

# Do Multidisciplinary Meetings Follow Guideline-Based Care?

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## Abstract

**Purpose:** Multidisciplinary meetings (MDMs) are increasingly being mandated as essential to oncology practice. However, there is a paucity of data on their effectiveness. The aim of this study was to assess whether MDM recommendations were concordant with guidelines in the treatment of lung cancer.

**Patients and Methods:** The Lung Cancer Multidisciplinary Meeting in South West Sydney, Australia, prospectively collects data on all patients whose cases have been presented. New patients with lung cancer who presented between December 1, 2005, and December 31, 2007, were reviewed. Patients were assigned to treatment on the basis of evidence-based guidelines according to pathology, stage, and Eastern Cooperative Oncology Group (ECOG) performance status. MDM recommendations were compared with guideline treatment, and reasons for discrepancy were noted.

**Results:** There were 335 patients with a median age of 69 years. Of these, 82% had non-small-cell lung cancer (NSCLC), 14% had small-cell lung cancer, and 4% had no pathologic diagnosis. Eighty-four percent had locally advanced or metastatic disease. Concordance of MDM recommendations with guideline treatment existed in 29 (58%) of 50 cases for surgery, 201 (88%) of 228 cases for radiotherapy, and 200 (77%) of 260 cases for chemotherapy. Overall concordance with guideline treatment was 71% (239 of 335 cases). On multivariate analysis, age greater than 70 years, ECOG performance status of 2 or higher, and stage III NSCLC were associated with the MDM not recommending guideline treatment. The primary reasons for this were physician decision (39%), comorbidity (25%), and technical factors (22%).

**Conclusion:** MDM recommendations were largely concordant with guidelines. Physician discretion in not recommending guideline treatment was most often exercised in older patients and those with borderline performance status. Individual factors that may preclude guideline treatment cannot be accounted for by guidelines.

## Introduction

Multidisciplinary meetings (MDMs) are commonplace in oncology. They represent a gathering of medical professionals and/or patients to form management plans for patients with a particular type of cancer. Potentially, these MDMs can help streamline care, improve efficiency of health service delivery, and increase adherence to guideline-based treatment. A systematic review of MDMs found that the benefits ranged from increased treatment utilization to reduced time from diagnosis to treatment to improved survival.<sup>1</sup> There was also greater enrollment onto clinical trials.<sup>2,3</sup>

Some lung cancer guidelines state that all patients with lung cancer should be referred to an MDM.<sup>4-6</sup> However, there is a paucity of data to support these recommendations. Conron et al<sup>7</sup> found a high rate of concordance with guidelines but only three of these specifically related to treatment. Leo et al<sup>8</sup> found a low rate of discordance between MDM recommendations and actual treatments received. None of these studies compared whether MDM recommendations followed evidence-based treatment guidelines according to stage of lung cancer.

There are numerous clinical practice guidelines for the management of lung cancer.<sup>4-6,9-11</sup> These guidelines have been used to create decision trees for evidence-based use of chemotherapy and radiotherapy.<sup>12,13</sup> The aim of this study was to assess concordance of MDM recommendations with evidence-based guidelines that use these decision trees.

## Patients and Methods

A weekly MDM on lung cancer is held at the Liverpool and Macarthur Cancer Therapy Centres (South West Sydney, Australia). The meeting takes place during 50 weeks each year and is attended by respiratory physicians, a cardiothoracic surgeon, medical and radiation oncologists, palliative care physicians, a positron emission tomography physician, a radiologist, and lung cancer nurse. This composition has remained largely unchanged since early 2000. The Australian lung cancer guidelines,<sup>9</sup> published in 2004, were available to clinicians to guide management decisions but were not actively referenced during the meeting.

Prospective electronic data collection has been in place since December 1, 2005, and includes patient demographics, specific comorbidities, smoking history, ECOG performance status, histology, diagnostic investigations, stage, and MDM consensus. For patients for whom the recommendation was best supportive care alone, the best reason for this was recorded (eg, comorbidity, ECOG performance status, patient decision, clinician decision).

