IDENTIFYING THE NEEDS OF

Multidisciplinary Team Treating Geriatrics Cancer Patients

Results from a Robust Needs Assessment Plan to Identify Gaps in Care at the Academic and Community Settings

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Abstract:

The objective of this initiative was to identify gaps in oncology clinicians' knowledge, competence, and performance with respect to treatment of geriatric patients with cancer, whether in an academic medical center or community setting. Methods included a review of the literature; a series of in-depth, 60-minute telephone interviews with oncology clinicians (physicians, nurses, nurse navigators, pharmacists); and a 55-question survey for medical oncologists focusing on case scenarios. The study revealed five key gaps in achieving optimal care of the geriatric cancer patient: (1) Need for more specific guidance in developing treatment plans for patients with cancer and comorbidities; (2) Underutilization of tools to assess function, cognition, and support services; (3) Lack of compliance to medication regimens; (4) Lack of communication between oncology clinicians and primary-care clinicians; and (5) A need to understand that goals of treatment as defined by geriatric cancer patients may differ from those of younger patients. The results are intended to serve as a springboard for designing continuing medical education programs to help bridge gaps in knowledge and practice performance. Participants demonstrated a strong desire to increase their competence and a readiness to change practice patterns to help improve the quality of care for the geriatric patient with cancer.

Keywords: geriatrics; oncology; cancer; needs assessment; elderly; oncologists; education

1. Introduction

This needs assessment aims to increase the awareness and understanding of the practice performance gaps in optimal care among multidisciplinary clinical team members engaged in the treatment of geriatric patients with cancer at academic medical centers and/or at community cancer centers and clinics in the United States (US). The targeted clinical team members of this initiative included geriatric oncologists, medical oncologists, radiation oncologists, surgical oncologists, oncology nurses, geriatric nurse practitioners (NPs), oncology nurse navigators (ONNs), and PharmDs in hospital settings. The overall goals of this needs assessment include:

1. Determine the key knowledge-based gaps of clinicians who treat geriatric patients with cancer
2. Determine the key competence-based gaps of clinicians who treat geriatric patients with cancer
3. Design educational strategies based on key findings
4. Publish results of this needs assessment for use by the continuing medical education (CME)/continuous professional development (CPD) community
5. Disseminate this needs assessment to appropriate groups for use in educational planning

The project partners investigated clinical perspectives by utilizing a multi-method, validated needs assessment conducted by experts in survey design and execution, clinical oncology issues, and clinician engagement. Findings from this needs assessment will inform the development of future performance interventions, such as CME activities. The results of this needs assessment—the identification of five key gaps in clinician knowledge, competence, and performance-- are intended to serve as a springboard for the design of educational platforms that will bridge educational and performance gaps in the treatment of elderly patients with cancer, while recognizing the importance of individualized patient needs that will improve the quality of care.

2. Materials and Methods

A mixed methodology was used to identify gaps in care, employing both qualitative and quantitative research. Multiple components were thoughtfully designed to enhance our understanding of current gaps in knowledge, practice, and attitudes that influence care. While each needs assessment component provides insight into facets of

clinician behavior, the systematic and integrated evaluation of data across all components served to identify and quantify gaps in knowledge, attitudes, competencies, current clinical practice, and barriers to change.

To ensure the collection of valid and reliable data for the assessment, a systematic process was used to design, develop, and validate the needs assessment tools. This process included the review of peer-reviewed literature, assessment and validation by clinical experts, and validation testing within the target audiences. This grounded theory approach resulted in survey items that are relevant to the research, clear and understandable to the target audiences, and written in accordance with best practices in survey design. Specific components of the needs assessment were:

- **Literature Review:** A thorough review of the clinical literature was conducted in order to inform the creation and design of the interview guide and the survey questions. Project partners reviewed clinical practice guidelines, peer-reviewed journals, and other sources of published literature. The literature review served to define standards of best practice and identify areas in assessment and treatment where guidelines and practices are unclear. A further literature analysis was conducted to supplement the learnings from the interview, survey, and expert analysis data.

- **In-depth Interviews:** Interviews were conducted with healthcare professionals who have experience managing and treating geriatric patients with cancer. Subjects for these interviews included oncologists in the academic setting, community oncologists, oncology patient/nurse navigators, and oncology nurses. Interview participants were recruited from multiple sources, including database queries of Boston University School of Medicine and Haymarket Medical Education (HME)/myCME.

Participants opted into these 60-minute telephone interviews by replying to targeted email invitations, and received an honorarium to compensate them for their time. The interviews were semi-structured, allowing the participants to discuss issues and needs surrounding treatment of geriatric patients with cancer. The questions were initially open and broad to allow maximum latitude in the responses. In later interviews, however, the questions were more refined, allowing the interviews to be more directed. The purpose was to identify gaps in knowledge, competence, and performance as well as identify key issues and influences on clinical behavior. These interviews also helped to identify decision points in the management of geriatric patients with cancer where educational interventions may be helpful. The interviews served to inform development of the survey tools used in the quantitative assessment. The interview data also assisted in interpreting the survey findings, providing examples and explanations.

- **Quantitative Clinician Survey**: This 55-item quantitative assessment was distributed via email invitation to healthcare professionals who manage and treat geriatric patients with cancer. Using estimated response rates based on similar past surveys, partners contacted a sufficient number of healthcare professionals to ensure approximately 100 completed surveys for the primary target audience of medical oncologists. Repeated sampling of the target audience ensured that needs assessment findings reflected the diversity of healthcare professionals who treat geriatric patients with cancer. The survey tool, consisting of multiple-choice questions, took participants approximately 13 minutes to complete. In addition to basic demographic data, the survey consisted of 2 main sections:

    1. **Clinician Change Readiness Inventory®:** Designed to assess perceived needs, this tool quantified forces, attitudes, and images around treatment of geriatric patients with cancer. This assessment also identified barriers to using new therapies in geriatric patients.

    2. **Clinical Knowledge and Practice Assessment:** Created to assess and quantify actual clinician knowledge and practice gaps related to assessment and management of geriatric patients with cancer.

The *Practice Assessment* multiple choice questions featuring clinical vignettes were intended for the medical oncologist audience, since these individuals primarily make the decisions related to treatment.

After development in consultation with the clinical advisory panel, beta-testing of the survey was performed in 2 phases. First, the instrument was sent to members of the target audience during interviews to discuss each item, the response chosen by the clinician, and feedback on the question-and-response set. After refinement based on the information learned through the interviews, the survey was placed online and released to a sample of the target audience to check for adequate item variance, reliability, and convergent/discriminant validity with respect to other measures.

Survey participants were recruited via multiple channels. These channels included:

- Identification of participants from the Boston University School of Medicine and HME/myCME databases.
- Clinicians in the ResearchNow database. ResearchNow is a company that provides researchers access to panels of clinicians who are members of the target audiences and fit the research criteria.

On completion of data collection, an advisory panel of clinical experts (physicians, a nurse, and a patient navigator) convened to assist professional educators with interpretation of these data. This panel reviewed the data and suggested further sub-analyses and developed implications for future education. Faculty involved in the needs assessment design and analysis, tool validation, and data interpretation were selected by Boston University School of Medicine and HME, based on the faculty's commitment to education and expertise in the treatment of geriatric patients with cancer.

Any conflict of interest was resolved in accordance with the policies of Boston University School of Medicine.

2.1 Data Analysis

Each of the components of the needs assessment listed above was analyzed and reported both separately and collectively. A summary of findings and recommendations based on these components is included in this report. The interviews were structured and analyzed using a grounded theory approach. The constant comparative method was used to refine the interview guide and begin analysis as the interviews progressed. Data were transcribed from interviewer notes and recollections into a data table, with 1 column for each person interviewed. Each question in the interview constituted a row in the table, with the responses filled in for each interviewee. The rows of questions were grouped into blocks of questions with common subject matter. Each of these blocks of questions/responses was synthesized down to an archetypal response to each question. The interview responses were then compared in order to derive significant themes and issues. Demographic groups were compared for similar and dissimilar data. Interview summarization included archetypal responses and key verbatim responses.

The results of the survey are presented descriptively and graphically to support the findings and recommendations. The responses in total are contained in the appendix. Initial analysis suggested a number of questions to be answered by sub-analysis. These questions were answered by standard statistical testing using commercially available statistics software. Correlations and relationships between demographic variables, confidence, knowledge gaps, practice gaps, and barriers to best practices were explored.

A number of tests were done using Pearson product-moment correlation. These tests were used to determine whether certain responses varied with each other, suggesting a relationship. An overall master analysis utilized triangulation to compare data from different components and develop overall findings and recommendations.

We used repeat sampling to ensure a data set that is representative of the target audience and results that are generalizable to that audience. All data-collection techniques and processes adhered to best practices around human research subject protection. Data are stored on a locked and password-protected computer, accessible only

by authorized study researchers. No private health information was collected. Personal information was collected only for purposes of reimbursing interviewees for their time. This information was separated (de-identified) from the study data. All study data were reported in aggregate fashion only. All data that have been collected will be de-identified and made available on request for all legitimate educational purposes.

3. Results

3.1 Demographics

In-depth interviews were completed with 36 clinicians: 28 physicians and 8 nurses/nurse practitioners. Fifteen of the clinicians were from academic medical centers and 21 were from community settings. The profession of the interviewees appears in **Table 1**.

Table 1. Interviewees by profession.

In-depth Interview Participation	
Profession	**Number of Participants**
Medical Oncologist	21
Radiation Oncologist	3
Surgical Oncologist	2
Geriatrician	2
Oncology Nurse Practitioner/Nurse	8

Several themes were identified during the interviews that aided with survey development and the analysis of results. Each of these themes is discussed below.

There is a desire for more guidance on treatment for geriatric patients with comorbidities. Treatment guidelines do not specifically identify where or how adjustments need to be made for patients based on frailty. Clinicians approach therapy differently with these patients, some "starting low and going slow," while others use full dose and adjust when side effects occur. In particular, familiarity and dosing were the concerns in using new treatments for geriatric patients with cancer.

Oncologists rarely use available tools to assess a patient's functional, cognitive, and support status. This results in no baseline measurement and the inability to document a change in these metrics. The clinicians indicated "we all do it," when referring to conducting a functional assessment, but when questioned, admit that they do not use objective tools to assess the patient.

Compliance is an issue in geriatric patients. This is due to a variety of factors, including both intentional and unintentional causes. This was cited as one of the major problems that exists in treating these patients.

Communication with primary care is an issue. Many of the clinicians reported that better communication with primary care would improve the care for geriatric patients with cancer.

Goals of care are the same for all patients regardless of age. However, with geriatric patients with cancer, quality of life may play more into the patient's treatment decision. The clinicians also reported being more likely to accept an older patient's refusal of treatment, and option for palliative care.

3.2 Survey Results

The clinician survey was completed by 96 medical oncologists from 27 different states. Only clinicians reporting that they treat geriatric patients with cancer were allowed to progress through the survey. The following tables and charts describe the survey completers. Respondents were asked how long they had been in practice **(Figure 1)** and where their practice was located (eg, academic setting, community, etc) (**Table 2).** The participants were fairly evenly divided among the categories.

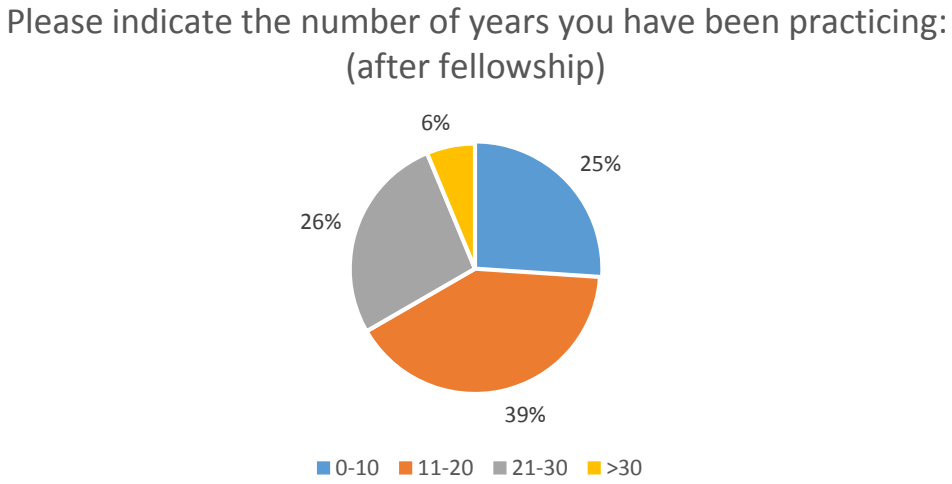

Figure 1. Length of time practicing**.**

Table 2. Survey participants by practice setting.

