

# Association of Patient–Provider Communication Domains with Lung Cancer Treatment

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**Background:** Patient–physician communication is critical for helping patients understand and complete the complex steps needed to diagnose stage and treat lung cancer. We assessed which domains of patient–physician communication about lung cancer and its treatment are associated with receipt of disease-directed, stage-appropriate treatment.

**Methods:** Patients with recently diagnosed lung cancer were recruited from four medical centers in New York City from 2008 to 2011. Participants were surveyed about discussions with physicians regarding treatment, symptoms, and needs. Multiple regression analysis and structural equation modeling were used to assess which communication factors were associated with disease treatment.

**Results:** Of the 352 participants, 191 (54%) received disease-directed, stage-appropriate treatment. Unadjusted associations between communication items and treatment found that participants who felt that their physicians explained the risks and disadvantages of lung cancer treatment ( $p < 0.01$ ), discussed their chances of cure ( $p = 0.02$ ), discussed goals of treatment ( $p < 0.01$ ), or who were warm and friendly ( $p = 0.04$ ) were more likely to undergo treatment. Three communication domains were identified: treatment information, physician support, and patient symptoms/needs. After adjusting for known

determinants of lung cancer treatment, increased treatment information was associated with higher probability of cancer-directed treatment ( $p = 0.003$ ). Other communication domains (physician support or patient symptoms/needs) were not independent predictors of treatment ( $p > 0.05$  for both comparisons).

**Conclusion:** These data suggest that treatment information is particularly important for increasing the probability of cancer-directed therapy among lung cancer patients. Clinicians should ensure that they clearly discuss treatment goals and options with patients while maintaining empathy, supporting patient needs, and addressing symptoms.

**Key Words:** Lung cancer, Treatment, Patient–provider communication.

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Despite the high mortality rate and poor overall prognosis of lung cancer, appropriate treatment is associated with decreased morbidity and improved survival, particularly for patients with non-metastatic disease.<sup>1</sup> Even for more advanced disease stages, chemotherapy along with supportive care can increase the median survival and improve quality of life.<sup>2</sup> The process leading to lung cancer treatment, from initiation to completion, is quite involved. To receive cancer-directed therapy, lung cancer patients need to be diagnosed in a timely manner, appropriately staged, and then may need to undergo multipart treatment procedures such as surgery, chemotherapy, and/or radiation. Successful treatment requires complex care coordination, effective management, and ongoing communication with multiple providers. As a result, patients need a clear understanding of their disease and treatment options to be able to make decisions and initiate treatment.

Several factors such as access to care, the ability to navigate the complexities of the healthcare system, and social support can influence whether lung cancer patients receive treatment.<sup>3–5</sup> In addition, patients' understanding of diagnostic tests, treatment options, and prognosis, coupled with their ability to adhere to provider recommendations, may affect whether patients ultimately accept and undergo treatment. Therefore, patient–physician communication likely plays a key role in ensuring that lung cancer patients understand the rationale and importance of treatment and complete these complex steps.

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Prior research has shown that while many patients with lung cancer are satisfied with how clinicians discuss diagnosis and treatment options, physicians' communication about treatment goals remains suboptimal.<sup>6</sup> Moreover, poor communication resulting in unattended patient needs has been reported across all stages of lung cancer.<sup>7</sup> However, the potential impact of patient–provider communication on lung cancer treatment has not been previously explored. In this study, we assessed which domains of patient–physician communication about lung cancer and its treatment are associated with receipt of stage-appropriate cancer-directed treatment.

## PATIENTS AND METHODS

A cohort of lung cancer patients were recruited from four New York City hospitals (Mount Sinai Hospital, Montefiore Hospital, New York-Presbyterian Hospital and Harlem Hospital) between January 11, 2008, and November 9, 2011. We identified potential participants using centralized registries maintained by the hospitals' pathology departments and/or institutional tumor registries. To ensure we captured all potential study subjects, we also regularly contacted lung cancer providers, conducted weekly screenings of oncology, radiotherapy, and pulmonary clinics, posted flyers advertising the study at treatment sites, and communicated with clinicians serving on tumor boards of the participating hospitals.

