Original Research Article

MDM
Medical Decision Making

Medical Decision Making
1–11

DOI: 10.1177/0272989X231164142
journals.sagepub.com/home/mdm
SAGE

Identifying Patterns in Preoperative Communication about High-Risk Surgical Intervention: A Secondary Analysis of a Randomized Clinical Trial

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Introduction. Surgeons are entrusted with providing patients with information necessary for deliberation about surgical intervention. Ideally, surgical consultations generate a shared understanding of the treatment experience and determine whether surgery aligns with a patient's overall health goals. In-depth assessment of communication patterns might reveal opportunities to better achieve these objectives. **Methods.** We performed a secondary analysis of audio-recorded consultations between surgeons and patients considering high-risk surgery. For 43 surgeons, we randomly selected 4 transcripts each of consultations with patients aged $\geq$60 y with at least 1 comorbidity. We developed a coding taxonomy, based on principles of informed consent and shared decision making, to categorize surgeon speech. We grouped transcripts by treatment plan and recorded the treatment goal. We used box plots, Sankey diagrams, and flow diagrams to characterize communication patterns. **Results.** We included 169 transcripts, of which 136 discussed an oncologic problem and 33 considered a vascular (including cardiac and neurovascular) problem. At the median, surgeons devoted an estimated 8 min (interquartile range 5–13 min) to content specifically about intervention including surgery. In 85.5% of conversations, more than 40% of surgeon speech was consumed by technical descriptions of the disease or treatment. "Fix-it" language was used in 91.7% of conversations. In 79.9% of conversations, no overall goal of treatment was established or only a desire to cure or control cancer was expressed. Most conversations (68.6%) began with an explanation of the disease, followed by explanation of the treatment in 53.3%, and then options in 16.6%. **Conclusions.** Explanation of disease and treatment dominate surgical consultations, with limited time spent on patient goals. Changing the focus of these conversations may better support patients' deliberation about the value of surgery. **Trial registration:** ClinicalTrials.gov Identifier: NCT02623335.

Highlights

- In decision-making conversations about high-risk surgical intervention, surgeons emphasize description of the patient's disease and potential treatment, and the use of "fix-it" language is common.
- Surgeons dedicated limited time to eliciting patient preferences and goals, and 79.9% of conversations resulted in no explicit goal of treatment.
- Current communication practices may be inadequate to support deliberation about the value of surgery for individual patients and their families.

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Keywords
shared decision making, informed consent, surgery, communication

Date received: October 24, 2022; accepted: February 15, 2023

The legal requirement to document informed consent has routinized this process as an essential component of surgical care.[1–5] In theory, communicating the elements of informed consent—patient understanding of disease and treatment, risks, benefits, and alternatives—would allow for greater patient autonomy. Assessment of informed consent in clinical practice has primarily focused on measuring surgeons' completion of procedural elements and patients' understanding of their disease, details of proposed treatments, and recollection of risks.[3,6,7]

Yet, communication during surgical consultation often fails to generate a shared understanding about the experience of treatment and whether surgery will support the patient's overall health goals.[8–10] Although surgeons are asked to provide patients with the information necessary to support the patient's right to self-determination,[3,5,11] surgeons and patients can experience informed consent as a perfunctory formal process, mainly focused on disclosure of risk.[3,12] Because the process is focused on information transfer, the content often does not support patients in deliberation about the personal value of surgery or prepare them for the experience of surgery and the real-life consequences of surgical complications.

Shared decision making, which aims to match treatment decisions with patient goals, theoretically fills this gap.[10,13] In practice, shared decision making often relies on describing the pros and cons of 2 or more treatment options,[14] even though patients or surgeons are frequently predisposed to 1 specific treatment strategy.[15–19] Discussing choices and options is sensible for instances of clinical equipoise (i.e., cases with 2 reasonable treatment options) but is potentially misleading in settings in which there are clear data to support one treatment. Moreover, the decision support interventions designed to facilitate shared decision making, like decision aids and question prompts, focus primarily on information exchange and rarely address the clinician-patient interaction needed to elicit, refine, and apply patient preferences.[19,20] In the setting of vulnerability due to illness and an insurmountable asymmetry of information, offering choices and describing pros and cons does not mitigate the power differential between surgeons and patients, particularly in high acuity settings.[2,21] If surgeons operationalize shared decision making as the description of options and choices, it too may fall short in helping the patient consider which treatment path makes the most sense for them.

The objective of this study was to describe the structure and content of communication during surgical consultations and evaluate how this deviates or conforms to theoretical models, specifically informed consent and shared decision making. This may provide insight into how surgeons currently situate treatment options within the context of the patient's overall health, support deliberation about whether surgery is truly worth its attendant burdens, or reveal other opportunities to improve patient autonomy.