There are models for evidence-based use of radiotherapy<sup>12</sup> and chemotherapy<sup>13</sup> in lung cancer. These decision trees use guideline recommendations to assign the use of radiotherapy or chemotherapy on the basis of pathology, stage, and performance status (Appendix Table A1, online only). There are no models for the use of surgery in lung cancer; however, this is included in the radiotherapy decision tree.<sup>12</sup> Data concerning

patients discussed at the MDM were entered into the model to assess guideline-based treatment for each patient. More than one option could be defined as guideline-based treatment if alternative treatments existed.

We performed a retrospective review of MDM decisions to assess the effect of this forum in recommending treatment according to guidelines that existed at the time. Data was retrieved on all patients with newly diagnosed lung cancer whose cases were presented at the MDM between December 1, 2005 and December 31, 2007. MDM recommendations were compared with guideline treatment to assess concordance. For patients for whom the guidelines recommended a combination of therapies, all therapies had to be recommended by the MDM for concordance to exist.

If there was a discordance, one investigator reviewed the electronic medical records to identify the best reason for the difference. The reasons included those already in the database for best supportive care as well as “technical factors,” “alternate treatment modality,” and “physician decision.” Technical factors considered for radiotherapy included large tumor volume, previous chest radiotherapy, proximity of tumor to spinal cord; those factors considered for surgery included proximity of tumor to neurovascular structures; and factors considered for chemotherapy included impaired renal or hematologic function. If no specific reason could be identified for discordance, the reason was recorded as a physician decision.

Non–small-cell lung cancer (NSCLC) was staged according to TNM (version 6) and small-cell lung cancer (SCLC) according to Veterans Administration staging.<sup>14,15</sup>

Analyses were performed using Statistical Package for the Social Sciences (SPSS) for Windows version 17.0 (SPSS, Chicago, IL). Univariate analyses were performed using  $\chi^2$  tests, and multivariate analyses used logistic regression.

## Results

### Patient and Tumor Characteristics

Between December 1, 2005 and December 31, 2007, 335 patients with newly diagnosed lung cancer were presented. This represented 70% of all new patients with lung cancer seen at the cancer therapy centers and 59% of the patient population with lung cancer in South West Sydney.<sup>16</sup> Patient and tumor characteristics are listed in Table 1. The median age of patients was 69 years; 64% of patients had good performance status (ECOG 0-1), and 66% had a comorbidity. Of all 335 patients, 82% had NSCLC, 14% had SCLC, and 4% had only been given clinical diagnoses. Most patients had stage III (36%) or IV (34%) NSCLC.

### Radiotherapy

Guideline-based use of radiotherapy in this cohort was 68% (n = 228). The MDM recommended radiotherapy in only 60% (n = 201). There were 28 patients for whom radiotherapy was not recommended. The main reasons were technical factors that precluded safe delivery of radiotherapy and physician decision (Table 2). There was one patient for whom the MDM recommended radiotherapy when such was not the guideline-

**Table 1.** Patient and Tumor Characteristics

Characteristic	No. of Patients	%
Sex		
Male	218	65
Female	117	35
Country of birth		
Australia	163	49
Other	165	49
Unknown	7	2
Language		
English	275	82
Other	59	18
Unknown	1	0
Age, years		
< 50	22	7
50-59	47	14
60-69	110	33
70-79	116	35
> 80	40	12
ECOG PS		
0-1	213	64
2	76	23
3-4	45	13
Unknown	1	0
Comorbidity		
Absent	112	34
Present	221	66
Pathology		
Squamous cell	60	18
Adenocarcinoma	90	27
Large cell carcinoma	109	32
NSCLC NOS	15	5
SCLC	46	14
No pathology	15	4
Stage*		
NSCLC		
I	29	9
II	25	7
III	122	36
IV	113	34
SCLC		
Limited stage	19	6
Extensive stage	27	8

Abbreviations: ECOG PS, Eastern Cooperative Oncology Group performance status; NSCLC, non–small-cell lung cancer; NOS, not otherwise specified; SCLC, small-cell lung cancer.