Survey Participation	
Practice setting	**Respondents,** n (%)
Academic	42 (44)
Community	32 (33)
Combination academic/community	13 (14)
Free-standing cancer center	8 (8)
Other	1 (1)

Survey respondents were also asked to report on the types of cancers treated and the percentage of geriatric patients (>70 years of age) in their practice. Slightly more than half of the respondents said their electronic health record system assisted in selecting therapy.

4. Discussion

This needs assessment illuminates both real and perceived needs of individuals treating and managing geriatric patients with cancer. The physicians indicated a strong desire for competence in managing these patients and will be motivated to learn and change if shown evidence of real needs within the content of the program. Through careful analysis of clinical guidelines and literature, interviews, and survey data, the project partners along with clinical experts have identified key clinical gaps and corresponding educational recommendations for continuing professional development.

In regards to treating geriatric patients with cancer, medical oncologists are, in general, only somewhat confident and reported a great number of perceived needs. A historical lack of clinical trial data focused on geriatric patients has left clinicians in the dark on the best approaches for managing the myriad challenges associated with cancer in this patient population. Recently, guidelines, tools, and other specific means of guiding treatment in geriatric patients with cancer have become available, but the results of our analyses indicate clinicians are either unaware of or are not fully utilizing them. Despite this, clinicians have demonstrated here that they appreciate that their clinical practices are in need of improvement, and are clearly willing to alter their clinical practices based on new information.

Five key practice performance gaps and associated needs have been identified from this research; each will be detailed below. As observed in the discussion to follow, many of the gaps overlap, and reflect the importance of staying up-to-date on the most recent clinical data and resources available while treating geriatric patients with cancer. Additionally, the integral role of communication is a theme throughout many of these gaps.

4.1 Key Practice Performance Gaps

1. Selecting the optimal treatment approach for geriatric patients with cancer and comorbidities
    - Selecting appropriate therapy options
    - Assessing the risks/benefits of treatment options in the geriatric patient population
    - Differentiating therapy options based on the impact of comorbidities
    - Identifying factors that are most predictive of toxicity with treatment
    - Managing side effects appropriately, which may include adjusting or revising the treatment plan
2. Using appropriate tools to assess a patient's functional, cognitive, and support status
    - Evaluating the patient's status to ascertain the optimal treatment approach and to identify any additional support they may need
    - Documentation that allows the entire multidisciplinary team to assess changes in these metrics
3. Recognizing and overcoming the barriers that lead to poor compliance in the geriatric patient population
    - Monitor and manage side effects of therapy
    - Engage in effective patient-physician and/or caregiver-physician communication and education
    - Utilize case managers/patient navigators as resources for addressing physical and social barriers that lead to poor compliance
4. Engaging in effective communication with patients' primary care provider
    - Communicating disease status, anticipated side effects, and recommended management of patients to support continuum of care and possibly improve clinical benefit

5. Articulating in what ways the goals of care for geriatric patients are the same and how they may differ from that of younger patients

- Recognize the important role quality of life plays in treatment decisions in the geriatric patient population

Each of these gaps is explored in detail below.

4.2 Practice Performance Gap #1: Selecting the optimal treatment approach for geriatric patients with cancer and comorbidities

An unmet need exists in medical oncologists' ability to select appropriate therapy options for geriatric patients with cancer. They rate their confidence in treating geriatric patients lower than their confidence in treating younger patients with cancer. The majority expressed a desire for more specific guidelines for geriatric cancer patients, rated the utility of various educational platforms for learning about new therapies, and described the types of tools and resources they use in their current practice.

Medical oncologists indicated a high desire for greater competence related to selecting optimal treatment. However, the perceived need, defined as the difference between their desired and present ability, demonstrates that clinicians recognize that their ability to select optimal treatment needs improvement. These findings, along with their reported readiness to change the way they practice in the near future, indicates that physicians are ready and willing to learn in order to change their clinical practice. They also rated the influence of various forces for change—professional, personal, and social [1].

National Comprehensive Cancer Network (NCCN) guidelines are often the most trusted source for treatment recommendations. However, 55% of respondents indicated the desire for more information in the NCCN guidelines, compared with 40% who felt the guidelines provided just the right amount of information. The expert advisory panel agreed that in the geriatric oncology field, far too many physicians rely on "gut knowledge" or "common sense" to guide their treatment decisions. As a medical oncologist stated:

> "The important challenge in the geriatric oncology area is convincing [physicians]…that there is actual knowledge, that it's not just common sense…there are actual ways to assess a patient that are objectively shown to improve your practice or your outcomes."

The tendency to avoid use of guidelines is likely rooted in the historical practice of underrepresentation of geriatric patients in clinical trials of cytotoxic therapies. A 2004 study found that while patients ≥65 or ≥70 years of age represented 60% and 46%, respectively, of all patients newly diagnosed with cancer, they represented only 36% and 20%, respectively, of patients enrolled in clinical trials [2]. This underrepresentation led to lack of knowledge of the efficacy and toxicity of these agents in the geriatric population [3]. Despite the fact that the past few years have seen a greater focus on the efficacy and safety of cytotoxic therapies in the elderly, many physicians interviewed believed that the guidelines, which include this new information, have little or no utility in their clinical practice. Others indicated they were unaware that NCCN guidelines specific to geriatric patients had been developed. Education on new clinical data focused on geriatric cancer patients, and how these data have been incorporated into recently developed guidelines, is critically needed.

The expert advisory panel did emphasize the importance of not blindly following the guidelines, but tailoring them to each patient. A geriatrician stated:

> "The guidelines are a starting point. Individualized care is the end point."

In other words, the path to truly individualized treatment plans require a firm foundation on current best practices and guidelines.

The *Practice Assessment* portion of the survey indicates variability in medical oncologists' ability to choose appropriate therapy options. Fifty-four percent of respondents did not choose the most appropriate treatment regimen in the clinical vignette presented in question 1. This was also highlighted in question 2, where 13% of respondents chose an adjuvant therapy (ie, FOLFOX) associated with significant toxicity, despite the fact that oxaliplatin does not provide survival benefit to patients aged >70 years with colon cancer [4]. This demonstrates a gap in accurately assessing the benefits and risks of certain treatment options in the geriatric patient population. In particular, physicians struggle with differentiating therapy options based on impact on comorbidities. For example, in question 2 most respondents chose capecitabine, despite the fact that it may not be an ideal therapy choice given the patient has moderate renal impairment [5]. The gap in appropriate treatment choice with regards to comorbidities is also highlighted in question 4. Only 45% of respondents chose what is considered the best treatment choice, with 28% choosing ibrutinib for this patient with cardiovascular complications, despite its association with potential bleeding and cardiac risks [6].

Significant gaps were identified in the ability of physicians to predict and manage treatment toxicity in the geriatric patient population. In question 6, 51% of respondents were unable to identify that multiple recent falls is the factor most predictive of chemotherapy toxicity. In question 9, 50% of respondents were unable to accurately identify the correct response to a question on a toxicity that is particularly prevalent in the geriatric cancer patient population. Finally, in question 8, only 52% of respondents were able to correctly identify which supportive medication has the least risk of significant negative effects in older patients. Further, respondents reported that they generally do not use formal tools to identify patients at risk for chemotherapy intolerance.

Physicians do seem cognizant of the need to better identify and manage side effects. Present ability was dramatically lower than the desired ability for the competency "Manage side effects." One way many physicians attempt to address toxicity and side effects in the geriatric patient population is by empirically reducing the dose of cytotoxic agents. However, many studies have determined a wide variability in the need for dose reductions in this patient population [7-10]. Once again, physicians seem cognizant of this gap, with "Adjust treatment options for geriatric patients based on health status" and "Revise treatment plan when necessary" both showing high perceived needs. There is additionally disagreement between medical oncologists and geriatric specialists with this approach, as a geriatrician stated:

> "In geriatrics, our saying is, 'Start low and go slow in everything.' And we're trying to get the oncologists to think that way, instead of, 'Start high. If they can't take it, okay, we'll cut it down a little bit.'"

A distinct possible means of addressing cytotoxicity in geriatric cancer treatment includes the use of increasingly available targeted treatments aimed at particular cellular pathways that are typically associated with fewer debilitating side effects. Clinical trials of these agents have enrolled a higher proportion of older patients compared with historical cytotoxic therapy trials and thus are more likely to have study populations that are more representational of the overall patient population; however, only a few agents have been specifically evaluated in geriatric patient populations. Similar to cytotoxic therapies, these agents demonstrate wide variations in their relationships between age and drug-related toxicity [11]. However, the busy schedules of medical oncologists leave little time for learning about these new treatments, as highlighted by the barrier "Lack of time to learn about new therapies" receiving high ratings as a barrier to best practice.

4.2.1 Implications for future CME

Education on this performance gap is perceived as important and necessary and should be well attended/subscribed. Physicians in our survey demonstrated they are open to changing the way they practice based on education on current data and treatment trends, with high levels of agreement with the statements "I may need to examine one or more of my clinical practices in this area" and "I plan to change the way I practice in this area in the near future."

Specifically, education should focus on using guidelines and the most recent clinical data for selecting appropriate therapy options in the geriatric patient population, including how to assess the risks and benefits of these options accurately and how they may impact comorbidities. Additionally, identifying factors that predict toxicity and the best practices for managing side effects should be detailed. "Lack of data specifically for geriatric patients" and "Unknown effects of comorbidities" were rated as high barriers to best practices by 78% and 68% of survey respondents, respectively.

Learning from senior oncologists regarding their experience with treatment selection in different settings, including side effect profiles, would be a fruitful approach to education. A modeling forum or patient case scenarios is a suggested approach to communicating these concepts; learning via a clinical vignette may make it easier to absorb, as integration of patient scenarios makes concepts more recognizable and relevant.

4.3 Practice Performance Gap #2: Using appropriate tools to assess a patient's functional, cognitive, and support status

Chronological age correlates poorly with functional status; as such, the use of geriatric assessments to determine a patient's so-called "functional" or "physiologic" age may be a more appropriate consideration for treatment decisions [12]. These assessments take chronological age into consideration, but also include variables like risk of falling, kidney and liver function, activity levels, and cognitive abilities [12,13].

Despite the fact that use of status tools may play an important role in treatment decisions, the results of our inquiries demonstrate a low use of these tools. While physicians in the survey largely agreed with the statement "I regularly use formal tools to assess performance status," when questioned more deeply if they use formal tools to assess cognitive status and identify risk for chemotherapy intolerance, agreement scores fell below the midway point of 3.0. Based on the telephone interviews and comments from the advisory panel, the feeling was that many clinicians use the content of formal tools in an informal manner to assess patients' performance status—in other words, they size up their patients mentally instead of using the actual tool as specified. However, physicians do recognize that this approach is not best practice, with "Assess health status (comorbidities, physical function, cognition, social status, etc.)" scoring highly as a perceived need.

A lack of knowledge around tools that are particularly useful in the geriatric population may lead to their underutilization. The expert panel surmised that most clinicians are likely to use tools specific for cancer, such as the Eastern Cooperative Oncology Group (ECOG) or Karnofsky scale, but not scales that are tailored to evaluate geriatric patients. For instance, in the Practice Assessment portion of the survey, only 39% of respondents chose to use the Cancer and Aging Research Group (CARG) or Chemotherapy Risk Assessment Scale for High-Age Patients (CRASH) tools in response to question 5, despite the fact the patient clearly should be evaluated with one of these tools given the history of multiple recent falls. Further, in question 7, only 39% of respondents recognized that the most appropriate approach for a patient with possible cognitive decline is to administer the Mini–Mental State Examination (MMSE) or Mini-Cog assessment as a screening tool. Additionally, 19% of respondents chose the Confusion Assessment Method (CAM) screening tool as an appropriate approach, despite the fact that it is more appropriate for assessing sleepiness or delirium rather than memory issues. These results highlight the need for education on tools that are most appropriate for assessing the functional, cognitive, and support status of geriatric patients and how they are best utilized.