Methods

We performed a secondary analysis of audio-recorded consultations between surgeons and patients considering high-risk surgery.[22] Conversations were audio-recorded as part of a multisite randomized clinical trial (RCT) examining the effects of a patient-mediated intervention—a question prompt list (QPL)—on patient engagement in preoperative visits. The RCT used a stepped-wedge design, in which patients were assigned to the QPL intervention or usual care based on the timing of their visit with the surgeon. Patients whose surgeons were in the intervention arm were mailed the QPL prior to their surgical consultation. There was no direct intervention on surgeon practices, and the

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QPL did not effectively change patient question-asking behavior,[23] likely due to poor adherence to the intervention. This study was approved by the institutional review boards at the University of Wisconsin–Madison; University of California, San Francisco; Rutgers New Jersey Medical School, Newark; Brigham and Women's Hospital, Boston, Massachusetts; and Oregon Health and Science University, Portland. We obtained written informed consent from all participants.

Study Participants

We enrolled 43 surgeons who regularly perform high-risk oncologic (colorectal, hepatobiliary, urologic, gynecologic, neurosurgical, or head and neck) or vascular (cardiac, neurosurgical, or peripheral vascular) surgery across 5 academic institutions. Eligible patients were 60 y or older with at least 1 comorbid condition and a potentially operable oncologic or vascular problem. Of the 446 audio recordings, we excluded recordings from the current analysis if high-risk surgery was not discussed ($n = 59$), there was a definite indicator the QPL was received by the patient (e.g., the patient mentioned the QPL; $n = 107$), Spanish was spoken ($n = 18$), more than half the audio was missing ($n = 6$), or the patient did not meet eligibility criteria ($n = 3$). Incomplete transcripts missing less than half the audio were not excluded, as typically only introductions or goodbyes were impacted. Unless it was clear from direct observation by research staff or from dialogue within the transcript that the patient had reviewed the QPL, transcripts of patients in the QPL intervention arm were eligible for selection for the current study. We then randomly selected 4 recordings, irrespective of intervention status, from each of the 43 surgeons.

Data Collection

We audio-recorded 1 consultation per study-enrolled patient, which aligned with the appointment identified by the surgeon as when they typically hold their primary decision-making conversation. We transcribed each audio-recorded conversation verbatim.

Coding

Guided by principles of shared decision making, we developed a coding taxonomy to categorize all surgeon utterances. We defined 12 domains to describe the content of the conversation specifically directed at engaging the patient in decision making about treatment (Supplementary Table S1). Specifically, we categorized an explanation of a patient's illness or a technical description of the operation or nonsurgical treatment as *Explanation of Disease* or *Explanation of Treatment*, respectively. We labeled dialogue regarding the need to make a decision or become informed as *Context*. We categorized discussion of options, including genuine or false choices, logistical choices, or patient-initiated choices, as *Options and Choices*. We labeled comparative language regarding the advantages and disadvantages of various treatment options as *Pros and Cons*. We categorized dialogue regarding the risks related to surgical treatment as *Risks of Surgery*. We categorized discussion of things to anticipate following surgery, such as pain, recovery time, or the need for further treatment (e.g., chemotherapy), as *Expectations*. We labeled an attempt by the surgeon to elicit patient preferences or values as *Preferences*. We coded an expression of partnership, sympathy, or working together as *Empathy*. We coded a treatment recommendation or discussion of future action as *Plan*. We labeled any unknown regarding the disease or treatment, an expression of a need for more information or consultation with another clinician, or the patient's eligibility for treatment as *Uncertainty*. We coded discussion related to the goals of treatment as *Goals*. In addition, we used subcodes to further classify specific content within certain domains. Specifically, both Explanation of Disease and Explanation of Treatment included a subcode for "fix-it" language (i.e., language which characterizes medical intervention as a means of addressing an isolated problem to restore normalcy).[24,25] We categorized any dialogue that did not align with one of the 12 domains, such as pleasantries, patient history, physical exam instructions, or discussion of logistics (e.g., where to find the phlebotomy laboratory), as *Other*.

We used utterances, defined here as a turn of speech by an individual, as the unit of coding. We used characters (i.e., letters, spaces, and punctuation) of speech to describe the length of an utterance. We allowed an utterance to be coded to multiple domains and estimated the quantity of content in each domain within the utterance. For utterances ≥ 150 characters, we estimated the content in increments of 25 (i.e., 1% to 25%, 26% to 50%, 51% to 75%, or 76% to 100%), with the option for overlapping content. To determine the length of each domain within an utterance in characters, we multiplied the midpoint of the percentage range by the total number of characters in the utterance. For utterances < 150 characters with multiple domains, the full utterance length was assigned to each domain.

