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Decision-Making under Clinical Uncertainty: An in-depth Examination of Provider Perspectives on Adjuvant Chemotherapy for Stage II Colon Cancer

Rachel C. Shelton, ScD, MPH^a, Laura E. Brotzman, MPH^a, Danielle M. Crookes, MPH^b, Patrick Robles, MPH^a, and Alfred I. Neugut, MD, PhD^b

^aDepartment of Sociomedical Sciences, Columbia University Mailman School of Public Health, New York, USA

^bDepartment of Epidemiology, Columbia University Mailman School of Public Health, New York, USA

Abstract

Objective: Decision-making about adjuvant chemotherapy (ACT) for stage II colon cancer is complex, particularly in light of clinical uncertainty regarding treatment benefits. Little is known about provider communication and factors influencing decision -making and recommendations in this setting.

Methods: We recruited providers from six US cancer centers and hospitals who care for stage II colon cancer patients. Providers participated in a 30–45 minute interview. Transcripts of interviews were coded for qualitative analysis.

Results: We interviewed 42 providers (Oncologists: 52%; surgeons: 24%; nurses: 14%). Though most providers were aware of stage II colon cancer treatment guidelines, their use and communication of recommended guidelines was limited. Most reported tailoring delivery and content of their communication, often based on perceived patient education level, but patient involvement varied. Findings highlight the complexity of, ACT decision-making, including the central role of providers and family members.

Conclusions: Providers are not consistently following recommended guidelines for communicating about ACT among stage II colon cancer patients or eliciting patient preferences for involvement in treatment decisions.

Practice Implications: Given clinical uncertainty surrounding use of ACT for stage II colon cancer, efforts are needed to enhance guideline implementation, provider education, and communication to facilitate decision-making.

Corresponding author at: Rachel C. Shelton, Columbia University Mailman School of Public Health, Sociomedical Sciences, 722 W. 168th Street, New York, NY 10032, USA, rs3108@cumc.columbia.edu, Phone: (212) 342-3919.

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Keywords

colon cancer; cancer treatment; decision-making; stage II; providers; guidelines; chemotherapy; provider communication

1. Introduction

Adjuvant chemotherapy (ACT) improves average disease-free and overall survival among stage III colon and stage II and III rectal cancer patients.[1, 2] However, benefits of ACT among stage II colon cancer patients continues to be debated, and nearly a quarter of stage II patients will have recurrence.[3] Controversy in this area stems from inconclusive clinical trial results,[4–6] many of which have been insufficiently powered to detect treatment benefits among stage II patients[7, 8], and challenges identifying which patients benefit most from ACT based on clinical risk features.[9]

Reviews of clinical trials among stage II colon cancer patients indicate ACT may improve disease-free survival, but does not appear to significantly improve overall survival,[4, 10, 11] with absolute survival benefits of 2 to 5% at 5 years.[10, 12, 13] Further, studies indicate overall survival benefits of ACT in stage II patients may depend on pathological risk features;[14, 15] ‘high-risk’ patients have shown significant overall survival benefits, but ‘low-risk’ patients have not.[15] Additionally, in multiple trials, the relative benefit of chemotherapy is similar for stage II and III patients (15–20% relative risk reduction;[16]). Even with evidence of the benefit of ACT among higher risk stage II patients, clinical trials fail to unequivocally demonstrate improvements in disease-free survival and absolute survival when stage II patients are considered as a uniform group.[17]

In light of this controversy, guidelines from the National Comprehensive Cancer Network (NCCN) recommend providers discuss risks and benefits of ACT, evidence and morbidity associated with treatment, ‘high-risk’ characteristics, and patient preferences with all stage II colon cancer patients.[18] While current guidelines from the American Society of Clinical Oncology (ASCO) do not support the routine use of ACT among this population, the guidelines specify chemotherapy is an appropriate consideration for discussion in consultations with all medically fit stage II colon cancer patients,[4, 19] particularly those with ‘high-risk’ features (e.g., obstruction, perforation, poorly differentiated histology, lymphovascular invasion, T4 disease, inadequate lymph node sampling).[4, 10, 12] ASCO guidelines also emphasize the importance of eliciting patient preferences and involvement in the decision process.[4, 19] These U.S.-based clinical guidelines are consistent with those used internationally for this patient population [20, 21].