The need for these tools to be used for formal documentation purposes was reiterated across the multiple platforms of our analysis. The need for baseline measurements is of utmost importance, so that any documented change in metrics can be assessed to determine if the treatment approach needs to be modified in any way or if additional support is needed. As a geriatrician stated:

> "[Clinicians] need to realize that evaluating [cognition is important] because [the elderly] need a healthcare proxy even more than a 50-year-old, because, from your treatment, it's entirely possible they'll get delirious."

Moreover, use of standardized tools and accurate documentation of the results will result in better communication across the multidisciplinary care team to assess any changes in metrics. As simply stated by an oncology clinical nurse educator:

> "[Use of tools] are [ideal] for better documentation and better communication."

Clinicians are keenly aware of the need for better communication and collaboration with the remainder of the healthcare team, as "Collaborate with the multidisciplinary team about the care of the geriatric patient" was the second-highest perceived need.

4.3.1 Implications for future CME

Education is needed around the tools that are more ideal for assessing a patient's functional, cognitive, and support status. The importance of administering these tools at baseline and during treatment to assess any changes in metrics will be reinforced by highlighting the benefits to both the patient and multidisciplinary care team. Clinical vignettes may also be used in this setting to reinforce these concepts in a simulation of what clinicians encounter during daily practice.

4.4 Practice Performance Gap #3: Recognizing and overcoming the barriers that lead to poor compliance in the geriatric patient population

Compliance was frequently identified as a particular problem in geriatric patients with cancer, which seems to be rooted in a variety of causes. Poor monitoring and management of side effects can lead to poor compliance, as noted by a geriatrician:

> "Sometimes patients stop [treatment and office visits] because the [medication] made them feel sick. They can't do their housework, and it's your fault, so the heck with this."

To overcome this barrier, better education around monitoring and management of side effects, as detailed in Practice Gaps #1 and #2, would be valuable. An additional component would be communicating with the patient and/or caregiver regarding what to expect with treatment, so that expectations are managed and support systems put into place to mitigate unpleasant effects stemming from treatment. Enhanced communication at this stage may also lead to an alteration of the treatment plan that is more aligned with patients' goals, which may lead to increased compliance. Physicians recognize a need for improvement, with "Communicate with the geriatric patient, family, and caregivers about treatment options and patient concerns" rated as a perceived need. The need for better physician-patient communication is exemplified by question 3, in which the hypothetical patient specifically requested a form of chemotherapy, and despite this, 24% of respondents chose best supportive care as the treatment they would offer the patient.

Education of and communication with geriatric patients and their caregivers can be challenging in a number of ways, as identified by the medical oncologists interviewed. Elderly patients tend to be hard of hearing and tend to be reluctant to acknowledge when they don't understand something. They may also have difficulty in remembering to take their medications as directed, or keeping track of many appointments, particularly if they experience cognitive decline as a result of their treatment. Additional complications may include language, religious, or cultural barriers that may impact effective education and communication. It is not unusual for close family members to act as interpreters for geriatric patients, and care must be given that the physician's message is reaching the patient accurately. As a geriatrician stated:

> "You don't know what they're hearing. I usually train people that with the interpreter, you'll see if the patient has any questions or wants anything explained. And if they say 'No, give it to my granddaughter. She's fantastic. She's a nurse…I trust her.' …Then I say 'Okay.' But we need to check and make sure."

Notably, medical oncologists in the survey rated their present ability to "Address language, religious, and other cultural issues that may affect management of the geriatric patient with cancer" the absolute lowest of all competency domains, and indicated a desire for improvement.

In comparison to younger patients, geriatric patients are typically in need of greater social support during treatment. This includes help with remembering medications and keeping track of appointments, but can extend to a need for assistance with transportation to and from appointments, assistance during appointments, help with self-care while at home, and close observation of possible side effects, which elderly patients tend to be reluctant to self-report. Unfortunately, despite being in greater need of social support, geriatric patients are more likely to have fewer close relatives and friends upon which to rely. Many geriatric patients tend to have deceased spouses and little or no close family nearby.

Integration of individuals such as oncology nurse navigators (ONNs), patient navigators, case managers, etc., into a multidisciplinary approach may help improve patient-physician communication and education. However, it should be noted that integration of ONNs or other navigators/managers is not meant to replace the role of the practicing oncologist in effective communication with the patient, but rather to augment the physician and, ultimately, to offer a fully multidisciplinary approach to care. Additionally, these individuals are specialists in identifying and overcoming the physical and social barriers that lead to poor compliance. In our survey of clinical practices, "Use of resources to educate patients" and "Refer geriatric patients for a consult" fell almost exactly at the midpoint on the agreement scale, indicating that while clinicians may be aware of these resources, they may not be utilizing them fully.

An additional barrier to compliance typically observed in the geriatric patient population is cost of treatment. The medical oncologists in our survey agreed that "High cost to patients" was a significant barrier to adoption of new therapies. Most geriatric patients are on Medicare only, and may lack the income required to cover necessary co-pays, some of which can be large. Beyond the expense of medication, there are additional financial burdens involved in receiving treatment. As an oncology clinical nurse educator put it:

> "[With patients on fixed incomes], you're telling them that they have to eat this certain food, or they should take these supplements, and they can't even afford food. [Sometimes] these patients can't pay their electricity bill, and you want them to go back and forth…to the hospital 3 times per week, and that's… not going to be a priority to them."

Cost is another barrier that may be overcome with the assistance of patient navigators or case managers, who have experience dealing with financial concerns and may have methods to address them.

4.4.1 Implications for future CME

Education and activities around monitoring and management of side effects, as detailed in Practice Gaps #1 and #2, would be valuable in addressing compliance issues.

Continuing education for the management of geriatric patients with cancer should address clinician competencies in communication and patient education, ensuring that patients and healthcare providers have concordant treatment goals and expectations. Means of overcoming barriers to effective communication with geriatric patients and/or their caregivers must be covered. Suggested approaches to education include integration of patient and/or caregiver perspectives into clinical cases and an emphasis on a multidisciplinary team approach to disease management, including the incorporation of nurse navigators or case managers.

While most likely not appropriate as an individual topic for CME content, potential patient access challenges, including the financial implications of therapies, should be covered in educational activities.

4.5 Practice Performance Gap #4: Engaging in effective communication with patients' primary care provider

A lack of quality 2-way communication between clinicians treating cancer and their patients' primary care providers was identified as a major gap in the geriatric setting. As a medical oncologist stated:

> "Oncologists…tend to take over the care, and the primary care doctor will participate, but often will cede. And so then we end up writing blood pressure medicines and other things...They're seeing you so often they don't keep their primary care appointment. And then we screw up some things."

Clinicians recognize the significant need to improve communication with primary care physicians, with "Collaborate with the multidisciplinary team (including primary care) about the care of the geriatric patient" second, only behind "Determine optimal treatment," in the perceived need for competency. It's often easy for medical oncologists to unintentionally leave primary care physicians out of their communications. Other members of the multidisciplinary team, such as the nursing staff, typically work with the medical oncologist in the same clinic and regularly schedule meetings with others, such as surgeons or radiologists. This type of regular communication rarely occurs with primary care physicians.

Not only do medical oncologists find themselves unwittingly administering primary care, primary care physicians also find themselves faced with managing the effects of therapy administered by medical oncologists. Primary care clinicians report that patients often see them to manage cancer-treatment related side effects, or to ask questions about the treatment they are undergoing. Without communication from the medical oncologist, the primary care physician is ill-equipped to address these issues.

With effective, 2-way communication between medical oncologists, geriatricians, and primary care physicians, a continuum of care is established that provides better support for patients and may possibly improve clinical outcomes.

4.5.1 Implications for CME

Continuing education in the area of physician-to-physician communication could use some of the approaches described for patient-physician communication detailed in Practice Performance Gap #3. Additionally, the American College of Physicians (ACP) has created a toolkit to facilitate more effective communication between primary care and specialty practices. This toolkit provides practical components, such as checklists for information to communicate and templates for filling in pertinent treatment-related data. Also included is a model of care coordination agreement that can facilitate discussions on roles and responsibilities [14]. Tools such as these can lead to more detailed and productive discussions between medical oncologists, geriatricians, and primary care physicians.

4.6 Practice Performance Gap #5: Articulate in what ways the goals of care for geriatric patients are the same and how they may differ from that of younger patients

The physicians participating in our analyses agreed with those interviewed that, regardless of age, the goals of care remain the same for all cancer patients:

1. Increase life expectancy if possible
2. Prolong remission
3. Palliation of symptoms

However, medical oncologists acknowledged being accepting of an older patient's goals of aggressive or minimal treatment, and understanding patient desire for quality over quantity of life. Discussing end-of-life goals such as these can be difficult, and physicians acknowledge this is an area in need of improvement in their own clinical practices by rating "Communicate with the geriatric patient, family, and caregivers about desired goals of care" as a perceived need. Fully understanding a patient's goals and treatment expectations allows clinicians to select a treatment regimen that best aligns with these. If the patient opts for treatment, the clinician must provide clear communication and education regarding feasible options and possible outcomes with each. On the other hand, patients who feel they may not have many years left may choose to forego treatment so that their remaining time is of higher quality by avoiding treatment-related toxicities.

4.6.1 Implications for future CME

There is also a strong need for education in the areas of communicating expectations to patients for palliative care and end-of-life discussions, all of which are closely related to Practice Performance Gap #3 regarding effective patient-physician communication, and all of which contribute to selecting the optimal treatment approach for a patient. Studies focusing on communication issues regarding palliative care and the disclosure of prognosis have determined that many physicians are not comfortable discussing prognosis and end-of-life issues, and thus tend to avoid them [15-18]. Interventions and tools for clinicians to navigate these highly complex and difficult conversations are needed.

5. Conclusion

The data collected during the process of creating this needs assessment present a broad perspective on some of the challenges and issues in the management of geriatric patients with cancer in the academic and community-based settings. Through careful analysis of clinical guidelines and literature, physician interviews, survey data, and expert opinion, the project partners synthesized a series of key educational implications and corresponding recommendations for continuing professional development.

Five key practice performance gaps and associated needs have been identified from this research. These gaps describe issues that can impact clinical efficiencies and, ultimately, quality patient care and outcomes. Each of the key practice performance gaps is addressable from an educational perspective.

As stated earlier, the majority of these gaps overlap and reflect two primary themes: the importance of staying current on best treatment practices and effective communication. Individuals involved in the management and treatment of geriatric patients with cancer are challenged in 1) selecting the optimal treatment choice with consideration of comorbidities, 2) a lack of time or knowledge in using appropriate tools to assess the patient's functional, cognitive, and social support status, 3) overcoming multiple barriers to compliance that are specific to the geriatric community, 4) engaging in effective and meaningful discussions with primary care physicians to maintain a continuum of care, and 5) recognizing how the goals and needs of geriatric patients may differ from those of younger patients. Healthcare providers treating and managing geriatric patients with cancer exhibit a desire to learn and a significant readiness to change if shown evidence of benefits.

Improving patient-physician and oncologist-primary care physician communication skills is a common theme that has emerged as the foundation of the educational strategy recommended for future CME interventions. Embedding the topics of communication and patient engagement into presentations of patient cases is recommended to emphasize the importance of taking a holistic approach to patient care. Oncologists recognize a need for more effective communication skills surrounding care of patients and demonstrate a willingness to change their clinical practice. In this instance, integration of the patient voice may be most successful in communicating this concept. Suggested approaches to education include integration of patient

perspectives into clinical cases and an emphasis on a multidisciplinary team approach to disease management, including the incorporation of nurse navigators and/or case managers. Consideration of an emphasis on patient engagement and integration of patient perspectives is recommended for all future CME interventions. Creation of tools or resources that engage patients in decision making can facilitate more detailed and productive conversations. Benefits of focusing on the concept of patient education include the potential to alleviate the burdens on the physician, minimize patient misinformation, and improve patient satisfaction and outcomes.