We randomly assigned primary and secondary coders to each transcript. The primary coder categorized all surgeon utterances within the transcript according to the above taxonomy. The secondary coder reviewed the coded transcript and noted any discrepancies. All discrepancies were adjudicated by group moderation. Coders (NB, AB, EK, AZ, MS) came from surgical, public health, and education disciplines. The length and content of utterances by the patient, family, or other clinicians were not coded.

We used a Microsoft Access interface, which displayed each utterance and allowed for the selection of domains and length, for coding and group adjudication (Supplementary Figure S1).

We recorded the conversation outcome (i.e., definitely proceeding to surgery, maybe proceeding to surgery, or not proceeding to surgery) and the overall goal of treatment, as noted in the transcript, for each patient. We categorized treatment goals as to feel better, live longer, make a diagnosis, prevent a disability, cure or control cancer, or as no stated goal. As part of the primary study, each transcript was scored using the 5-domain Observing Patient Involvement in Decision-making (OPTION5) scale.[19,23]

Statistical Analysis

We summarized surgeon, patient, and transcript characteristics using descriptive statistics. We examined characteristics across all transcripts, stratified by the conversation outcome, that is, definitely proceeding to surgery, maybe proceeding to surgery, or not proceeding to surgery, and stratified by surgical indication (i.e., oncologic or vascular).

We calculated summaries related to consultation length (i.e., audio length, number of surgeon utterances, and number of characters used by surgeons in their speech) 2 ways: 1) with all utterances included to describe the entire conversation and 2) with utterances coded as *Other* removed to isolate the part of the conversation focused on making a treatment decision. We estimated minutes using the conversion 562 characters = 30 s, which was calculated using the mean speed of speech among the research team. We calculated all summaries related to content domains after *Other* utterances were removed, as this content was unrelated to the decision about whether to do surgery and was highly variable across surgeons.

To investigate the order in which the domains were introduced, we first sequenced the domains within each transcript based on the order of their first occurrence. We excluded utterances < 150 characters prior to sequencing and recurrence of a domain throughout a conversation did not factor into the sequence. We then used Sankey Network diagrams to characterize patterns in the domain sequences across transcripts. To improve readability, we combined *Context*, *Expectations*, *Pros and Cons*, and *Risks* into a single domain, *Contextual*, for the Sankey diagram. The full diagram is available upon request.

Analyses were performed with R statistical software, version 4.1.1, and SAS software (version 9.4, SAS Institute Inc., Cary, NC).

Results

We had 169 consultations for analysis, with 4 transcripts for 40 surgeons and 3 transcripts for the remaining surgeons. Among the 43 surgeons, the mean (*s*) age was 46.1 (7.9) y, 35 (81.3%) were male, 22 (51.2%) were White, and 18 (41.9%) were Asian (Table 1). The median OPTION5 score among these transcripts was 30 (interquartile range [IQR] 20, 50). The patients had a mean (*s*) age of 71.9 (8.1) y. Most patients, 137 (81.1%), were White, and 91 (53.8%) were male. Nine (5.3%) patients were in the QPL intervention arm but had no convincing evidence they had reviewed the QPL. Patients consulted their surgeon regarding an oncologic problem in 136 (80.5%) consultations, while 33 (19.5%) consultations discussed a vascular problem. Following the consultation, 100 (59.2%) patients had a plan to proceed to surgery, 53 (31.3%) were still considering surgery, and 16 (9.5%) did not plan to pursue surgical treatment.

Consultations lasted a median of 21 min (IQR 15, 28) (Table 2). Throughout the consultation, surgeons and patients/family members spoke a median of 136 (IQR 94, 199) and 134 utterances (IQR 94, 198), respectively, reflecting the turn-taking nature of clinical consultations. However, surgeons spoke a median of 2.3 (IQR 1.6, 3.6) times as much as patients and family members, as estimated by total characters. When surgeon speech coded as *Other* was removed, all remaining surgeon speech occupied an estimated median of 8 min (IQR 5, 13). The median surgeon utterance lasted an estimated 6 s (IQR 3, 11) (i.e., 110 characters [IQR 55, 215]), while the longest surgeon utterances lasted several minutes (Supplementary Figure S2).