Prior research among patients across a range of cancer types suggests provider communication can have an important influence on treatment decisions and patient outcomes, including anxiety and depression,[22] quality of life (QOL),[23] healthcare satisfaction, decisional regret, and adherence.[22–25] This is important, as studies suggest patient and provider perspectives on treatment decisions may differ, including risk/benefit trade-offs and what information is perceived to be critical to the decision.[26–28] There has also been a movement toward shared decision-making (SDM) in medicine, where providers

and patients participate collaboratively in the decision-making process[29, 30]. SDM is considered integral to patient-centered care and patient engagement.[31, 32] Further, research suggests patients want their preferences considered [33] and to be actively involved in the cancer treatment decision-making process.[34–37] Patient involvement in treatment decisions and perceived decisional control has been shown to improve satisfaction with the decision and treatment,[29, 38, 39] and is associated with favorable physical and psychological health,[40–42] better quality of care,[25] and improved QOL.[35]

Despite some research suggesting patients in the context of colorectal cancer prefer a shared role in the treatment decision-making process,[43] the extent to which patients are involved in adjuvant treatment decision-making for colon cancer is unclear.[44] Little is known about provider perspectives on treatment decision-making for use of ACT among stage II colon cancer patients. This study uses in-depth interviews to examine: 1) provider understanding and use of clinical guidelines for stage II colon cancer patients; 2) provider communication of guidelines; and 3) provider perceptions of patient and provider roles in treatment decision-making for stage II colon cancer. We focused primarily on providers who are central to clinical consultations and treatment decision-making for stage II colon cancer patients, namely medical oncologists and surgeons.

2. Methods

2.1 Recruitment

We recruited providers from major academic cancer centers and hospitals between 2012 and 2016. Participants were recruited from six academic medical/healthcare and cancer institutions in predominately urban areas on the East Coast of the U.S., including NYC (n = 3), Buffalo, NY (n=1), Miami (n = 1), and Richmond, VA (n = 1). Recruitment initially took place through Columbia and Sinai institutions, where study investigators were based, and additional institutions and providers were added through snowball sampling, based on the recommendation of providers interviewed and study team members.

Providers were eligible to participate in the study if they were: (1) an actively practicing health care provider who interacted with or participated in the care of stage II colon cancer patients; (2) were English-speaking. The majority of providers across sites (76%) were recruited between 2012 and 2014, with 71% percent in 2012 and 2013. Additional participants were recruited until 2016 as new providers were hired at participating institutions. Providers were initially identified through medical center websites, listservs, and peer recommendation. Providers were either contacted in-person at colon cancer tumor board meetings at local institutions, or by telephone or email based on recommendations from other providers and study team members. Of note, we initially focused on recruiting oncologists and surgeons, given the literature and our pilot research suggesting they were key providers involved in treatment decisions for stage II colon cancer patients; however, during the course of the study, nurses, physician's assistants, and pathologists were included at the recommendation of providers. At each site, we attempted to interview all oncologists and surgeons who focused on colon cancer, supplemented with the perspectives of other care team members to ensure a comprehensive understanding. Response rate was high, with only six refusals from providers approached. The study was conducted with institutional review

board approvals from Columbia University's Mailman School of Public Health and Mount Sinai Icahn School of Medicine.

2.2 Data collection

Data was collected using 30–45 minute qualitative interviews. Interviews were conducted by telephone, unless the participant requested the interview be conducted in-person (10% of interviews). Informed consent was obtained for all interviews. In-depth interviews were conducted by two trained research assistants with experience and training in qualitative research. Open-ended questions and subsequent probes (See Appendix for interview guide) were asked of participants, following recommended guidelines for qualitative research [45, 46]. For example: Tell me more about how you involve stage II colon cancer patients in decision-making for ACT. What do you know about the guidelines for communicating with stage II colon cancer patients about ACT? Participants were compensated with \$20 gift cards. Interviews were transcribed verbatim from audiotapes, and used for qualitative analysis. An iterative approach was taken to data collection and analysis, with initial coding of interviews taking place during data collection; we ceased to conduct interviews once thematic saturation had been reached (e.g. no new codes developed and no new themes identified).