\* Patients without pathologic diagnosis were staged with the NSCLC group.

based treatment. In terms of radiotherapy intent, the main difference between guideline and MDM recommendations was in definitive radiotherapy (36% *v* 22%, respectively; Appendix Fig 1, online only). Conversely, the MDM recommended palliative chest radiotherapy more often (20% *v* 13%).

**Table 2.** Reasons for the MDM Not Recommending Guideline Treatment, by Treatment Modality and Overall

Reason	Radiotherapy (n = 28)		Chemotherapy (n = 64)		Surgery (n = 21)		Overall*	
	No. of Patients	%	No. of Patients	%	No. of Patients	%	No. of Patients	%
Physician decision	8	29	34	53	4	19	37	39
Technical factors	8	29	5	7	3	14	21	22
Patient decision	2	7	1	2	3	14	3	3
Change in ECOG PS/progressive disease	1	3	7	11	0	0	9	9
Lung comorbidity	4	14	7	11	7	34	13	14
Other comorbidity	3	11	9	14	4	19	11	11
Alternate modality	2	7	1	2	0	0	2	2

Abbreviations: MDM, multidisciplinary meeting; ECOG PS, Eastern Cooperative Oncology Group performance status.

\* The overall patient numbers do not represent the sum of patient numbers for each treatment, as an individual patient could appear in more than one treatment column if multimodality treatment was the optimal treatment.

## Chemotherapy

Guideline-based chemotherapy use in this cohort was 78% (n = 260). The MDM recommended chemotherapy in only 60% (n = 200). There were 64 patients for whom chemotherapy was not recommended by the MDM, largely as a result of physician decision or comorbidity (Table 2). The MDM recommended chemotherapy for 4 patients for whom that was not deemed to be guideline treatment by this study. Concurrent chemotherapy with radiotherapy was guideline treatment in 29% of patient cases but was only recommended in 16% (Appendix Fig A2, online only). Although 41% of patients had indications for palliative chemotherapy on the basis of guidelines, palliative treatment was recommended by the MDM for only 37%.

## Surgery

The use of surgery as guideline treatment has been limited to patients with stage I and II NSCLC. Although there is a role for surgery in stage IIIA disease, the definition of operability differs from surgeon to surgeon. On the basis of evidence, surgery should have been assigned for 15% of patients (n = 50). The MDM recommended surgery for only 9% (n = 29), primarily because of comorbidities (Table 2). There were an additional 15 patients—all with stage III NSCLC—who were recommended for surgery by the MDM.

## Overall Concordance

Overall, the MDM recommended guideline treatment for 71% of patients (239 of 335). The primary reasons for not recommending guideline treatment were physician decision and comorbidity. In those patients for whom the reason was physician decision, median age was 79 years, 56% (n = 20) were ECOG performance status 2, 47% (n = 17) had stage III NSCLC, and 33% (n = 12) had stage IV NSCLC. Respiratory comorbidity was the primary reason for nonguideline recommendations in stage I and II NSCLC (Appendix Table A2, online only), physician decision in stage III and IV NSCLC, and other comorbidity in extensive-stage SCLC. Technical factors were a prominent reason for lack of guideline recommendation in limited-stage SCLC and stage III NSCLC and generally re-

lated to large tumor volume precluding safe delivery of radical radiotherapy.

In univariate analysis, recommendation of guideline treatment by the MDM was significantly associated with age, ECOG performance status, disease stage, weight loss, comorbidity, and prior cancer. The median age of those for whom the MDM recommended guideline treatment was 67 years compared with 74 years for those for whom guideline treatment was not recommended. In multivariate analysis, only age, ECOG performance status, and disease stage remained independent predictors of whether the MDM recommended guideline treatment (Table 3). Patients age 70 years and older, those who were ECOG performance status 2, and those with stage III NSCLC were all significantly less likely to have guideline treatment recommended. Conversely, patients who were ECOG performance status 4 or had stage IV NSCLC or extensive-stage SCLC were more likely to have guideline treatment recommended for them, because for many of these patients with advanced disease, the guideline treatment may have been palliative care alone.