Consistent patterns emerged across planned treatment outcomes (Figure 1). After removing content coded as *Other*, most of the conversation was taken up by *Explanation of Disease* and *Explanation of Treatment*, which consumed a median of 24.7% (IQR 13.6, 35.6) and 30.7% (IQR 23.9, 39.1) of the conversation, respectively. With modest variation, this was consistent between conversation outcomes, except in the case of conversations not leading to surgery, where 38% (IQR 24.2, 42.9) of decision-making time centered on *Explanation of Disease*. Together, *Explanation of Disease* and *Explanation of*

Table 1 Surgeon and Patient Characteristics

Surgeon (n = 43) Characteristics	
Age, y, (s)	46.1 (7.9)
Male gender, No. (%)	35 (81.4)
Race/ethnicity (self-reported), No. (%)	
White or Caucasian	22 (51.2)
Black or African American	1 (2.3)
Asian	18 (41.9)
More than 1 race	1 (2.3)
No response	1 (2.3)
Hispanic, Latino, or Spanish origin, No. (%)	1 (2.3)
Typically hold treatment decision-making conversations during, No. (%)	
First consult	34 (79.1)
Second consult	9 (20.9)
Surgical specialty, No. (%)	
Cardiac	4 (9.3)
Colorectal	8 (18.6)
HPB	7 (16.3)
Neurosurgery	3 (7.0)
Peripheral vascular	3 (7.0)
Thoracic	6 (14.0)
Urology	6 (14.0)
Gynecology	3 (7.0)
Head and neck	3 (7.0)
No. of patients per surgeon enrolled in the RCT, (s)	10.3 (3.8)
Shared decision-making score (OPTION5),[a] median (IQR)	30 (20, 50)
Patient (n = 169) characteristics	
Age, y, (s)	71.9 (7.1)
Female gender, No. (%)	78 (46.2)
Race/ethnicity (self-reported), No. (%)	
White or Caucasian	137 (81.1)
Black or African American	20 (11.8)
Asian	3 (1.8)
American Indian or Alaskan Native	2 (1.2)
Other	4 (2.4)
More than 1 race	3 (1.8)
Hispanic, Latino, or Spanish origin, No. (%)	9 (5.3)
Frequency of need for help reading material from doctor or pharmacy, No. (%)	
Never/rarely	127 (78.9)
Often/always	33 (20.5)
No response	9 (5.3)
Family member present at initial visit, No. (%)	
Yes	128 (75.7)
Intervention or control group status, No. (%)	
Intervention	66 (39.1)
Charlson Comorbidity Score, (s)	5.0 (1.9)

HPB, Hepato-Pancreato-Biliary; IQR, interquartile range; RCT, randomized clinical trial.

[a] OPTION 5 scale range is 0 to 100, with higher scores indicating greater shared decision making.

Treatment consumed more than 40% of the discussion time in 85.8% of conversations (Figure 2). Language related to “fix-it,” coded as either a subcode of *Explanation of Disease* or *Explanation of Treatment*, appeared in 91.7% of conversations, occupying, at the median, 9.3% (IQR 4.2, 16.6) of the conversation.

Surgeons dedicated less time to other content areas. At the median, after excluding content coded as *Other*, *Options and Choices* took up 10.9% (3.8, 16.3) and 9.6% (IQR 1.3, 16.4) of time in conversations not leading to surgery and undecided conversations, respectively, but made up only 2.5% (IQR 0.0, 6.7) of time in conversations leading to surgery. Across all conversations, the median length of *Pros and Cons* was 0.0% (IQR 0.0, 3.8). *Risks of Surgery* took up a median of 9.6% (IQR 2.0, 16.7) and 6.9% (IQR 0.0, 10.7) of time not coded as *Other* in conversations leading to surgery and conversations not leading to surgery, respectively, but only a median of 2.6% (0.0, 11.4) of time in undecided conversations.

In 55.0% of conversations, no overall goal of treatment was mentioned. In 24.9% of conversations, a desire to cure or control cancer was expressed without connecting this aim to an end goal for the patient (e.g., living longer or feeling better; Figure 3). These findings were consistent across conversation outcomes, with only modest variation (Table 2).

Domains frequently appeared multiple times throughout a conversation. Because surgeons moved back and forth between domains, the entire sequence of domains was highly variable across conversations (Supplementary Figure S3). However, we identified patterns in the order in which content was first discussed (Figure 4). *Explanation of Disease* and *Explanation of Treatment* appeared early in the conversations, with most (68.6%) beginning with *Explanation of Disease* and an additional 18.3% starting with an *Explanation of Treatment*. *Explanation of Treatment* appeared second in 53.3% of conversations, while *Options and Choices* followed third in 16.6% of conversations. *Preferences* were discussed first in 1 (0.6%) conversation and the earliest *Goals* were considered was third, in 3.6% of conversations.