2.3 Data analysis:

Analyses were guided by thematic content analysis [45, 47] to identify content-related codes, thematic groupings, and illustrative quotes. Dedoose software [48] was used to facilitate coding, data management, and collaborative analysis. Transcripts were read independently by three members of the research team (PR, LEB, RCS) trained in qualitative methods, and a list of general domains and codes were initially developed based broadly on interview topics (e.g. shared decision-making). Team-based codebook development guidelines were followed [49], and an iterative approach was taken in which the coding scheme remained flexible to accommodate the expansion of codes. The final codebook was applied to the data and transcripts were analyzed systematically using line-by-line analysis. To ensure reliability of the coding process, each transcript was analyzed by at least two coders (LB, PR, or RS), and consensus meetings were held to reach agreement on coding. Any inconsistencies in coding were reviewed and resolved by the first author (RS).

3. Results

3.1 Sample characteristics

We interviewed a total of 42 providers (see Table 1). Medical oncologists (55%), surgeons (24%), and nurses (14%) were the most common provider types. Provider experience ranged from <1 to 36 years, with a mean of 11 years (median: 8; SD: 10.3). Most providers were white (69%) and male (62%). The mean age of the provider sample was 43 years (median: 40; SD: 10.3).

3.2 Qualitative themes

Key themes provided insight into provider understanding of guidelines, provider communication, and factors that shape treatment decision-making for use of ACT among stage II colon cancer patients. Quotes are provided below and in Table 2.

3.2.1 Consensus on clinical uncertainty in the context of stage II colon cancer

Providers were consistently aware of the controversy surrounding the use of ACT for stage II colon cancer patients. Most perceived that the controversy reflected a lack of evidence and data to inform clinical practice, emphasizing the inconclusive or “contradictory” nature of available literature. There was variation in provider perceptions of what shaped this clinical uncertainty. Some providers believed “there is probably a benefit but it just hasn’t been entirely proven to the point where it’s frequently used” (*oncologist*), while others hesitated to recommend ACT for any stage II patients without definitive data. According to one *surgeon*: “You are talking about a situation where there is no science that chemotherapy does any good in patients with stage II colon cancer”. For others, the lack of consensus reflected the uncertainty involved with practicing medicine or treating cancer more generally. One *oncologist* stated: “I don’t find [stage II colon cancer] that much different than a lot of other areas of oncology where it’s not completely certain what the treatment course should be.” Providers agreed that this uncertainty leads to varying interpretations of pathology, risk benefit analysis, and treatment recommendations, and some noted that this uncertain clinical context requires input from both patients and providers.

Although infrequent, it is important to note there was some skepticism among a few surgeons in particular who questioned the motives of companies or providers in recommending ACT. One *surgeon* explained: “My perception about that is that the drug companies are trying to push chemotherapy in a stage II patient when there is no data that shows that it does any good.”

3.2.2 Variable knowledge and use of recommended stage II national guidelines

In light of this clinical uncertainty, the majority of providers reported being aware of either the ASCO or the NCCN guidelines for communicating with stage II colon cancer patients to inform treatment decisions.

Although most providers were aware such guidelines existed, detailed knowledge and reported use of guidelines in clinical practice varied tremendously. Some providers report “living and breathing” the guidelines. One *surgeon* explained: “I helped write the guidelines for colorectal...the NCCN guidelines are things I live and breathe.” However, others questioned their validity entirely due to variation across guidelines. According to one *oncologist*: “I am gradually reviewing the guidelines and what I am learning is that everybody has got different guidelines”. Few other providers expressed concern that current guidelines do not reflect the most recent data. One *oncologist* shared: “I think the guidelines are falling behind the level of data we have”. Despite differences in reported use, most providers agreed that due to uncertainty regarding the benefits of ACT for this patient population, guidelines are important to help patients understand treatment options and to help providers make the most appropriate recommendation.