The survey results on Forces for Change indicate that new information in the field is a strong driver for change in clinical practices, and results on Barriers To Adopting New Therapies indicate that lack of data around the use of new therapies in the geriatric patient may be inhibiting this change. The Attitudes Toward Change data indicate that oncology clinicians are willing to change if provided the appropriate information. In order to address gaps related to selecting the optimal treatment approach and personalizing therapy regimens based on individual patient characteristics, future CME should include a modeling forum or clinical vignettes. Patient cases are complex and, therefore, there is an ongoing need for physicians to be exposed to multifaceted clinical vignettes. Additionally, integration of patient case scenarios makes concepts more recognizable and relevant. This approach may be executed through a small group educational format using teaching cases, similar to Tumor Boards; however, patient case scenarios also lend themselves well to symposium and text-based cases featuring video vignettes. When educating clinicians about therapies, content should cover efficacy, side effects, assessment of risk/benefit in geriatric patients, and impact on commonly observed comorbidities. Where appropriate, the financial implications of therapies and the possible social supports required for them should be covered as well, in order to give clinicians an idea of potential patient access challenges. Interviewees and our expert panel suggest that patient-based clinical vignettes are well received when presented by colleagues with more experience.

Overall, pertinent, high-quality, evidence-based education that meets identified educational needs will ensure that healthcare professionals continually improve their practice, ultimately resulting in better care and optimal clinical outcomes in geriatric patients with cancer.

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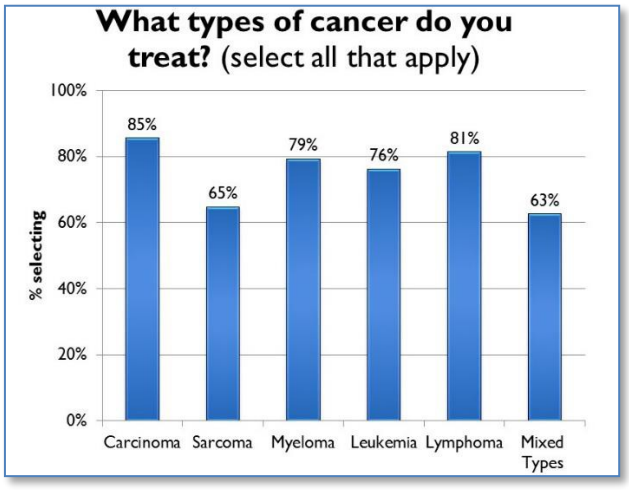
Appendix

Description of Sample

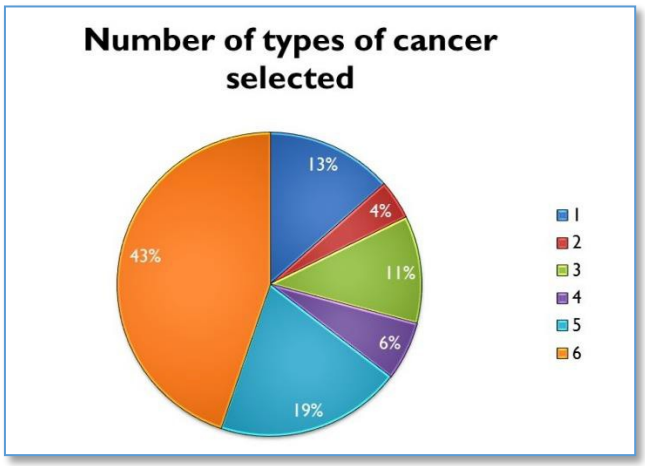
The medical oncologists reported on the types of cancers that they treat (**Figure A1**). Note that they could check as many boxes in the survey as needed. The responses were fairly high across the types listed. The advisory board expressed surprise at this, most notably regarding how high the percentage for the Sarcoma category was. It was noted that most medical oncologists in the academic setting specialize, and within the sample surveyed most (ie, 64%) of respondents worked in an academic setting. The advisory panel suggested that the phrasing of the question may have skewed the results seen here, and suggested in the future that the options given be: solid tumor (possibly broken down by organ type), hematology, and mixed.

Figure A1. Types of cancers treated.



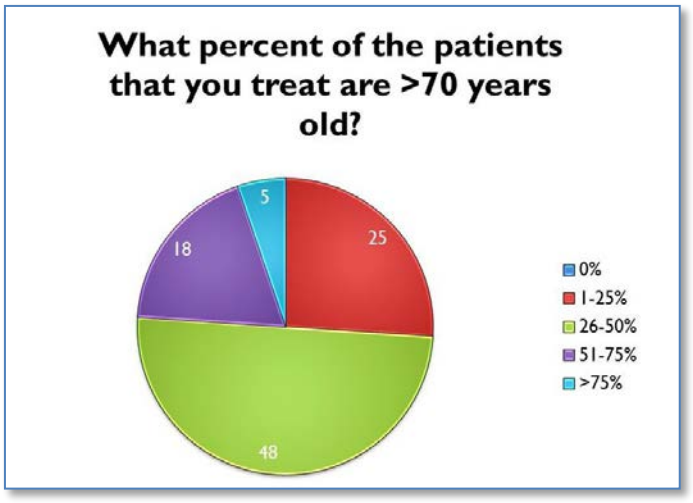
The number of types of cancer selected was also analyzed (**Figure A2**), with only 13% of medical oncologists choosing 1 type of cancer, which would indicate specialization. The largest number of respondents chose all 6 cancer types. Note, however, that this does not reflect the frequency of certain cancer types. For many community physicians, for example, they may be the only providers of cancer care in their area and do indeed treat all cancer types, albeit with differing frequencies.

Figure A2. Number of types of cancer selected.



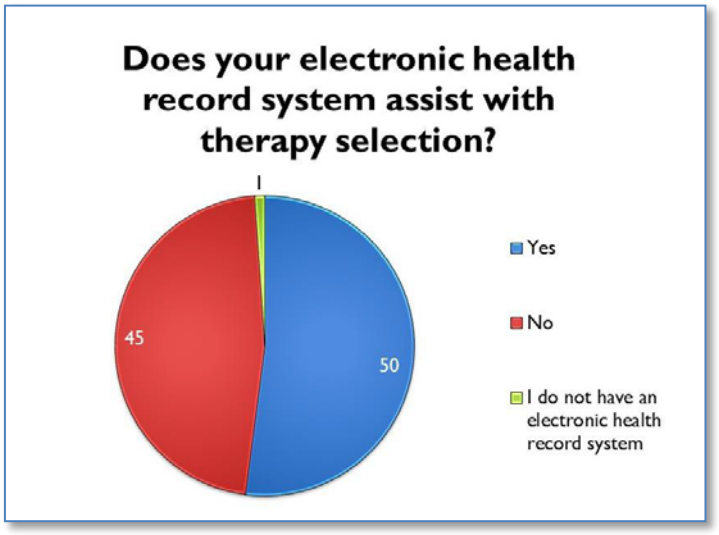
Most (48%) of respondents indicated that 26% to 50% of the patients they treat are older than 70 years of age (**Figure A3**). At this point in the survey, any participants that answered 0% were exited from the survey to ensure that respondents were treating geriatric patients and could provide useful feedback.

Figure A3. Percentage of geriatric patients.



A little over half of the survey respondents reported that their electronic health record system assisted with therapy selection (**Figure A4**). Both the members of the advisory board and the interview panel described frustration with the electronic health record systems they were required to use. The 2 main themes that emerged were that the systems were more focused on safety precautions, many of which do not apply to their patients and are seen as a hindrance. One advisory board member described having "warning fatigue". Another theme was that the programs lacked certain desirable aspects. For instance, due to copyright issues, links to publications of clinical trials describing treatment regimens of interest could not be included.

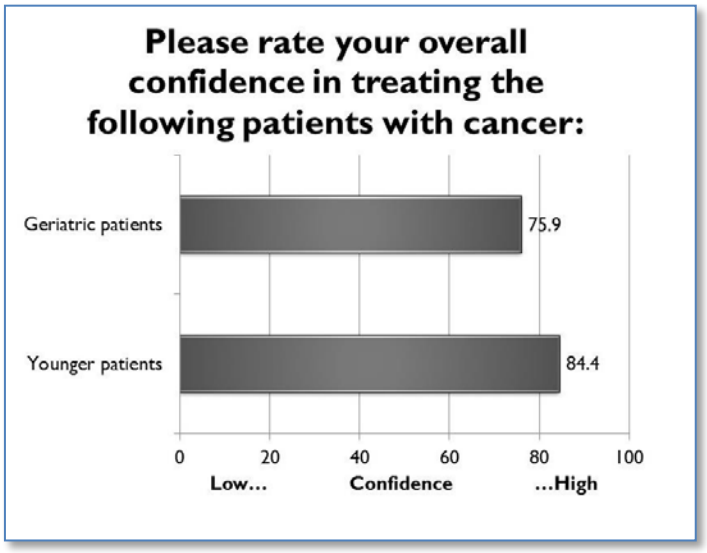
Figure A4. Electronic health record usage.



The survey results indicated that the population of clinicians treating patients were confident overall in their ability to treat geriatric patients with cancer, but not as confident as they felt in treating younger patients with

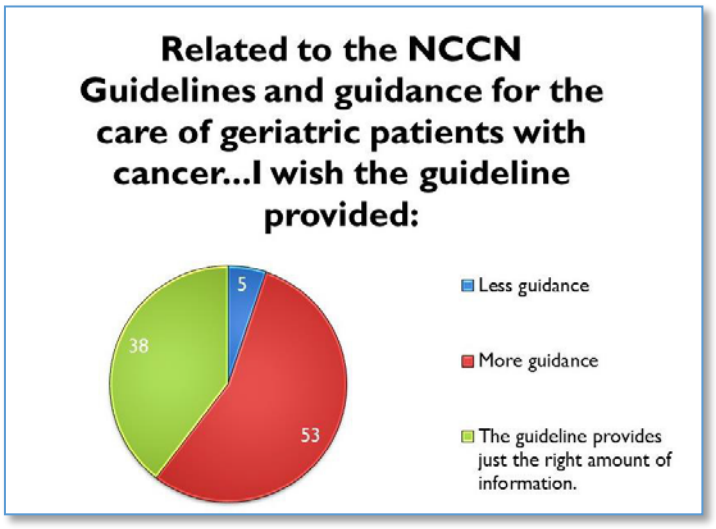
cancer (**Figure A5**). Notably, these confidence levels are not as high as what has been noted in the past with other clinical areas when confidence in treating was assessed using a similar survey.

Figure A5. Confidence levels.



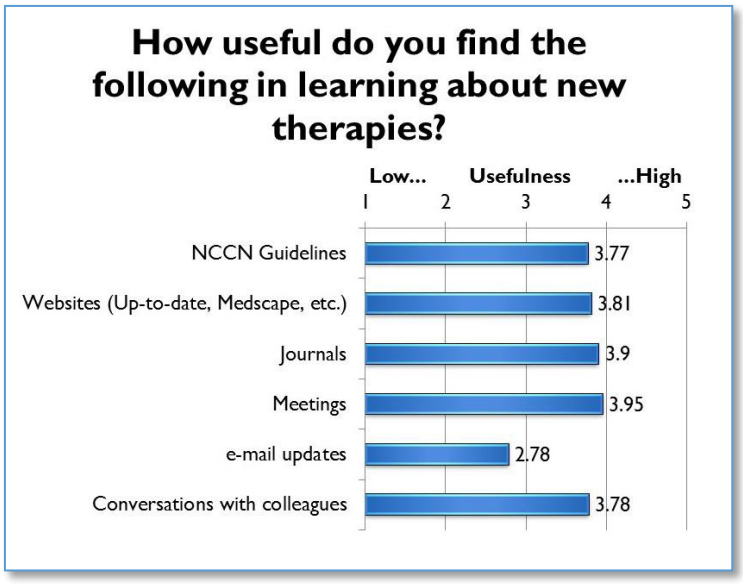
Most physicians (53%) expressed a desire that the NCCN guidelines for the care of geriatric patients with cancer provided more guidance (**Figure A6**). A subpopulation of this group noted that they believed the guidelines had little or no utility in their clinical practice. A separate, but notable, portion of the survey respondents were completely unaware that guidelines specific for geriatric patients with cancer had been developed.

Figure A6. Guideline opinion.