Discussion

In 169 surgical consultations contemplating treatment with high-risk surgery, we found that surgeons allocate considerable time to describing the patient’s disease and technical details about an operation and other treatments. This content is frequently used upon initiation of a discussion about whether to pursue treatment and in 92% of conversations was coupled with language noting that surgery could in some way fix the problem. Additional content, such as the downsides of surgery (e.g., risks and pros and cons) is given less time and was often not considered until later in the conversation. Although surgeons regularly asked about patient preferences, the inquiry was cursory (e.g., “Does this make sense?”) and did not relate to a treatment goal. Moreover, considering curing or controlling cancer is a means to an end and not

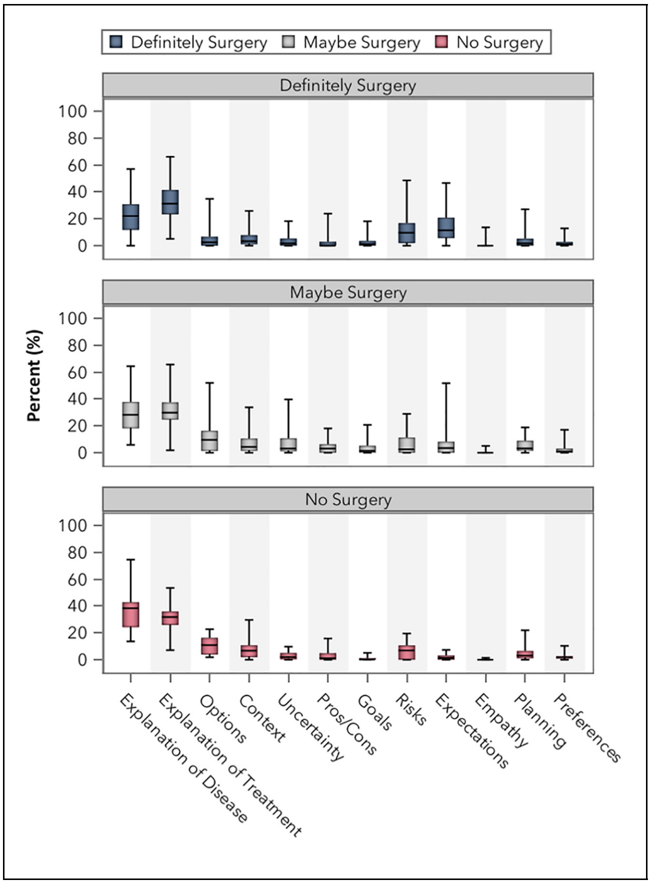

Figure 1 Percentage of surgeon speech related to each domain, calculated after content coded as *Other* was removed, within conversations resulting in a plan to proceed to surgery (n = 100), conversations which were undecided at their conclusion (n = 53) and conversations where the decision was to not pursue surgical treatment (n = 16). No outliers are displayed.

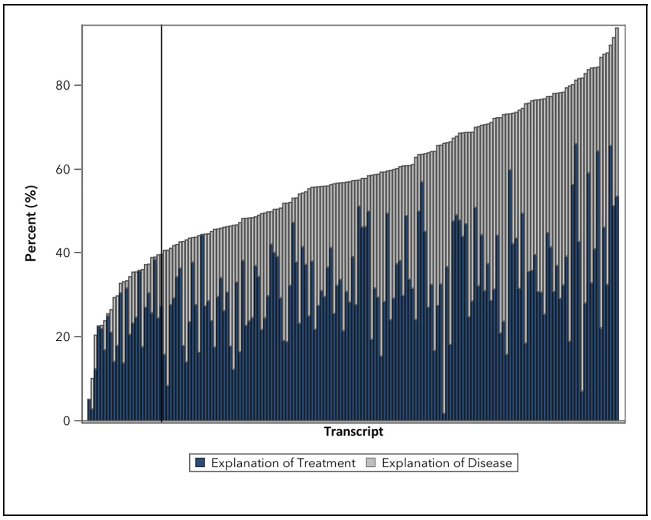

Figure 2 Percentage of surgeon speech related to *Explanation of Disease and Explanation of Treatment*, calculated after content coded as *Other* was removed, across 169 surgical consultations. Consultations to the right of the black reference line spent more than 40% of discussion time on explanation of disease or treatment.