3.2.3 Strategies for communicating clinical uncertainty—Most providers reported that discussing the uncertainty of ACT benefit with patients was necessary but challenging. Providers felt that patients expect them to “know what is best” (oncologist). Oncologists often reported acknowledging the uncertainty of the benefits of treatment with patients. However, surgeons in particular, reported not discussing clinical uncertainty with patients; one stated: “there is no science that chemotherapy does any good in patients with stage II colon cancer...I tell them it’s not necessary.”

Providers detailed varying strategies to communicate this uncertainty. Some providers discussed changing their communication strategies based on their perception of the patient’s education or literacy level, such as drawing pictures, using images, and providing online decision support tools to facilitate patient understanding, particularly among those with perceived lower levels of understanding. To communicate the risks and benefits associated with treatment options, some providers felt it was best to use words (not numbers), while others described using a mix of words and numbers. Very few providers felt numbers were the best way to communicate risk and benefits of treatment. An oncologist explained:

I’m not a big fan at throwing numbers at patients...So I’ll say...big studies with thousands of patients like you don’t show a benefit overall to chemotherapy, but that doesn’t mean that any one individual patient won’t benefit from chemo. And, there are certain features about your tumor that makes me worried enough...that you might be someone on an individual level who would benefit from chemotherapy even though on average all the stage II’s put together don’t benefit.

Regardless of strategies used to discuss patient prognosis, almost all providers explained that communicating with stage II patients required a *tailored conversation*. One nurse practitioner explained: “we are meeting them for the first time... we really do try to get a handle on how much they understand and what they feel, what they can tolerate.” Most providers reported putting substantial effort into ensuring that patients understand they are making a decision based on imperfect data.

Providers also identified *communication barriers* and *facilitators*. Patient knowledge and expressed interest in understanding treatment options were identified as key facilitators of patient-provider communication and decision-making involvement. Conversely, low health literacy/education, language differences, and medical mistrust were common barriers. Patient education-level was commonly discussed. Providers perceived that less educated patients required careful explanation and were less likely to want information about the prognosis or to take part in decision-making. Several providers reported that less educated patients not only have more difficulty understanding what ACT is, but also why they need it. According to one oncologist:

Education is a huge barrier...[If] they have very limited understanding of cancer and what chemotherapy is the discussion goes very differently, than [with] a very educated person...Frequently patients come to you...saying, ‘The surgeon said that this went great... they got it all,’ they said. They don’t understand what recurrence is or how it’s possible, if [after surgery] it was all gone.

3.2.4 Complexity of decision-making There—There was variability in the extent to which patients were involved in the treatment decision-making process. When the decision was predominantly made by the patient, providers explained it can be because the patient wants to make the decision independently, or because the providers feel their job is to provide the patient with options, but ultimately it is the patient’s decision. For example, an oncologist explained some patients are very involved and “want to have all the information and then they will go back to the families or to the other consultants...go over the recommendations and they will make a decision.” Many providers describe the patient-led decision being encouraged by the clinical care team. For example, a surgeon describes:

To be honest to you I think patients have to make their own decisions and I think my role is to provide them with enough information to make the decision...I can help, guide them, I can give them information so that they can make the decision themselves and I can tell them what I would do if they ask me that...but ultimately they make the decision themselves.

Some providers also explain how clinical uncertainty encourages patient-led decisions: “I personally am less comfortable with bearing too much of the decision-making myself because the data is not good [for stage II disease]” (oncologist).

On the other hand, providers explain that uncertainty surrounding treatment decisions for stage II may deter patients from involvement: “All of that uncertainty is for many patients uncomfortable, I think, it has lot to do with what they expect and what they want from doctors” (oncologist). Many providers felt it was common for patients to rely entirely on provider recommendation and decision: “They say why don’t you just tell me what to do now?” which “makes it tougher because that becomes a barrier to getting the patient involved in the decision-making process” (oncologist). However, most providers still made an effort to inform and involve patients, while also giving them their recommendation. For example, an oncologist explains, “if [the] patient says that they don’t want to be involved, I still give them what I feel [is] essential information before anybody would be taking chemotherapy about some of the benefits and risks and then I will give my recommendation.”