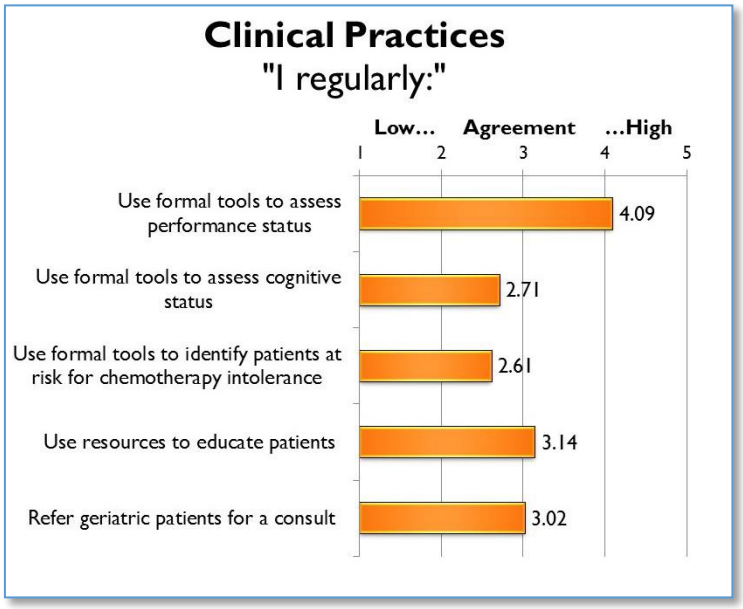
Survey respondents were asked to rate certain educational platforms for their usefulness as tools to learn about new therapies (**Figure A7**). Overall, respondents found most platforms useful, with journals and meetings receiving the highest scores. Notably, email updates were rated significantly lower than other platforms. The faculty board was in relative agreement that this was most likely a result of an overwhelming volume of emails.

Figure A7. Utility of educational platforms.



Finally, clinical practices were assessed (**Figure A8**). While physicians largely agreed with the statement "I regularly use formal tools to assess performance status," when questioned more deeply if they use formal tools to assess cognitive status and identify risk for chemotherapy intolerance, scores fell below the midway point of 3.0. Regarding patient education, agreement was just over the 3.0 midpoint. The impression from both the interviews and the advisory panel was that most physicians use myriad educational resources for patients, and the quality of these resources varies widely. Finally, referral of geriatric patients for a consult to a geriatric specialist or to palliative care was almost exactly at the agreement midpoint, indicating that while clinicians may be aware of these resources, they may not be utilizing them fully.

Figure A8. Clinical practices.



Clinical Competencies

Clinical guidelines, literature, interview data, and expert opinion were used to create a list of evidence-based competencies for the treatment of geriatric cancer patients. The competencies are a series of statements that represent the abilities necessary for physicians to successfully manage and treat these patients.

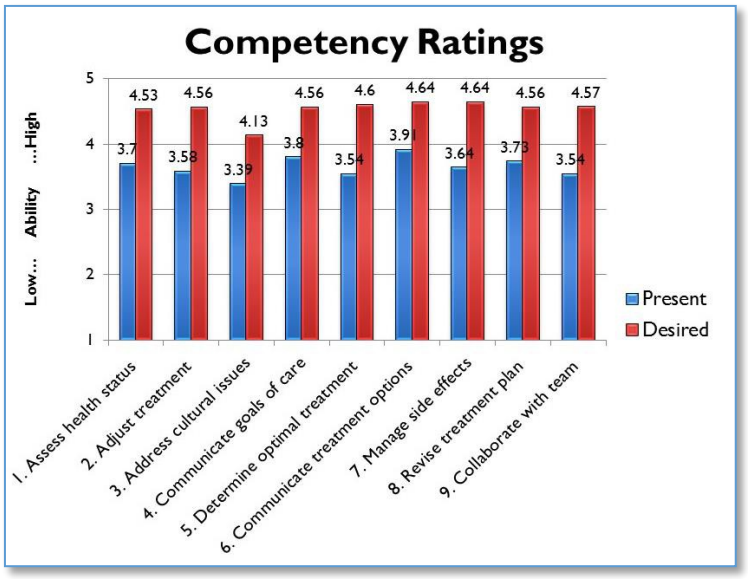
Please rate your *present* and *desired* ability to:

1. Assess patient health status (comorbidities, physical function, cognition, social status, etc.)
2. Adjust treatment options for geriatric patients based on health status
3. Address language, religious, and other cultural issues that may affect management of the geriatric patient with cancer
4. Communicate with the geriatric patient, family, and caregivers about desired goals of care
5. Determine the optimal treatment regimen(s), including timing and dosing, for the geriatric patient
6. Communicate with the patient/family/caregivers about treatment options and patient concerns
7. Manage side effects
8. Revise the treatment plan when necessary
9. Collaborate with the multidisciplinary team (including primary care) about the care of the geriatric patient

In the survey, respondents were asked to rate their present and desired levels of ability for each competency. The "*present* ability" identifies where the respondents believe they are presently performing. The "*desired* ability" represents the importance the respondents place on that particular ability. Another way to view the label "desired" is how important is this competency to the demographic; how much do they value this competency as they strive to improve their clinical practice. Average responses for all respondents are presented below, with 1 representing a low level of ability and 5 representing a high level of ability.

Notably, a significant gap was seen between present and desired levels of ability in all of the competencies (**Figure A9**).

Figure A9. Present and desired abilities.

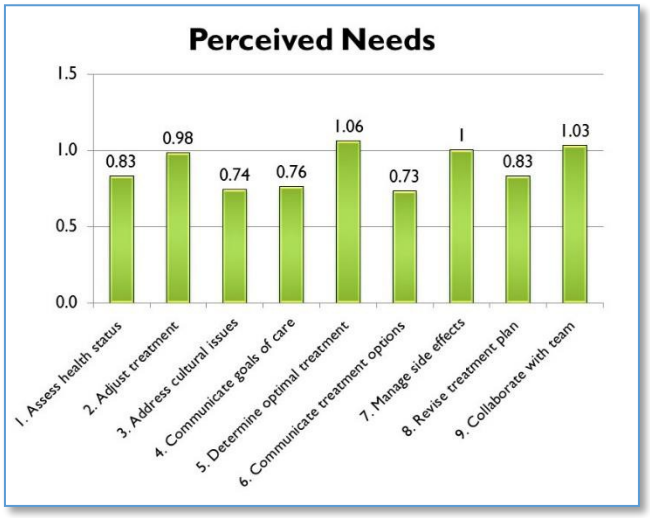


Competency Gaps

The average difference, or gap, between the present perceived and desired levels of competency indicates the perceived need of the learners. This gap between the perception of "what is" and "what ought to be" predicts physician motivation to learn and change. A gap of 0.5 or higher is considered to be meaningful, while a gap of 1.0 to 2.0 is ideal for clinician education; this cutoff threshold is based on previous research on forces for change and learning in the lives of physicians.

Notably, all the gaps are significantly above the threshold of 0.5 (**Figure A10**). The gaps near 1.0, including "Adjust treatment," "Determine optimal treatment," "Manage side effects," and "Collaborate with team" demonstrate very significant gaps. This signals that clinicians recognize a drastic need for improvement. It is important to note that gap scores over 1.5 tend to signal that that gap is perceived as insurmountable. As such, the gap scores here reflect that clinicians recognize the gap, express readiness to change, and feel that the gap is capable of being closed.

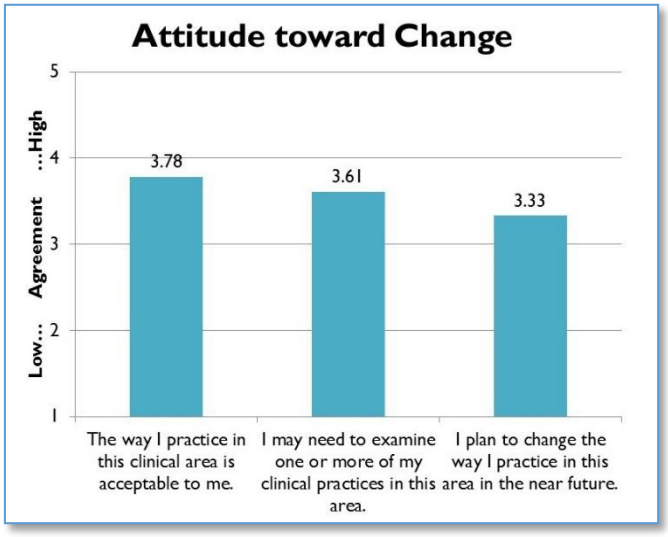
Figure A10. Competency gaps.



Attitude toward change

Survey participants were asked to rate their attitude toward change (**Figure A11**). The score of 3.78 for "The way I practice in this clinical area is acceptable to me" is notably low. Typically, scores on this statement are well over 4.0 in other clinical areas, which demonstrates clinicians recognize areas for improvement in the way they administer care to geriatric patients with cancer. The level of agreement with the statements "I may need to examine one or more of my clinical practices in this area" and "I plan to change the way I practice in this area in the near future" clearly demonstrated that the physicians taking this survey are open to changing the way they practice based on education on the current data and treatment trends.

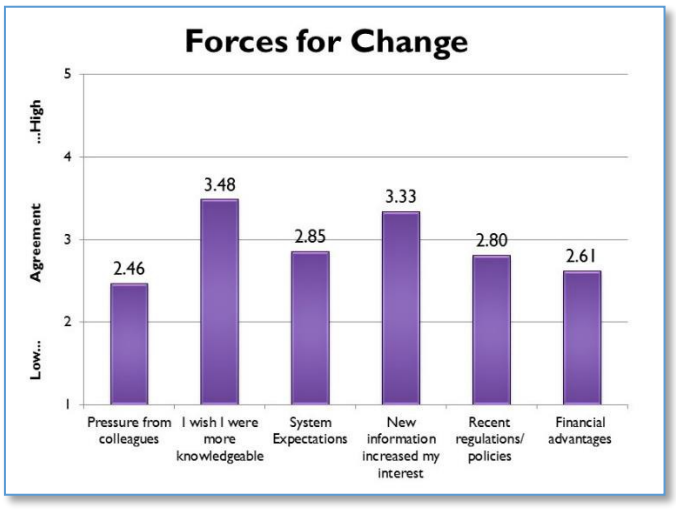
Figure A11. Attitude toward change.



Forces for Change

Physicians are encouraged to change their clinical behavior based on the presence or absence of various forces in their environment. The forces for change are broken into 3 types: professional forces, social forces, and personal forces. These forces were measured by asking physicians to rate their level of agreement from 1 (low agreement) to 5 (high agreement) with statements related to each force (**Figure A12**).

Figure A12. Forces for change.

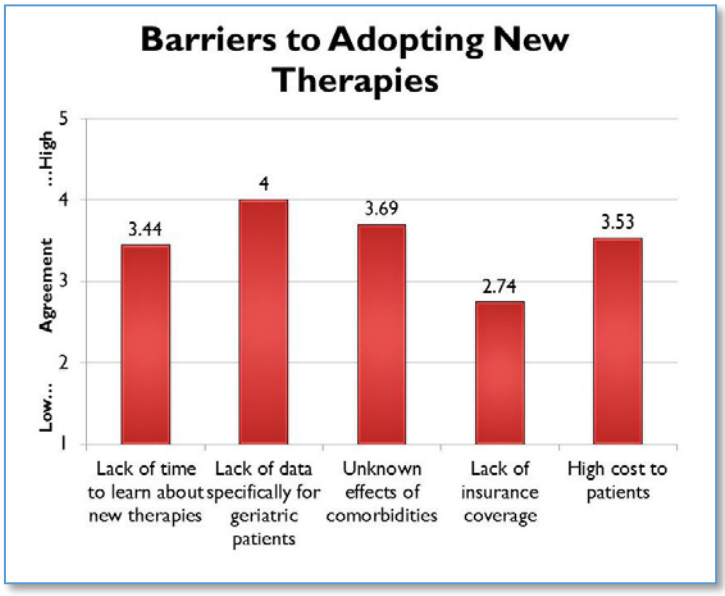


The highest forces for change were the professional forces "I wish I were more knowledgeable in this area" and "New information in the literature has increased my interest in adopting new practices in this area". Professional forces are the most often cited reason for change in clinical practice and demonstrate a desire for competence. The social forces encompass environmental elements that impact a clinician from outside and over which they feel that they have little control. The social forces, "The expectations of the systems (hospital, ACO, etc.) in which I work are a force for change in treating geriatric patients" and "Recent regulations or policies require that I do things differently in this area of my clinical practice," were ranked below the professional forces. The final social force, pressure from colleagues, was ranked lowest, just behind the lone personal force of financial advantage to changing practice. The most effective drivers of change in this area are professional forces. Oncologists will be most receptive to educational activities that indicate new information applicable to their patient population.