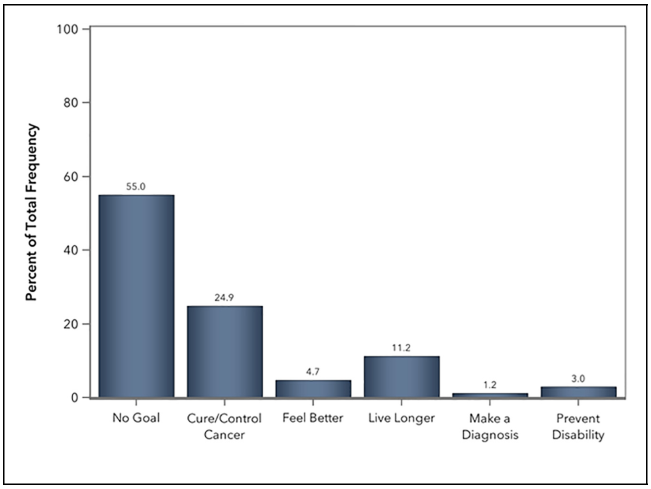

Figure 3 Distribution of overall goal across 169 surgical consultations between surgeons and patients considering high-risk surgery.

an end goal, 80% of these conversations did not explicitly describe the goal of surgery, specifically to help the patient live longer, feel better, prevent disability, or make a diagnosis. These patterns were consistent whether the conversation outcome was to proceed to surgery, was undecided, or was to forgo surgical treatment.

Our findings suggest that current communication practices may be inadequate to support deliberation about the value of surgery for individual patients and their families. Although surgeons aim to satisfy the "understanding of disease and treatment" component of informed consent through extensive description of the patient's illness and its associated operation, this technical information is difficult for patients to consume and integrate within a deliberative frame. Patients do not need to know the steps of how to do an operation to determine whether it is right for them.[26] Moreover, because the intervention is described as an opportunity to fix the patients' problem, these explanations are misleading, particularly when the goal of surgery is not mentioned. As such, the primary goal is simply to fix the problem. This both promotes surgical intervention[24] and allows patients to imagine an outcome that may not align with the surgeon's reasonable expectation of what

Table 2 Transcript Characteristics

Transcript Characteristic	All Transcripts (n = 169)	Definitely Surgery (n = 100)	Maybe Surgery (n = 53)	No Surgery (n = 16)	Oncologic (n = 136)	Vascular (n = 33)
Transcript length (without *Other*), median (IQR)						
Surgeon characters[a]	8,300 (5,700, 13,100)	8,100 (5,800, 12,800)	9,100 (5,600, 13,900)	7,000 (4,200, 13,900)	8,100 (5,600, 13,500)	8,400 (6,500, 12,200)
Surgeon utterances	42 (27, 70)	45 (30, 76)	38 (23, 63)	41 (16, 93)	42 (29, 70)	43 (20, 77)
Length of surgeon utterance (characters)	110 (55, 215)	105 (52, 206)	125 (63, 241)	107 (53, 201)	113 (56, 219)	99 (51, 199)
Transcript length (with *Other*), median (IQR)						
Surgeon characters	11,800 (8,900, 18,900)	12,400 (9,100, 19,200)	11,800 (9,100, 18,400)	9,400 (6,400, 20,300)	11,800 (8,700, 18,900)	12,700 (9,800, 18,800)
Patient/family characters	5,400 (3,400, 8,400)	5,700 (3,600, 8,300)	4,500 (3,400, 7,800)	7,200 (2,400, 1,100)	5,300 (3,400, 8,400)	5,600 (3,300, 8,300)
Surgeon utterances	136 (94, 199)	151 (105, 204)	110 (76, 164)	115 (57, 214)	131 (94, 191)	169 (96, 214)
Patient/family utterances	134 (94, 198)	151 (105, 2023)	109 (72, 163)	115 (56, 214)	130 (92, 189)	169 (95, 214)
Length of surgeon utterances (characters)	46 (17, 108)	45 (16, 103)	50 (16, 120)	47 (20, 105)	49 (19, 114)	36 (11, 86)
Surgeon/patient character ratio	2.3 (1.6, 3.6)	2.3 (1.8, 3.2)	2.7 (1.6, 4.1)	2.1 (1.1, 4.9)	2.4 (1.6, 4.0)	2.3 (1.4, 3.1)
Audio length (min)	21 (15, 28)	21 (14, 28)	20 (17, 28)	21 (11, 35)	20 (15, 28)	22 (16, 35)
Percentage of *Other*	32.3 (21.8, 42.3)	33.8 (22.5, 43.1)	31.2 (19.7, 40.2)	26.7 (21.7, 39.1)	32.0 (21.2, 42.9)	33.4 (25.0, 40.0)
Incomplete transcripts,[b] No. (%)	18 (10.7)	9 (17.0)	7 (7.0)	2 (12.5)	16 (11.8)	2 (6.1)
Overall goal, No. (%)						
No goal	93 (55.0)	55 (55.0)	27 (50.9)	11 (68.8)	73 (53.7)	20 (60.6)
Cure/control cancer	42 (24.9)	25 (25.0)	14 (26.4)	3 (18.8)	42 (30.9)	0 (0.0)
Feel better	8 (4.7)	5 (5.0)	3 (5.7)	0 (0.0)	2 (1.5)	6 (18.2)
Live longer	19 (11.2)	10 (10.0)	7 (13.2)	2 (12.5)	16 (11.8)	3 (9.1)
Make a diagnosis	2 (1.2)	2 (2.0)	0 (0.0)	0 (0.0)	1 (0.7)	0 (0.0)
Prevent disability	5 (3.0)	3 (3.0)	2 (3.8)	0 (0.0)	2 (1.5)	4 (12.1)

[a] Character values are rounded to the nearest hundred.