Family involvement in the decision-making process was reported as common by providers, largely described as positive and helpful support (social, emotional, and instrumental) for patients, but also an adding complexity of communication in the clinical context. A few providers explained that family members may try to limit information discussed. For example, a surgeon explained: “Sometimes the family doesn’t want me to tell the patient they have cancer”, which can compromise provider communication. Furthermore, though oncologists were often perceived to be the key contact regarding ACT treatment decisions, it was acknowledged that surgeons, nurses, and physician assistants may also be involved, also increasing the complexity of the decision-making process.

4. Discussion and Conclusion

4.1 Discussion

The present study is the first study to use an in-depth qualitative approach to understand the perspectives of providers (primarily oncologists and surgeons) who are central in influencing chemotherapy treatment decisions for stage II colon cancer patients, including their understanding and use of clinical guidelines, communication of guidelines, and perception of patient and provider roles in decision-making. There was consensus among providers about the clinical uncertainty of the use of ACT among stage II colon cancer patients. However, our findings suggest that publishing clinical communication guidelines in this area is not sufficient for such guidelines to be implemented widely, as providers are not consistently following specific guidelines in place for communicating the benefits and risks of ACT. Variable knowledge and use of recommended guidelines for what should be discussed with stage II colon cancer patients suggests that the individual clinical judgment of providers may be more influential than clinical practice guidelines, as has been found in the literature.[50] We also found there may be some skepticism of the existing data and guidelines on the part of surgeons, which should be further explored. To our knowledge, this is the first study to examine perceived use and knowledge of these guidelines in the context of stage II colon cancer.

Most providers reported tailoring the delivery and content of their communication with patients. Patient knowledge and expressed interest in treatment options were key facilitators of communication, and perceived education level, language differences, and medical mistrust were reported barriers, consistent with the broader literature on patient-provider communication and cancer treatment decisions.[51, 52] Emphasis on patient education level as a barrier in patient involvement is consistent with other studies, which find less educated populations report less involvement in treatment decision-making [53, 54], due to limited understanding of clinical information, or lack of lower literacy or numeracy decision-making resources.[55, 56] Of some concern, providers seemed to be making assumptions regarding patient education or literacy level, without objective information or assessment, limiting deliberate efforts to involve and communicate with patients. Previous research has found patient involvement in treatment decisions to be limited when providers fail to communicate treatment risks and elicit patient preferences [57, 58]. Testing strategies to improve provider communication about risk, treatment options, and elicitation of patient preferences should be a priority, particularly among less educated and low-literate populations.

Providers were variable in the extent to which they involved patients in treatment decision-making. Although most providers responded positively to the idea of SDM, findings indicate preferences among patients and provider-reported barriers may limit their engagement in SDM in practice. Further, involvement of family and input from multiple providers adds another layer of complexity to decision-making [59–61]. Current conceptualizations of SDM models may be simplistic and ignore patient/provider power dynamics and the role of the family, particularly in cases of high clinical uncertainty. This is consistent with a recent study on SDM among colon and pancreatic cancer patients [62] that found patient and provider perception of patient involvement differs, and suggests collecting data on the

perceptions of each party involved in decision-making to evaluate the quality of SDM. Recently the TRIO framework was introduced, recognizing cancer treatment decision-making as a continuum of influence among patient, provider, and family members. [63] Though a promising start, more in-depth data on the content and context of clinical consultations is needed to understand and improve optimal decision-making from the perspective of all stakeholders. Given that there are other contexts in which chemotherapy treatment decisions are preference-sensitive, [64] it is important for future research to investigate use of SDM in situations with high clinical uncertainty when treatment decisions are made based on patient or provider preference rather than strong clinical evidence. Recording clinical encounters and investigating patient, provider, and family member perspectives and communication will be critical in advancing understanding of decision-making dynamics.