Barriers to Change: Adopting New Therapies

Barriers to change are real or perceived issues that may prevent physicians from applying best practices. Knowledge of the nature and magnitude of these barriers helps educational designers address these barriers within the scope of the interventions, thereby allowing for changes in physician performance as compared to changes in knowledge. In order to assess the impact of barriers to best practices in treating geriatric patients with cancer, respondents were asked to rate the extent to which they saw each item as a barrier to best practices, from 1 (low) to 5 (high) (**Figure A13**). These barriers were derived from the interviews, expert opinions, and the literature on physician change. Average responses are depicted below.

Figure A13. Barriers to care.



All of the barriers except "Lack of insurance coverage" are above the midpoint of 3, suggesting that these particular issues present barriers to best care of geriatric patients with cancer. The highest-rated items were "Lack of data specifically for geriatric patients" and "Unknown effects of comorbidities," confirming that a lack of quality clinical trial data focused on geriatric patients has left clinicians in the dark when trying to make the best treatment decisions for their patients. The barrier "High cost to patients" also scored well over the midpoint, highlighting that most geriatric patients are on fixed incomes and lack other necessary supports (ie, relying on a relative for transportation; directives to eat a specific, unaffordable diet). The busy schedules of medical oncologists are revealed by the barrier ranked next, which indicates that time is of the essence, and often clinicians feel they do not have enough time to achieve the level of study they would prefer. The "Lack of

insurance coverage" barrier is ranked less than 3.0, which is indicative of physicians feeling neutral about or disagreeing that this is a barrier.

These data were further evaluated to identify the percentage of physicians who rated each barrier as "High" (4 or 5). As expected, the percentage of physicians who rated the barriers very high aligned with the overall highly rated barriers (**Table A1**).

Table A1. Highest-rated barriers to care.

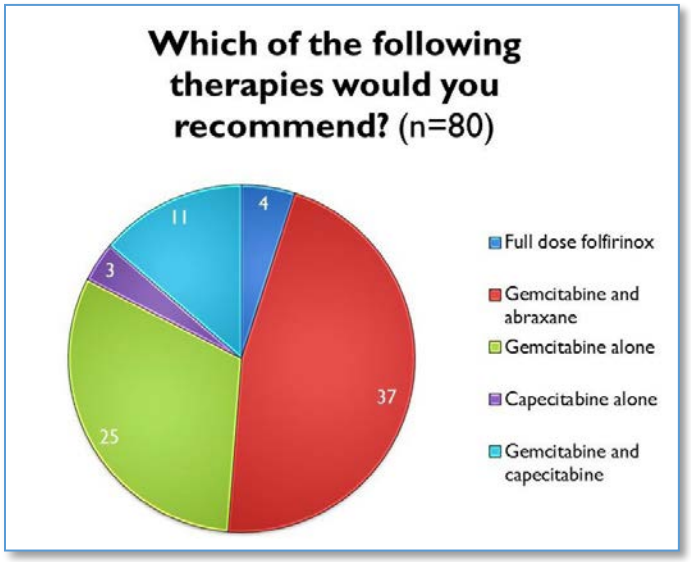
Barrier	% Rating High (4 or 5)
Lack of data specifically for geriatric patients	78%
Unknown effects of comorbidities	68%
Lack of time to learn about new therapies	54%
High cost to patients	52%
Lack of insurance coverage	23%

Practice Assessment

Next, medical oncologist survey participants were asked a series of practice assessment questions. Expert faculty optimal answers are in bold capital letters, and other acceptable answers are in bold. If a question was deemed unquestionably inappropriate as per the expert panel, it is identified as such in italics.

1. An 80-year-old man with borderline resectable pancreatic adenocarcinoma presents to your clinic. Per discussions with the surgeon, the tumor could become resectable if there was some shrinkage using pre-operative therapy. He has diabetes, stable CAD, and mild renal insufficiency, all of which are under good control through his internist. Which of the following therapies would you recommend?

    1. **FULL DOSE FOLFIRINOX**
    2. *Gemcitabine and abraxane*
    3. Gemcitabine alone
    4. Capecitabine alone
    5. Gemcitabine and capecitabine



Forty-six percent of respondents chose the ideal response of gemcitabine and abraxane. Gemcitabine alone would not be the optimal choice for this patient, given that tumor shrinkage is a goal and there is a fairly low chance of tumor shrinkage with gemcitabine alone. Gemcitabine with capecitabine is more appropriate for the adjuvant postoperative setting. There is very little data on use of full-dose FOLFIRINOX in geriatric patients or those with low performance status, and is unquestionably not appropriate given the other options presented here.

2. A 90-year-old male underwent resection of a stage IIIC colon cancer. He has excellent performance status and no major comorbidities. His creatinine clearance is 30. He lives independently and takes care of his own activities of daily living. He is afraid of falling and breaking his hip because this happened to his wife. Which approach would you take in considering adjuvant therapy?

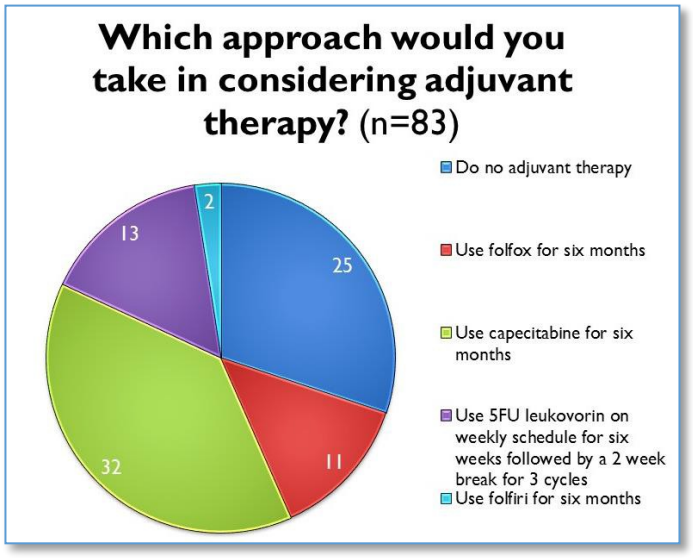
   1. **Do no adjuvant therapy**

   2. Use folfox for 6 months

   3. **Use capecitabine for 6 months**

   4. **USE 5FU LEUCOVORIN ON A WEEKLY SCHEDULE FOR 6 WEEKS, FOLLOWED BY A 2-WEEK BREAK FOR 3 CYCLES**

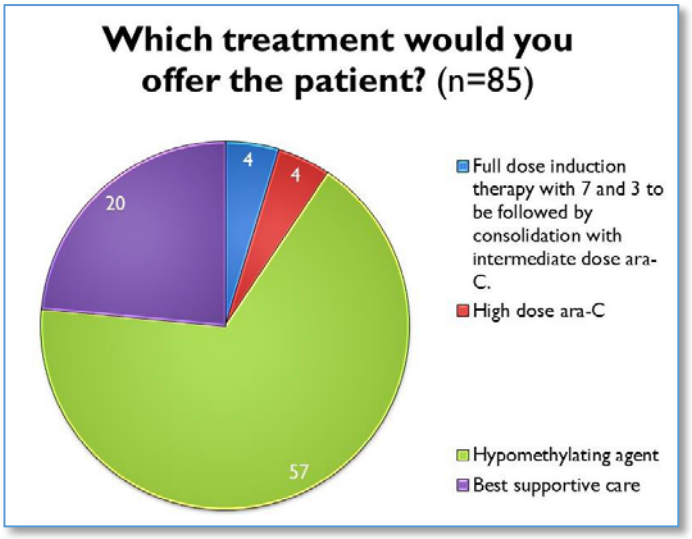
   5. Use folfiri for 6 months



Per the expert advisory panel, the 5FU leucovorin choice would also be most appropriate. Despite this, only 16% of survey responders chose this option. Capecitabine could be acceptable, with the caveat that dose adjustment would be required and creatinine clearance would need to be monitored in this patient with moderate renal impairment [18]. The decision to do no adjuvant therapy could also be considered appropriate, given that the patient is 90 years old and it may not impact his survival. Given the evidence that the addition of oxaliplatin does not provide survival benefit to patients aged >70 years, the choice of FOLFOX is inappropriate [17].

3. An 82-year-old woman is diagnosed with poor risk AML (complex karyotype), which appears to have arisen out of a prior myelodysplastic syndrome. She has multiple comorbidities and is limited in regards to her activities of daily living. She prefers to undergo some form of chemotherapy as long as she can tolerate it. Which treatment would you choose?

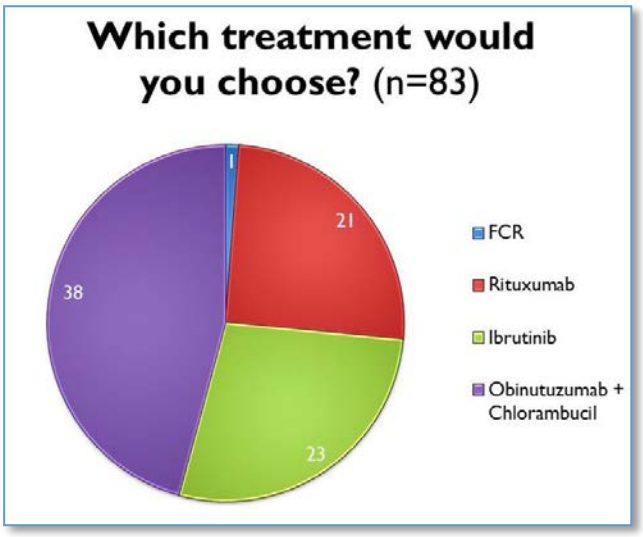
    1. Full-dose induction therapy with 7 and 3, to be followed by consolidation with intermediate-dose ara-C
    2. High-dose ara-C
    3. **HYPOMETHYLATING AGENT**
    4. **Best supportive care**



Sixty-seven percent of respondents chose the best route, the use of a hypomethylating agent. The advisory panel was somewhat taken aback that 24% of respondents chose to offer best supportive care, despite the fact the patient specifically requested undergoing some form of chemotherapy. This highlights the need for education regarding patient communication.

4. A 78-year-old woman presents with CLL (without del[17p]) with symptomatic enlarged lymph nodes and anemia due to bone marrow infiltration. She has COPD, which is treated with inhalers but otherwise well compensated. However, she also has atrial fibrillation on warfarin and high doses of metoprolol for rate control. Which treatment would you choose?

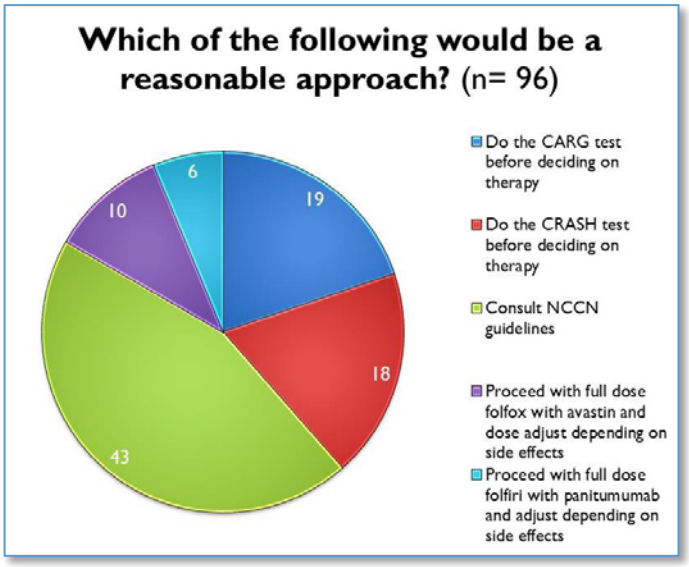
   1. *FCR*
   2. **Rituximab**
   3. Ibrutinib
   4. **OBINUTUZUMAB + CHLORAMBUCIL**



Forty-five percent chose obinutuzumab + chlorambucil, considered the best treatment choice. Rituximab in this setting may also be a possibility, though it would have fairly limited efficacy. Given the patient's cardiac complications, the choice of ibrutinib isn't ideal given its association with potential bleeding and cardiac risks.[11] Despite this, 28% of respondents still opted for this choice. FCR in this setting would be considered far too aggressive.