[b] Incomplete transcripts missing less than half the audio were not excluded.

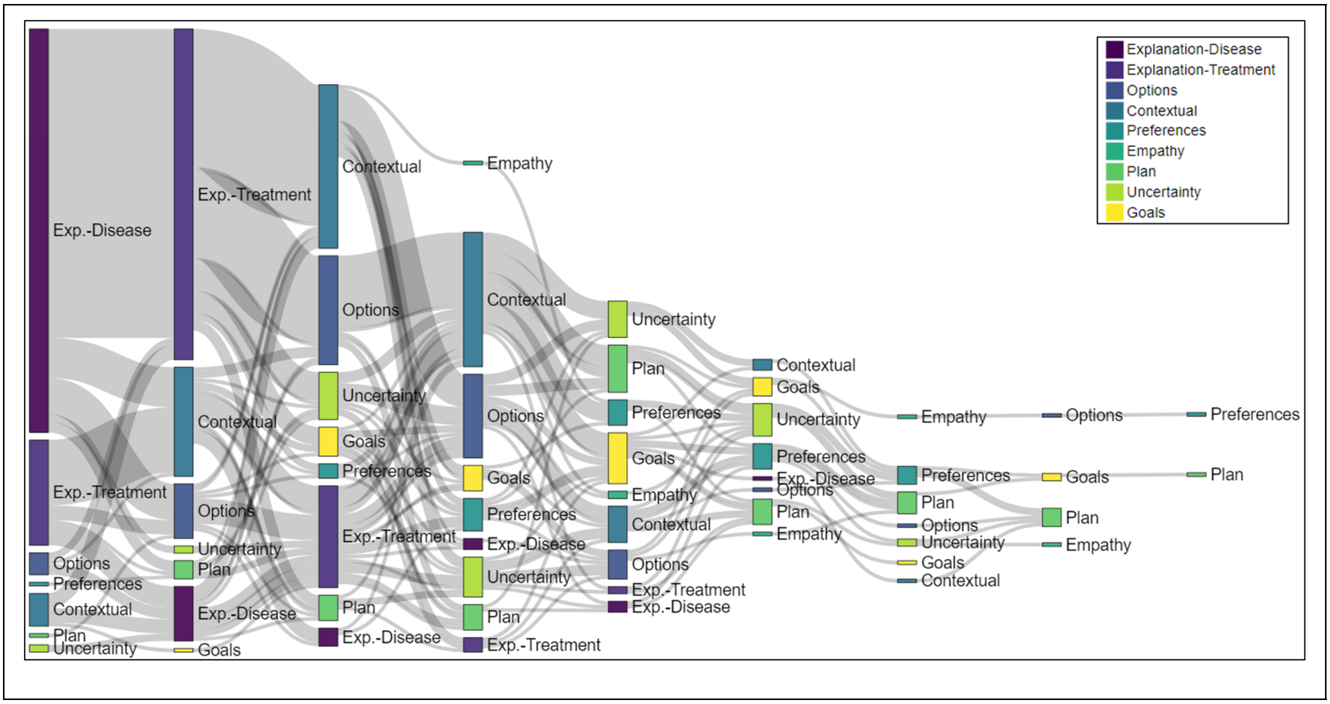

Figure 4 Sankey Diagram displaying the order content was introduced in consultations about high-risk surgery. Although most domains appeared multiple times throughout each conversation, the Sankey diagram shows only a domain's first occurrence within each conversation. The columns represent the order in which new content occurred, such that the leftmost column includes content that appeared first, and the second column represents subsequent content. The vertical space associated with a domain in each column is proportional to the number of conversations introducing that content in that position, while the height of the grey connections between columns illustrates the frequency of transitions from a given content area to another. To improve readability, we combined *Context, Expectations*, *Pros and Cons*, and *Risks* into a single domain, *Contextual*, for the Sankey diagram. The full diagram is available upon request.

is possible. "Fix-it" language also creates unrealistic expectations about the patient's postoperative return to normalcy and confounds the difference between the technical aspects of what can be done and whether it will benefit the patient.[25,27,28]