Several limitations should be acknowledged. First, this study focuses only on the provider perspective in the treatment decision-making process, and through we included several nurses, fellows, and physician assistants, findings primarily reflect oncologist and surgeon perspectives. Further research assessing patient perspectives is critical, and we will be analyzing and publishing patient data that was also collected as part of this study. In addition, findings are primarily generalizable to providers at academic centers in predominately urban areas, and may not reflect community or rural provider perspectives or practices, which may differ. Finally, we recognize that the time period for data collection was longer than ideal, given that new providers and sites were added over the course of the larger study; however, the recommendations for what should be communicated to patients did not change during this time period. Strengths should also be recognized. This study includes provider perspectives from a range of cancer care team roles and specialties, including surgeons, oncologists, nurse practitioners, physicians assistants, and fellows. We had a large sample of providers from six academic medical and cancer institutions in urban areas and a rigorous qualitative analytic approach. This study is one of the first to examine provider perspectives on treatment decisions specifically among stage II colon cancer patients, which sheds light on treatment decisions under high clinical uncertainty. These findings also contribute to research on the perceived role of providers in SDM processes for cancer treatment, and indicate a notable gap between recommended guidelines and clinical practice.

4.2 Conclusion

Given the critical role that providers play in shaping patient treatment decisions, this study helps identify key areas in which research and translational clinical efforts are needed to enhance provider education, patient-provider communication, and patient involvement in the decision-making process among stage II colon cancer patients.

4.3 Practice Implications

Several important practice implications that follow. First, it may be important for providers and practitioners to revisit assumptions about the use and dynamics of SDM models in the context of heightened clinical uncertainty, when decisions are preference-sensitive rather than evidence-driven, as in the case of stage II colon cancer. In particular, it is not only the

provider that shapes this decision, but the team of providers or multiple providers when patient receive 2nd opinions, as well as family members and caregivers. As such, it is critical to understand their influence and perspectives, and recognize that decision-making is rarely dyadic. Second, practitioners and providers should consider and test varied strategies for education and communication with patients and their families about the uncertain risks and benefits of chemotherapy for this patient population, particularly those with low literacy and lower educational levels. This may include visual strategies and other opportunities for communicating uncertainty. Providers also need further training and education on how to communicate with patients under high clinical uncertainty, particularly given that provider influence and recommendation can be powerful in the absence of strong clinical evidence. Finally, it will be important that implementation strategies are tested in diverse real-world settings that help facilitate provider understanding and use of guidelines for communicating risks and benefits of chemotherapy, as our research indicates that simply publishing such guidelines is insufficient.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Highlights

- Current shared decision-making models don't account for complexity of process
- Efforts needed to improve provider communication for uncertain treatment decisions
- Strategies are needed to enhance guideline implementation in clinical practice
- Decision-making dynamics and role preferences vary for patients and providers
- Qualitative interviews provide in-depth insight into treatment decision-making process

Table 1.

Demographic Characteristics (N=42)

		n (%)
Gender	Male	26 (62)
	Female	16 (38)
Age (years) <i>Mean = 43; SD = 10.3</i> <i>Median: 40</i>	28–39	19 (45)
	40–59	15 (36)
	60–65	6 (14)
	Unknown	2 (5)
Race	White	29 (69)
	Black	2 (5)
	Asian	5 (12)
	Other	6 (14)
Hispanic	Yes	5 (12)
	No	37 (88)
Years In Practice <i>Mean = 11; SD = 10.3</i> <i>Median: 8</i>	<1 – 4	15 (36)
	5 – 9	9 (21)
	10 – 19	7 (17)
	20 – 29	6 (14)
	30 – 39	4 (10)
	Unknown	1 (2)
Type of Provider	Medical Oncologist	23 (55)
	Nurse	6 (14)
	Surgeon	10 (24)
	Physician Assistant	1 (2)
	Pathologist	1 (2)
	Surgical Oncologist	1 (2)
Recruitment Site	(NY) Columbia University New York Presbyterian Hospital	11 (26)
	(FL) Miami Cancer Institute	8 (19)
	(NY) Memorial Sloan Kettering Cancer Center	1 (2)
	(NY) Mount Sinai	14 (33)
	(NY) Roswell Park Cancer Institute	6 (14)
	(VA) Virginia Commonwealth University Cancer Center	2 (5)