5. An 85-year-old female presents with right-sided and metastatic colon cancer that is not amenable to resection. Extended ras testing and braf testing show no mutations. She has a performance status of 1, hearing loss, and has had some falls at home in the past 6 months. Which of the following would be a reasonable approach?

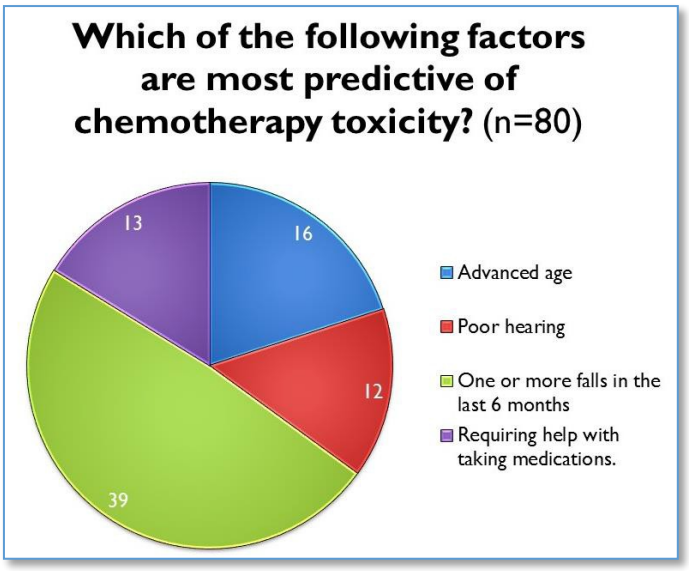
1. **DO THE CARG TEST BEFORE DECIDING ON THERAPY**
2. **DO THE CRASH TEST BEFORE DECIDING ON THERAPY**
3. **Consult NCCN guidelines**
4. Proceed with full-dose folfox with Avastin and dose adjust depending on side effects
5. Proceed with full-dose folfiri with panitumumab and adjust depending on side effects



While consulting the NCCN guidelines was overwhelmingly chosen, the advisory panel felt that this was in all likelihood a "cop out" answer, as reviewing the guidelines is technically never incorrect. Importantly, however, only 39% of respondents chose to do a CARG or CRASH test prior to deciding on therapy, highlighting the need for education around the utility of functional status tools.

6. A 79-year-old woman smoker with rheumatoid arthritis and chronic obstructive pulmonary disease was recently diagnosed with widely metastatic squamous cell carcinoma of the lung. The patient has an ECOG performance status of 1, an unremarkable CBC, serum creatinine of 0.7, and normal liver function tests. She is seeing you to discuss systemic treatment options. Which of the following factors are most predictive of chemotherapy toxicity?

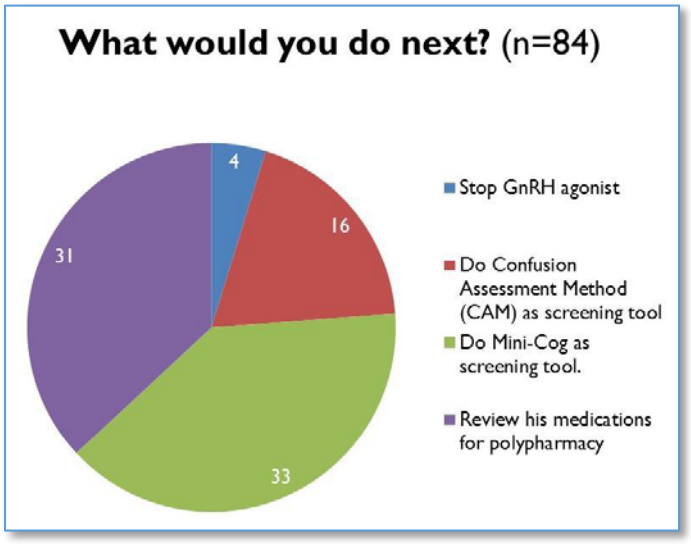
1. Advanced age
2. Poor hearing
3. **ONE OR MORE FALLS IN THE LAST 6 MONTHS**
4. Requiring help with taking medications



Forty-nine percent of respondents chose the empirically correct answer of "one or more falls in the last 6 months". This factor is weighted in the CARG scale, and the fact that more respondents were incorrect here again reflects the need for education around the utility of functional status tools.

7. You are treating an 85-year-old man with metastatic prostate cancer with a GnRH agonist. His family is concerned that the patient has chronic 'memory issues' and that the treatment could worsen it. He denies that he has any disturbances in attention or awareness. What would you do next?

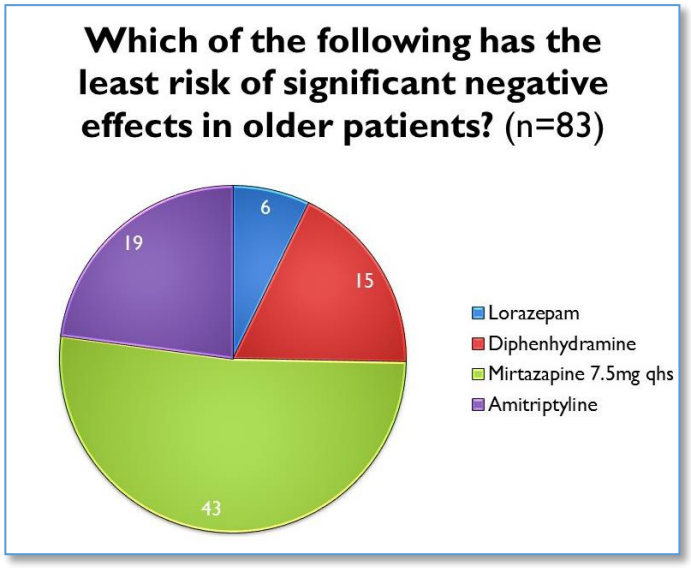
   1. *Stop GnRH agonist*
   2. Do Confusion Assessment Method (CAM) as screening tool
   3. **DO MINI-COG AS SCREENING TOOL**
   4. **Review his medications for polypharmacy**



While reviewing medications for polypharmacy is never a poor approach, the ideal approach is to do a MMSE or Mini-Cog assessment to assess cognitive function. It was noted that, ideally, there would be a baseline value that the clinician could compare the results against to determine if the therapy was impacting the patient's cognitive function. This highlights the need for education on the use of available tools at baseline to ensure that in the future any changes from baseline are documented. The CAM screening tool is more appropriate for sleepiness or delirium than memory issues, and stopping the GnRH agonist would likely have little to no effect.

8. A 90-year-old man is receiving carboplatin and paclitaxel for metastatic squamous cell carcinoma of the lung. His daughter is concerned that he is on "too many medications". You begin to review his supportive medications. Which of the following has the least risk of significant negative effects in older patients?

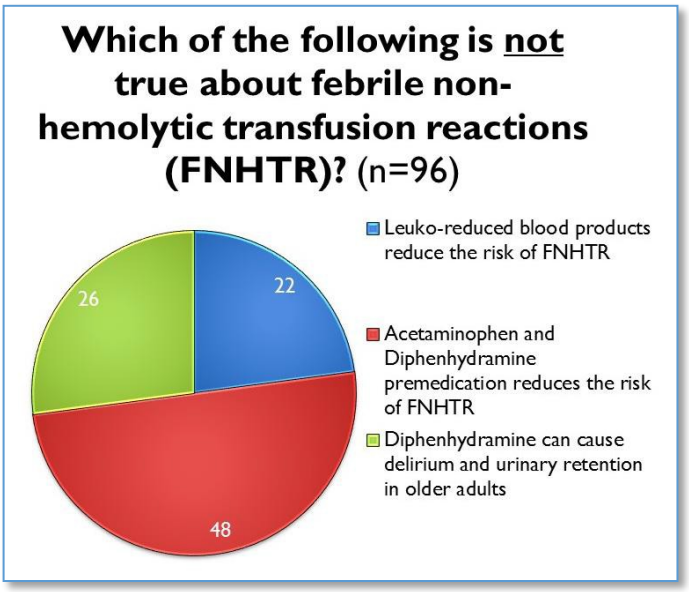
   1. *Lorazepam*
   2. *Diphenhydramine*
   3. **MIRTAZAPINE 7.5 MG QHS**
   4. *Amitriptyline*



Of the options here, mirtazapine is the only drug that stimulates appetite, which is important in the metastatic setting, and has the most minimal effect on other organs. Despite being the empirically correct answer, only 52% of respondents selected it. This highlights the need for increased education on the considerations that must be given when managing a geriatric patient.

9. An 87-year-old lady with anemia secondary to myelodysplastic syndrome has come to your clinic to receive a blood transfusion. The nursing staff has requested both acetaminophen and diphenhydramine as premedication prior to blood transfusion. The patient has not had any previous transfusion reactions and is going to receive leuko-reduced blood product. Which of the following is <u>not</u> true about febrile non-hemolytic transfusion reactions (FNHTR)?

1. *Leuko-reduced blood products reduce the risk of FNHTR*
2. **ACETAMINOPHEN AND DIPHENHYDRAMINE PREMEDICATION REDUCES THE RISK OF FNHTR**
3. *Diphenhydramine can cause delirium and urinary retention in older adults*



Exactly 50% of respondents selected the empirically correct answer. Along with several of the other scenarios presented, this highlights the need for education regarding toxicities that are particularly prevalent in the geriatric cancer patient population.

Survey Instrument

Thank you for taking part in this brief survey, conducted by Boston University School of Medicine and focused on management of geriatric cancer in the academic and community settings. You have been invited to participate in this survey because you are part of the multidisciplinary team of healthcare professionals that care for geriatric patients with cancer. Your responses will help shape medical education in this important area. Thank you for your kind assistance with this important project.

Demographic Questions

1. Please indicate your profession.
    1. Physician
    2. Nurse Practitioner
    3. Other

2. Please indicate your specialty.
    1. Medical Oncology
    2. Radiation Oncology
    3. Surgical Oncology
    4. Other

3. Please indicate the number of years you have been practicing: (after fellowship)
    1. 0-10
    2. 11-20
    3. 21-30
    4. >30

4. Please indicate the practice setting in which you work.
    1. Academic
    2. Community
    3. A combination of academic and community
    4. Freestanding cancer center
    5. Other

5. What types of cancer do you treat? (Select all that apply)
    1. Carcinoma
    2. Sarcoma
    3. Myeloma
    4. Leukemia
    5. Lymphoma
    6. Mixed Types

6. What percent of the patients that you treat are >70 years old?
    1. 0%
    2. 1-25%
    3. 26-50%
    4. 51-75%
    5. >75%

7. Does your electronic health record system assist with therapy selection? (eg, link to guidelines, pathways, pop-up window, etc.)
    1. Yes
    2. No
    3. I do not have an electronic health record system

8. Please rate your overall confidence in treating the following patients with cancer:
    a. Younger patients slider scale 1-100
    b. Geriatric patients slider scale 1-100

General Questions

9. If you were designing education for your specialty related to the treatment of geriatric patients with cancer, what issues would be most important to cover?

10. Related to the NCCN Guidelines and guidance for the care of geriatric patients with cancer...I wish the guideline provided:
    1. Less guidance
    2. More guidance
    3. The guideline provides just the right amount of information.
    4.
11. Why do you feel this way about the guidelines? (any clarification you can provide is appreciated)

12. How useful do you find the following in learning about new therapies?

	1	2	3	4	5
NCCN Guidelines	❑	❑	❑	❑	❑
Websites (Up-to-date, Medscape, etc.)	❑	❑	❑	❑	❑
Journals	❑	❑	❑	❑	❑
Meetings	❑	❑	❑	❑	❑
email updates	❑	❑	❑	❑	❑
Conversations with colleagues	❑	❑	❑	❑	❑

Forces for Change

13. In regards to treating geriatric patients with cancer, please indicate your level of agreement with each of the following statements:

	1	2	3	4	5
I feel pressure from some colleagues to adopt new practices in this clinical area.	❑	❑	❑	❑	❑
I wish I were more knowledgeable in this area.	❑	❑	❑	❑	❑
The expectations of the systems (hospital, ACO, etc.) in which I work are a force for change in treating geriatric patients.	❑	❑	❑	❑	❑
New information in the literature has increased my interest in adopting new practices in this area.	❑	❑	❑	❑	❑

Recent regulations or policies require that I do things differently in this area of my clinical practice.	❑	❑	❑	❑	❑
There are financial advantages to changing my approach with geriatric patients.	❑	❑	❑	❑	❑

14. For the following statements related to geriatric oncology, please indicate your present ability to the left, and your desired ability to the right.