## Discussion

It is difficult to measure the effectiveness of MDMs and whether such meetings have an impact on patient outcomes. There have been three retrospective studies that have compared patient outcomes of patients discussed at MDMs with those of patients not discussed at MDMs.<sup>3,17,18</sup> Riedel et al<sup>3</sup> compared the timeliness of care of 244 patients discussed at an MDM with 101 patients who were not. They found no significant difference between time from presentation to diagnosis and time from diagnosis to treatment. Survival was also similar.

The other two studies have been limited to inoperable stage III and IV NSCLC.<sup>17,18</sup> Bydder et al<sup>17</sup> compared 81 patients discussed at MDMs with 17 patients not discussed at an MDM. They found increased use of treatment in the MDM cohort and significantly improved 1-year survival (18% v 33%). The authors did acknowledge that biases in selecting patients for MDM discussion could have impacted their findings. Forrest et al<sup>18</sup> compared outcomes of patients who were diagnosed four

**Table 3.** Concordance of MDM Recommendations With Guideline-Based Treatment According to Patient Characteristics

Characteristic	Concordance (%)	Odds Ratio	95% CI	P
Age, years				.002
< 50	82	1		
50-59	81	1.1	0.3 to 4.3	
60-69	80	1.3	0.4 to 4.9	
70-79	63	0.5	0.1 to 1.8	
> 80	55	0.4	0.1 to 1.6	
ECOG PS				< .0001
0-1	78	1		
2	43	0.2	0.1 to 0.4	
3-4	84	2.3	0.8 to 6.4	
Stage				.005
NSCLC				
I and II	72	1		
III	60	0.5	0.2 to 1	
IV	81	1.4	0.6 to 3.4	
SCLC				
Limited stage	68	1	0.3 to 3.9	
Extensive stage	82	2.3	0.6 to 9.1	

Abbreviations: MDM, multidisciplinary meeting; ECOG PS, Eastern Cooperative Oncology Group performance status; NSCLC, non-small-cell lung cancer; SCLC, small-cell lung cancer.

years apart—before ( $n = 117$ ) and after ( $n = 126$ ) the introduction of an MDM. Chemotherapy use and median survival improved in the MDM cohort (3.2 months *v* 6.6 months). However, these findings could also be related to improved staging<sup>19</sup> and more evidence supporting the use of chemotherapy over time.

A surrogate measure of MDM effect is the concordance of its recommendations with evidence-based guidelines. Population studies from throughout the world have shown that treatment use varies enormously, from 50% in New Zealand and Ireland to 81% in the United States.<sup>20-25</sup> There have been two large population-based studies assessing the use of guideline treatment for patients with NSCLC.<sup>26,27</sup>

Potosky et al<sup>26</sup> evaluated 898 patients with NSCLC from the Surveillance, Epidemiology, and End Results (SEER) database comparing actual management with guideline treatment. Overall, 52% of patients were treated according to guidelines, although concordance ranged from 69% of patients with stage I and II NSCLC to 48% of patients with stage III NSCLC and 41% of patients stage IV NSCLC. Similar to our findings, the use of guideline treatment decreased with age, from 75% for patients age 50 years and younger to 34% for those age 80 years and older.

De Rijke et al<sup>27</sup> identified patients with lung cancer from two Dutch cancer registries ( $n = 803$ ) and evaluated whether they had been treated according to local guidelines. The authors found that 82% of patients with stage I and II NSCLC, 48% of patients with stage IIIA NSCLC, and 54% of patients with

stage IIIB NSCLC received guideline treatment. Of the patients with stage IV NSCLC, 64% received any treatment. The presence of comorbidity and age older than 75 years predicted for lack of guideline treatment. ECOG performance status was not a predictor of guideline treatment, although only 4% of the patient population was ECOG performance status 3 or 4.