Table 2.**Key Themes and Illustrative Quotes**

Theme and Subtheme	Quote
Consensus on clinical uncertainty	
<i>Provider perception</i>	<p>(Oncologist) There's really a lack of very good data to guide treatment. So, the personal judgment of the physician and the preferences of the patient have to be taken into consideration when you don't have very clear evidence-based guidelines to follow.</p> <p>(Surgeon) it's stage two colon cancer... such a mixed bag that I think hard to get into a very specific discussion about what the risk and benefits are. I tried to as the best I can, but it's often a multidisciplinary decision. I would certainly recommend all patients that seek consultation with the medical oncologist.</p> <p>(Oncologist) In 10 years it may be totally different, we will have more tools. Some patients that we treat now we wouldn't treat in 10 years. Some patients we don't treat now we would treat in 10 years</p>
Variable knowledge and use of stage II guidelines	
<i>Knowledge of guidelines</i>	(Oncologist) in the setting of not having perfect data, that's where we go to guidelines
<i>Use of guidelines</i>	(Surgeon) We do follow NCCN guidelines you know, as a whole. I think there are some people that fall off that algorithm and those recommendations based on you know, individual issues or problems... we do use NCCN as... kind of what algorithm to use in managing these patients.
Strategies for communicating clinical uncertainty	
<i>Tailored conversation</i>	<p>(Oncologist) Some patients want to know more, some patients don't ...So, initially I would go with the words. I'm trying to figure out how number oriented they are. And then I ask them whether they would want to know the absolute benefit. And get into a sort of detailed numbers. But there is a minority who just don't really want to get into details and numbers. They just feel like, if there's a benefit and then I just tell them that yes there is an overall survival benefit.</p> <p>(Surgeon) In general, I don't answer or respond to their questions directly. I just reorient them to what my evidence based recommendation is.</p>
<i>Barriers & Facilitators</i>	<p>(Oncologist) The biggest barrier we have is language... If I am talking through an interpreter, I don't feel like I am quite getting it across as comfortably, or I am not confident, as I am getting it across to someone who speaks English.</p> <p>(Nurse Practitioner) A lot of times the surgeon will say I got it all, and that is what it is in their mind and so when they come into the oncologist they can't for one second understand why they got it all does not equate to there is no cancer.</p>
Complexity of shared decision-making	
<i>Patient-led</i>	(Oncologist)To be honest, I think patients have to make their own decisions and I think my role is to provide them with enough information to make the decision... I can help, guide them, I can give them information so that they can make the decision themselves and I can tell them what I would do if they ask me that... but ultimately they make the decision themselves.
<i>Shared decision</i>	<p>(Oncologist) I tell them that you know it is recommended by the cancer guidelines that if we are going to be talking about it, that it should be a joint decision and you know, try to give them a sense of what the risk and benefits might be.</p> <p>(Surgeon) I think patients give you a very clear goal and expectation as to what they will accept and what they won't accept. But I prefer to give them the facts as to what I tell the risk is, before they give me their wishes.</p> <p>(Oncologist) I need to know their MSI, I also then look at their pathology. So I look for t4 disease, lymphovascular invasion, how they present it initially, whether or not they present it with obstruction or perforation. I look at the number of lymph nodes, samples and whether or not we're dealing with the high grades tumor. After presenting the pathology, and what makes them high or low risk, I give them my opinion on whether or not they should receive chemotherapy and we discuss what their wishes are.</p>
<i>Family involvement</i>	<p>(Oncologist) Sometimes, I have the family members step out while I examine the patients and then I talk to the patient. Usually, it's fine to talk to them all together, but then I just want to make sure that the patient is okay with what we are doing.</p> <p>(Surgeon) If for whatever reason there is no family member there and it's older patients let's say or Spanish speaking older patient and I feel that the patient is now at risk for noncompliance because I feel [the patient] just didn't get it, then I will reach out to the family</p> <p>(Oncologist) You try to know the patient...Understand the patient's social and family support system. Because those are the things that I cannot read on the chart</p>