>
Use of confirmation questions	<i>"...with the lumpectomy, we're definitely going to recommend some radiation. I'll get you in to see a radiation doctor after the surgery. The lymph nodes are removed whether we do lumpectomy or mastectomy, so that doesn't matter. We take those out to make sure there's been no spread. Okay?" (7107)</i>

Minor Theme 3: Some surgeons occasionally used verbal imagery to explain complex topics.

Use of imagery to explain complex topics	<i>A train leaving the station: "These are the sentinel nodes and the whole concept of this is the cancer is like a train leaving the station that has to go to the first train stop to get to the second, to get to the third." (6076)</i> <i>Cancer growing like roots: "Lobular cancers start in the lobules of the breast, which is where milk is made and the way they grow, they tend to grow like roots through the soil. That's something growing on the breast tissues." (7109)</i>
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