The patients in the current study included patients with both NSCLC and SCLC. We found that 72% of patients with stage I and II NSCLC, 60% of patients with stage III NSCLC, 81% of patients with stage IV NSCLC, 68% of patients with limited-stage SCLC, and 82% of patients with extensive-stage SCLC received an MDM recommendation for treatment that was concordant with the guidelines. For patients with stage III and IV NSCLC, the concordance is higher than the use of guideline treatment documented in the US and Dutch populations.

All three studies show increasing age to be a negative predictor for guideline treatment, independent of comorbidity or ECOG performance status. This is probably because of a paucity of randomized data on treatment options for the elderly. Patients for whom guideline treatment was not recommended had an older median age of 79 years. Lung cancer guidelines do not have an age cutoff for treatment recommendations.<sup>4,6,9-11</sup> Although age is associated with increased incidence of organ dysfunction, guideline treatment for patients with minimal comorbidities and good performance status can result in outcomes equivalent to those experienced by younger patients.<sup>28-32</sup>

Patients with ECOG performance status 2 were the least likely to receive guideline treatment. The uncertainty of outcome for these patients again reflects the selection criteria of many trials. Specific trials targeting this population do show a clinical benefit in patients with ECOG performance status 2, although survival remains poorer than for those with ECOG performance status 0-1.<sup>33,34</sup> Newer biologic agents have an emerging role in this group of patients.<sup>35</sup>

Concordance of MDM recommendation to guideline treatment was lowest in stage III NSCLC, which represents a heterogeneous population. The optimal management is multimodality treatment. Physician decision was the primary reason for lack of a guideline treatment recommendation in this group, suggesting that doubt still exists about optimal treatment for these patients, especially patients in the older age group. Patient comorbidity and technical factors also meant that patients were unsuitable for guideline treatment.

Concordance between MDM recommendations and guideline treatment varied by treatment modality, with 58% (29 of 50) for surgery, 77% (200 of 260) for chemotherapy, and 88% (201 of 228) for radiotherapy. For surgery and radiotherapy, there were legitimate reasons for not recommending these treatments on the basis of comorbidity or technical factors, such as large tumor volume. Physician decision was the predominant reason for not recommending chemotherapy. It is important to note that this was the collective decision of the MDM, which took individual patient factors into account. The most marked difference was in the recommendation for definitive radiother-



apy and concurrent chemotherapy. Although numerous trials have proven the benefit of this treatment, it may not be applicable to many in the general population with lung cancer, because of comorbidity, technical factors, or uncertain applicability in older patients and patients with borderline performance status.

This study simply assessed the management recommendations after discussion of a patient at a single MDM at which there was breadth of specialty attendance, written management protocols, and formalized data collection. The results may not be able to be generalized to other settings, particularly if the composition or process of the MDM differs substantially. The next step is to evaluate whether these patients actually received the treatment recommended by the MDM. Ideally, we would like to compare patterns of care and outcomes of this MDM cohort with the resident population diagnosed with lung cancer during the same time period. Both of these areas are currently the subjects of ongoing research.

In conclusion, MDM discussion resulted in recommendation of guideline treatment in a high proportion of patients. Physician discretion in not recommending guideline treatment was more often exercised for older patients and those with borderline performance status. These patients have been largely excluded from clinical trials, and additional data is necessary to guide treatment decisions. Given that guidelines cannot account for patient or tumor-specific factors that may preclude specific treatment in an individual patient, MDMs are the preferred forum to formulate management plans for patients with lung cancer.

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## Multidisciplinary Cancer Care in a Community Hospital Setting: Challenges and Rewards

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### Introduction

Cancer care is multidisciplinary by its very nature. To care for our patients, we need the input of radiologists, pathologists, a psychosocial support team, and many others. That is to say nothing of the care that must be coordinated among surgeons, radiation oncologists, medical oncologists, pharmacists, radiation physicists, and the list goes on.