Patients were eligible for the study if they were English or Spanish speaking, older than 18 years, and diagnosed with primary lung cancer within the previous 12 months. Potential participants were excluded if they were without decisional capacity or had been diagnosed with another malignancy (other than non-melanoma skin cancer) within the past 5 years. Eligible patients were undergoing staging work-up or treatment when they were approached by the study team. Once participants signed informed consent, they underwent a standardized in-person baseline interview in their preferred language. Follow-up phone interviews were conducted to collect data on primary, cancer-directed treatment. Medical record review was conducted using a standardized instrument to obtain and confirm information about patients' diagnostic evaluation, cancer stage, and treatment. The study was approved by the Institutional Review Boards of all participating institutions.

Sociodemographic characteristics, including age, sex, race, ethnicity, marital status, primary language, education, insurance status, and income were collected by patient self-report. Patients were classified according to the Tumor, Node, and Metastasis staging criteria of the American Joint Committee on Cancer (7th edition) through review of medical records, pathology reports, and tumor registry data. Information about comorbidities was collected by self-report and confirmed by chart review. Performance status was assessed by patient report using the Eastern Cooperative Oncology Group (ECOG) instrument.<sup>8</sup>

Questions regarding physician communication covered several domains (Table 2). The first group of questions focused on lung cancer treatment and goals of care and included items inquiring if lung cancer doctors explained

the disease itself; the benefits and disadvantages, potential complications and goals of treatment; and the chances of cure. The second domain focused on patients' physical, emotional, spiritual and practical needs. Items inquired about whether doctors discussed emotional issues (sadness, anxiety, etc.), physical symptoms, spiritual concerns, or practical needs (transportation to appointments, homemaking assistance). The third domain included items about physician support, such as whether their doctors encouraged patients to ask questions, used simple language, showed they care, and were warm and friendly. Questions were developed with input from an interdisciplinary team of experts in lung cancer, patient–physician communication, psychology and palliative care; details about survey development have been previously described.<sup>7</sup> Responses rated level of agreement with statements either on a 4-point Likert scale, ranging from “strongly agree” to “strongly disagree” or on a 5-point Likert scale from discussed “not at all,” “a little bit,” “somewhat,” “quite a bit,” or “a lot.” Responses were dichotomized: strongly agree and agree were combined into one category versus disagree and strongly disagree and quite a bit and a lot were combined versus somewhat, a little bit, and not at all.

The study outcome, receipt of disease-directed, stage-appropriate treatment (including surgery, chemotherapy, and/or radiation therapy), was defined based on the National Comprehensive Cancer Network (NCCN) recommendations for lung cancer management.<sup>9</sup> Treatment was ascertained through medical chart review, and patients were classified as having received such treatment if they underwent NCCN-concordant primary lung cancer-directed therapy within a year of diagnosis (see supplemental table, Supplemental Digital Content, <http://links.lww.com/JTO/A639>).

## Statistical Analysis

We used descriptive statistics to summarize sociodemographic characteristics of participants. The unadjusted association between patient–physician communication items within each domain and receipt of cancer-directed, stage-appropriate treatment was assessed using the  $\chi^2$  or Fisher's exact test, as appropriate. We used exploratory factor analysis to identify latent factors representing different communication domains. Based on the scree plot and eigenvalues (values >1), we identified three latent factors. Items with absolute loadings greater than 0.5 and that were theoretically congruent with prior knowledge were assigned to specific factors. We then used structural equation modeling (SEM) to evaluate which communication factors were associated with receipt of stage-appropriate treatment. The SEM was adjusted for age, gender, race/ethnicity, primary language, marital status, income, insurance, comorbidities, lung cancer stage, and performance status. Effect estimates from the latent communication factors leading into treatment represent the increase in the probit of the likelihood of receiving treatment with a one standard deviation increase in the communication factor score. Model fit was assessed with the root mean square error of approximation and the comparative fit index. Analyses were conducted with SAS9.2 (SAS

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