Ability [Low, High]

	1	2	3	4	5
Assess patient health status (comorbidities, physical function, cognition, social status, etc.)	❑	❑	❑	❑	❑
Adjust treatment options for geriatric patients based on health status	❑	❑	❑	❑	❑
Address language, religious, and other cultural issues that may affect management of the geriatric patient with cancer	❑	❑	❑	❑	❑
Communicate with the geriatric patient, family, and caregivers about desired goals of care	❑	❑	❑	❑	❑
Determine the optimal treatment regimen(s), including timing and dosing, for the geriatric patient	❑	❑	❑	❑	❑
Communicate with the patient/family/caregivers about treatment options and patient concerns	❑	❑	❑	❑	❑
Manage side effects	❑	❑	❑	❑	❑
Revise the treatment plan when necessary	❑	❑	❑	❑	❑
Collaborate with the multidisciplinary team (including primary care) about the care of the geriatric patient	❑	❑	❑	❑	❑

15. In regard to managing geriatric patients with cancer...

	1	2	3	4	5
The way I practice in this clinical area is acceptable to me.	❑	❑	❑	❑	❑
I may need to examine one or more of my clinical practices in this area.	❑	❑	❑	❑	❑
I plan to change the way I practice in this area in the near future.	❑	❑	❑	❑	❑

16. Please rate the following as barriers to adopting new therapies for geriatric patients:

	1	2	3	4	5
1. Lack of time to learn about new therapies	❑	❑	❑	❑	❑
2. Lack of data specifically for geriatric patients	❑	❑	❑	❑	❑
3. Unknown effects of comorbidities	❑	❑	❑	❑	❑
4. Lack of insurance coverage	❑	❑	❑	❑	❑
5. High cost to patients	❑	❑	❑	❑	❑

17. Please rate your level of agreement with the following statements.

	1	2	3	4	5
I regularly use formal tools (ECOG, Karnofsky, ADLs, IADLs, etc.) to assess geriatric patient performance status	❑	❑	❑	❑	❑
I regularly use formal tools (MMSE, MOCA, Mini-Cog, SLUMS, etc.) to assess geriatric patient cognitive status	❑	❑	❑	❑	❑
I regularly use formal tools (CARG, CRASH) to identify patients who are at a higher risk for chemotherapy intolerance	❑	❑	❑	❑	❑
I regularly use resources (NCI, ACS, FDA, etc.) to educate my geriatric patients on their condition and treatment.	❑	❑	❑	❑	❑
I regularly refer geriatric patients for a consult with a geriatrician or palliative care physician.	❑	❑	❑	❑	❑

Selection of Therapy - Select the best option

18. An 80-year-old man with borderline resectable pancreatic adenocarcinoma presents to your clinic. Per discussions with the surgeon, the tumor could become resectable if there was some shrinkage using pre-operative therapy. He has diabetes, stable CAD, and mild renal insufficiency, all of which are under good control through his internist. Which of the following therapies would you recommend?
    1. I do not see this type of patient
    2. Full dose folfirinox
    3. Gemcitabine and abraxane
    4. Gemcitabine alone
    5. Capecitabine alone
    6. Gemcitabine and capecitabine

19. A 90-year-old male underwent resection of a stage IIIC colon cancer. He has excellent performance status and no major comorbidities. His creatinine clearance is 30. He lives independently and takes care of his own activities of daily living. He is afraid of falling and breaking his hip because this happened to his wife. Which approach would you take in considering adjuvant therapy?

1. I do not see this type of patient
2. Do no adjuvant therapy
3. Use folfox for 6 months
4. Use capecitabine for 6 months
5. Use 5FU leucovorin on a weekly schedule for 6 weeks, followed by a 2-week break for 3 cycles
6. Use folfiri for 6 months

20. An 82-year-old woman is diagnosed with poor risk AML (complex karyotype), which appears to have arisen out of a prior myelodysplastic syndrome. She has multiple comorbidities and is limited in regards to her activities of daily living. She prefers to undergo some form of chemotherapy as long as she can tolerate it. Which treatment would you offer the patient?
    1. I do not see this type of patient
    2. Full-dose induction therapy with 7 and 3, to be followed by consolidation with intermediate-dose ara-C.
    3. High-dose ara-C
    4. Hypomethylating agent
    5. Best supportive care

21. A 78-year-old woman presents with CLL (without del[17p]) with symptomatic enlarged lymph nodes and anemia due to bone marrow infiltration. She has COPD, which is treated with inhalers but otherwise well compensated. However, she also has atrial fibrillation on warfarin and high doses of metoprolol for rate control. Which treatment would you choose?
    1. I do not see this type of patient
    2. FCR
    3. Rituxumab
    4. Ibrutinib
    5. Obinutuzumab + Chlorambucil

22. An 85-year-old female presents with right-sided and metastatic colon cancer, which is not amenable to resection. Extended ras testing and braf testing show no mutations. She has a performance status of 1, hearing loss, and has had some falls at home in the past 6 months. Which of the following would be a reasonable approach?
    1. Do the CARG test before deciding on therapy
    2. Do the CRASH test before deciding on therapy
    3. Consult NCCN guidelines
    4. Proceed with full dose folfox with Avastin and dose adjust depending on side effects
    5. Proceed with full dose folfiri with panitumumab and adjust depending on side effects

23. A 79-year-old woman smoker with rheumatoid arthritis and chronic obstructive pulmonary disease was recently diagnosed with widely metastatic squamous cell carcinoma of the lung. The patient has an ECOG performance status of 1, an unremarkable CBC, serum creatinine of 0.7, and normal liver function tests. She is seeing you to discuss systemic treatment options. Which of the following factors are most predictive of chemotherapy toxicity?
    1. I do not see this type of patient
    2. Advanced age
    3. Poor hearing
    4. One or more falls in the last 6 months
    5. Requiring help with taking medications

24. You are treating an 85-year-old man with metastatic prostate cancer with a GnRH agonist. His family is concerned that the patient has chronic memory issues and that the treatment could worsen it. He denies that he has any disturbances in attention or awareness. What would you do next?
    1. I do not see this type of patient
    2. Stop GnRH agonist
    3. Conduct the Confusion Assessment Method (CAM) assessment
    4. Conduct the MMSE or Mini-Cog assessment
    5. Review his medications for polypharmacy

25. A 90-year-old man is receiving carboplatin and paclitaxel for metastatic squamous cell carcinoma of the lung. His daughter is concerned that he is on "too many medications". You begin to review his supportive medications. Which of the following has the least risk of significant negative effects in older adults?
    1. I do not see this type of patient
    2. Lorazepam
    3. Diphenhydramine
    4. Mirtazapine
    5. Amitriptyline

26. An 87-year-old lady with anemia secondary to myelodysplastic syndrome has come to your clinic to receive a blood transfusion. The nursing staff has requested both acetaminophen and diphenhydramine as premedication prior to blood transfusion. The patient has not had any previous transfusion reactions and is going to receive leuko-reduced blood product. Which of the following is <u>not</u> true about febrile non-hemolytic transfusion reactions (FNHTR)?
    1. Leuko-reduced blood products reduce the risk of FNHTR
    2. Acetaminophen and diphenhydramine premedication reduces the risk of FNHTR
    3. Diphenhydramine can cause delirium and urinary retention in older adults

References

1. Fox RD, Mazmanian PE, Putnam RW. *Changing and Learning in the Lives of Physicians*. New York, NY: Praeger; 1989.
2. Talarico L, Chen G, Pazdur R. Enrollment of elderly patients in clinical trials for cancer drug registration: a 7-year experience by the US Food and Drug Administration. *J Clin Oncol*. 2004;22(22):4626-4631.
3. Hutchins LF, Unger JM, Crowley JJ, et al. Underrepresentation of patients 65 years of age or older in cancer-treatment trials. *N Engl J Med*. 1999;341(27):2061-2067.
4. Tournigand C, André T, Bonnetain F, et al. Adjuvant therapy with fluorouracil and oxaliplatin in stage II and elderly patients (between ages 70 and 75 years) with colon cancer: subgroup analyses of the Multicenter International Study of Oxaliplatin, Fluorouracil, and Leucovorin in the Adjuvant Treatment of Colon Cancer trial. *J Clin Oncol*. 2012;30(27):3353-3360.
5. Xeloda® (capecitabine) [prescribing information]. South San Francisco, CA: Genentech, Inc;2016.
6. Imbruvica® (ibrutinib) [prescribing information]. Horsham, PA: Janssen Biotech, Inc; 2017.
7. Cascinu S, Del Ferro E, Catalano G. Toxicity and therapeutic response to chemotherapy in patients aged 70 years or older with advanced cancer. *Am J Clin Oncol*. 1996;19(4):371-374.
8. Fisher B, Anderson S, Wickerham DL, et al. Increased intensification and total dose of cyclophosphamide in a doxorubicin-cyclophosphamide regimen for the treatment of primary breast cancer: findings from National Surgical Adjuvant Breast and Bowel Project B-22. *J Clin Oncol*. 1997;15(5):1858-1869.
9. Lichtman SM, Hollis D, Miller AA, et al; Cancer and Leukemia Group B (CALGB 9762). Prospective evaluation of the relationship of patient age and paclitaxel clinical pharmacology: Cancer and Leukemia Group B (CALGB 9762). *J Clin Oncol*. 2006;24(12):1846-1851.

10. Muss HB, Berry DA, Cirrincione C, et al; Cancer and Leukemia Group B Experience. Toxicity of older and younger patients treated with adjuvant chemotherapy for node-positive breast cancer: the Cancer and Leukemia Group B Experience. *J Clin Oncol*. 2007;25(24):3699-3704.
11. Calvo E, Walko C, Dees EC, Valenzuela B. Pharmacogenetics, pharmacokinetics, and pharmacodynamics in the era of targeted therapies. In: Dizon DS, Pennell N, eds. *American Society of Clinical Oncology 2016 Educational Book.* Alexandria, VA: ASCO University; 2016:e175-e184. https://media4.asco.org/176/edbook/2016_edbook.pdf. Accessed January 7, 2019.
12. Hurria A, Blanchard MS, Synold TW, et al. Age-related changes in nanoparticle albumin-bound paclitaxel pharmacokinetics and pharmacodynamics: influence of chronological versus functional age. *Oncologist*. 2015;20(1):37-44.
13. Extermann M, Boler I, Reich RR, et al. Predicting the risk of chemotherapy toxicity in older patients: the Chemotherapy Risk Assessment Scale for High-Age Patients (CRASH) score. *Cancer*. 2012;118(13):3377-3386.
14. American College of Physicians (ACP). High Value Care Coordination (HVCC) Toolkit. https://www.acponline.org/clinical-information/high-value-care/resources-for-clinicians/high-value-care-coordination-hvcc-toolkit. Accessed January 7, 2019.
15. Hagerty RG, Butow PN, Ellis PA, et al. Cancer patient preferences for communication of prognosis in the metastatic setting. *J Clin Oncol*. 2014;22(9):1721-1730.
16. Hagerty RG, Butow PN, Ellis PM, et al. Communicating with realism and hope: incurable cancer patients' views on the disclosure of prognosis. *J Clin Oncol*. 2005;23(6):1278-1288.
17. Kadakia KC, Moynihan TJ, Loprinzi CL. Palliative communications: addressing chemotherapy in patients with advanced cancer. *Ann Oncol.* 2012;23(suppl 3):829-832.
18. Temel JS, Greer JA, Muzikansky A, et al. Early palliative care for patients with metastatic non-small-cell lung cancer. *N Engl J Med.* 2010;33(8):733-742.

Additional Reading: Williams SK, Braxton JM, Gosdin M, et al. Evidence-Based Care for the Elderly: Uses of "the Grandmother Principle". *J Health Care Poor Underserved*. 2017;28(1):7.