Still, the patient who is confronted with the terrifying diagnosis of cancer frequently gets only a glimpse of the people who are making life-and-death decisions for him or her. Adding to this sense of not having control of one's life is the fact that the patient usually has little or no relationship with many of these caregivers.

In an attempt to ameliorate these problems and improve patient care, physicians have tried to bring many of the members of this care team together in the form of multidisciplinary clinics. In my own practice, I have experienced both success and failure in this effort.

I am a member of a 10-person adult medical oncology practice in southern and central New Hampshire. We care for patients in a variety of practice settings. These include independent physician-owned and operated offices as well as hospital-owned clinics where we provide professional services only.

Many years ago, we attempted to start a multidisciplinary breast cancer clinic in one of the communities in which we have a physician-owned practice. This is a two-hospital community, and unfortunately, the political rivalries and conflicting economic needs thwarted the effort. The project never got off the ground.

Some years later, I was practicing in one of our hospital-based clinics. The hospital brought in two new surgeons who were enthusiastic about initiating a multidisciplinary breast clinic. Because of my previous experience, I was skeptical that such a clinic could succeed. I was wrong. The breast surgeons rallied institutional support. The institution provided financial and logistical support, and the clinic has grown in stature over the ensuing years.

### Barriers to Multidisciplinary Care

Physicians are generally busy, with the average physician working in excess of 50 hours per week.<sup>1</sup> It is no small task to find the time for another obligation, such as participating in a multidisciplinary clinic. The process of presenting and reviewing a patient's case in the context of the multidisciplinary clinic may be redundant. The physician may have already reviewed the case for a tumor board or for a previous consultation or procedure. Coordinating the time spent in the clinic so that all the members of the team can see the patient and discuss his or her case efficiently is usually difficult. Frequently, there is the sense that time is being wasted on the process.

Multidisciplinary clinics not only use time inefficiently, but the time spent may not be well reimbursed. Unfortunately, the resource-based relative value system generally reimburses time spent on procedures more generously than time spent in cognitive activities. Additionally, if the patient has already been seen in consultation before his or her visit to the multidisciplinary clinic, the physician cannot bill for an initial consultation again, even if the amount of time spent would be nearly equivalent to an initial consultation. Besides time and money, there is the barrier of distance. Different providers may practice at locations that are somewhat separated from each other, and time spent traveling to a central location may be difficult to manage and is certainly not going to be reimbursed.

Political rivalries can further complicate the ability to bring together a multidisciplinary care team. If a community has more than one group providing similar services, there may be competition for patients that hinders the collegial participation of all the members of the care team. Additionally, it may be awkward for a surgeon to decide which of several competing groups of medical or radiation oncologists should receive the referral for a given patient.

Complicating matters still more is the decision about which disciplines should be involved in the process. Should social services see every patient? What about physical therapy or occupational