Considering the limited time available for surgical consultations, time dedicated to explanations of disease or treatment erodes the time available for substantive deliberation. Most surgeons devoted more than 40% of time, and often much more than that, to these details, inundating patients with information that is difficult to engage with, particularly when technical language is used.[25] Previous research reveals that patient recollection of technical details is low, especially among older adults,[3,7,29] suggesting this information is unlikely to support any decision-making rationale beyond the consultation. Lengthy surgeon utterances compound the problem, potentially making it more difficult for patients to comprehend or participate. The longest utterances in our study, which lasted several minutes, often contained technical explanations of physiology, anatomy, and surgical technique. Surgeons may conduct consultations in this manner because they feel that these technical descriptions promote trust, demonstrate expertise, or are simply expected by patients. However, instead of promoting deliberation, these explanations are likely difficult to follow, especially for patients who are scared and sick.

Surgeons typically engaged patients and families in preference elicitation with nonspecific inquiry, for example, asking "Any questions?" or "Does this make sense?" These simple questions both fail to effectively check understanding and fall short in determining whether surgery is "worth it"; that is, do the potential benefits of surgery outweigh the burdens? Coupled with a lack of clarity about the goal of treatment, patients and families will struggle to generate a deliberative model that allows them to consider and justify their individual treatment plan. Moreover, on the heels of a long technical description, they may feel lost and unsure about what questions to ask. To support deliberation, surgeons need to encourage patients to compare the goals of surgery to its downsides and pose explicit questions about the treatment burdens they are willing to bear.[30] This would provide space to acknowledge that patient preferences may not align with the surgeon's predilections or typical pathways and, when surgery is pursued, would allow patients and surgeons to confirm the treatment goals are aligned with the patient's health priorities and tolerance for the burdens of surgery.[31]

To address these problems, a novel framework for surgical consultations is warranted. For surgeons, discarding descriptions of disease and treatment and prioritizing deliberation could be accomplished with explicit statements about treatment goals and a more detailed description of the experience of surgery. For patients and families, strategies for active participation include asking questions like, "Will surgery help me feel better?" or "Will surgery help me live longer?"[32] which may be particularly useful when surgeons are mired in technical details. For scientists who study decision making and communication, efforts to evaluate and measure how theoretical models play out empirically in clinical practice are needed. OPTION5 is a useful measure of shared decision making, yet surgeons generally score higher than nonsurgeons[19,33–38] despite clear gaps in communication, missed opportunities for deliberation, and a significant quantity of content that is useless for decision making. Although consultations between clinicians and patients vary greatly (a significant measurement challenge), novel strategies using direct observation with the ability to quantitate content and compare critical elements of communication are necessary for feedback and improvement.

Our study has both strengths and limitations. We include a large number of surgeons from multiple sites across the United States and quantify content not previously characterized. To reduce the potential for bias introduced by transcriptionist variation, we provided instruction on common filler words and conducted quality control. However, there is residual variation in spelling, punctuation, and phrasing, which influence utterance and character counts. Although we chose to use utterances as the unit of analysis to better capture natural speech patterns, this decision may have affected results, as utterance length is affected by idiosyncratic patient or family interjections. Moreover, given natural overlap, it is not feasible to quantitate each domain with extreme precision, so we approximated the percentage of the domain with each utterance coded and allowed domains to overlap. Speech rate is inherently variable across individuals, and we did not time each utterance as the audio recordings were destroyed after transcription, so utterance lengths reported in minutes are estimates based on the average speed of speech among members of the research team. Coders used patient and family utterances for context related to surgeon utterances, but coding patient or family utterances was beyond the scope of this project. Finally, we could not investigate patient and family member perspectives regarding the specific content of surgeon communication described herein, as this information was not collected as part of the original study.

Conclusion

Surgeons prioritize patients' understanding of their disease and surgical treatment while dedicating insufficient time to establishing treatment goals and preparing patients for the experience of surgery. Shifting the focus of these conversations may allow surgeons to better support patients' deliberation about the value of surgery.

Authors' Note

This work was presented at the American College of Surgeons Clinical Congress 2022: Stalter, L. N., Baggett N. D., Hanlon, B. M., Buffington, A., Kalbfell, E. L., Zelenski, A. B., Arnold, R. M., Clapp, J. T., Schwarze, M. L. (2022, October 17). Patterns in preoperative communication about high-risk surgical intervention [Oral presentation]. American College of Surgeons Clinical Congress, San Diego, CA, United States. De-identified data, analytic code, and study materials are available upon request from the corresponding author (please e-mail schwarze@surgery.wisc.edu).

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Supplemental Material

Supplementary material for this article is available on the *Medical Decision Making* website at http://journals.sagepub.com/home/mdm.

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