## Appendix

**Table A1.** Guideline-Based Treatment on the Basis of Pathology, Stage, and Performance Status

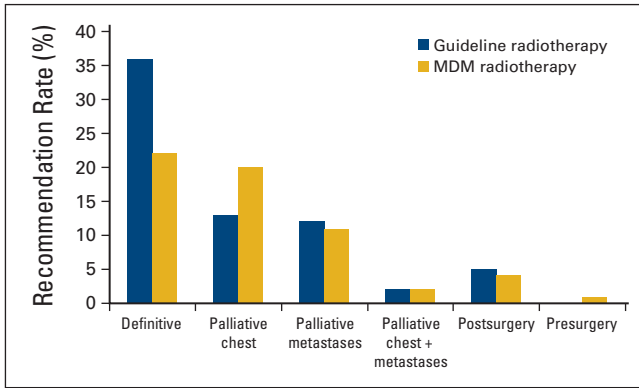
Basis	Guideline Treatment
NSCLC	
I	
ECOG PS 0-2	Surgery or curative radiotherapy
ECOG PS 3-4	Best supportive care with or without palliative radiotherapy to symptomatic sites
II	
ECOG PS 0-2	Surgery and adjuvant chemotherapy or curative radiotherapy with or without chemotherapy
ECOG PS 3-4	Best supportive care with or without palliative radiotherapy to symptomatic sites
IIIA	
ECOG PS 0-2	Surgery and chemotherapy (adjuvant or neoadjuvant) with or without radiotherapy or curative radiotherapy and chemotherapy
ECOG PS 3-4	Best supportive care with or without palliative radiotherapy to symptomatic sites
IIIB	
ECOG PS 0-2	Curative radiotherapy and chemotherapy or palliative radiotherapy or palliative chemotherapy
ECOG PS 3-4	Best supportive care with or without palliative radiotherapy to symptomatic sites
IV	
ECOG PS 0-2	Palliative chemotherapy with or without palliative radiotherapy to symptomatic sites
ECOG PS 3-4	Best supportive care with or without palliative radiotherapy to symptomatic sites
SCLC	
Limited	
ECOG PS 0-3	Curative chemotherapy and radiotherapy
ECOG PS 4	Best supportive care with or without palliative radiotherapy to symptomatic sites
Extensive	
ECOG PS 0-3	Palliative chemotherapy with or without palliative radiotherapy to symptomatic sites
ECOG PS 4	Best supportive care with or without palliative radiotherapy to symptomatic sites

Abbreviations: ECOG PS, Eastern Cooperative Oncology Group performance status; NSCLC, non-small-cell lung cancer; SCLC, small-cell lung cancer. Data adapted.<sup>4-6,9-11</sup>

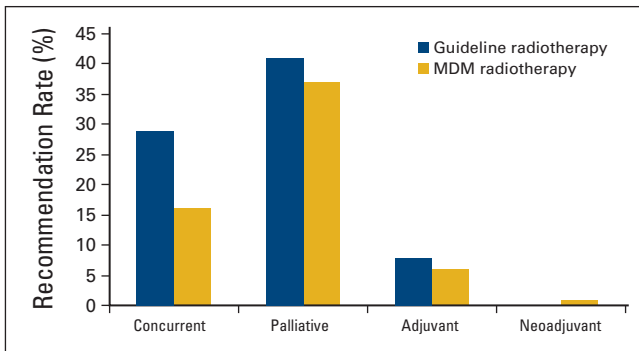
**Table A2.** Reasons for the MDM Not Recommending Guideline Treatment According to Stage of Lung Cancer

Reason	NSCLC						SCLC			
	Stage I and II (n = 15)		Stage III (n = 49)		Stage IV (n = 21)		Limited Stage (n = 6)		Extensive Stage (n = 5)	
	No. of Patients	%	No. of Patients	%	No. of Patients	%	No. of Patients	%	No. of Patients	%
Physician decision	3	20	18	37	12	57	2	33	2	40
Technical factors	3	20	12	25	2	9.5	4	67	0	0
Patient decision	2	13	0	0	1	5	0	0	0	0
Change in ECOG PS/ progressive disease	1	7	6	12	2	9.5	0	0	0	0
Lung comorbidity	4	27	9	18	0	0	0	0	0	0
Other comorbidity	2	13	4	8	2	9.5	0	0	3	60
Alternate modality	0	0	0	0	2	9.5	0	0	0	0

Abbreviations: MDM, multidisciplinary meeting; NSCLC, non-small-cell lung cancer; SCLC, small-cell lung cancer; ECOG PS, Eastern Cooperative Oncology Group performance status.



**Figure A1.** Indications for radiotherapy: Guideline versus multidisciplinary meeting (MDM) recommendation.



**Figure A2.** Indications for chemotherapy: Guideline versus multidisciplinary meeting (MDM) recommendation.