

# Brief Report on Teleconsultation in Lung Cancer: Toward a Semiotic Paradigm Shift?



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## ABSTRACT

**Introduction:** Telehealth is taking an increasingly important part of medicine. This practice change is being accelerated by the pandemic linked to coronavirus disease 2019. Oncology is a medical specialty for which this paradigm shift is particularly relevant.

**Methods:** We developed a survey aiming at evaluating the use of teleconsultation by physicians managing patients with lung cancer in France. The survey was available online from December 15, 2020, to February 10, 2021.

**Results:** Answers were obtained from 142 clinicians (73.9% pneumologists, 18.3% medical oncologists, and 7.7% with another specialty), 129 (90.8%) of whom had already performed teleconsultation. Among those, 123 (95.3%) started after the coronavirus disease 2019 pandemic. In addition, 72.9% had a moderate usage of this tool (<10 teleconsultations/mo). The frequency of clinicians never using teleconsultation was higher in private practices ( $p = 0.029$ ). The two clinical situations for which teleconsultation was frequently used were visits during treatment without imaging assessment (53.5%) and post-treatment surveillance (80.3%). Depending on the type of treatment received, the frequency of teleconsultation was variable. Lung cancer subtype also affected the clinician's practice. Indeed, 47.2% never proposed this tool for SCLC. Teleconsultation was considered to be of no contribution, a moderate contribution, a significant contribution, or a revolution of the clinical practice for 14.1%, 66.2%, 10.6%, and 2.1% of the respondents, respectively. The participants expected to decrease, stabilize, or increase their

teleconsultation activity in 18.3%, 52.8%, and 23.2% of the cases, respectively.

**Conclusions:** Most thoracic oncologists in France are using teleconsultation, mostly as an additional tool that should not replace the doctor-patient in-person relationship.

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**Keywords:** E-health; Telemedicine; Lung cancer; Thoracic oncology; Survey

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## Introduction

Telehealth is increasingly becoming tied with clinical practice in oncology. It is routinely used as a tool for multidisciplinary tumor boards, sharing patient medical records including imaging and virtual pathological slides, allowing remote centers to connect and share expertise for better quality of care and equal access to standard of care. On the patient side, web applications were found to improve the outcomes, besides providing interactive education materials, for example by means of collection of patient-related outcomes.<sup>1</sup>

Teleconsultation, defined as a virtual appointment between a physician and a patient using a phone, and possibly using video support, has been made technically available and increasingly adopted in the past months, as coronavirus disease 2019 (COVID-19) pandemic led to decisions of social distancing and more limited opportunities for patients to come at the hospital.<sup>2</sup> This is especially striking for patients with lung cancer, who are known to be at higher risk of severe COVID-19 infection.<sup>3</sup> Feedbacks from patients with regard to teleconsultation are favorable,<sup>4,5</sup> but health care professional's opinion remains unclear.

We conducted a survey to evaluate the use and the perception of thoracic oncologists (TOs) regarding teleconsultation for the management of patients with lung cancer.

## Materials and Methods

We developed a survey aiming at evaluating the use of teleconsultation by physicians—medical oncologists, pulmonologists, surgeons, radiation oncologists—managing patients with lung cancer in France.

A total of 44 questions were asked covering the physician practice (five questions), the teleconsultation material and its organization (six questions), the teleconsultation process (seven questions), the characteristics of patients (six questions), and cancers (14 questions). The objective was to understand the key factors leading a clinician to propose a teleconsultation and ultimately the feedback regarding the contribution of teleconsultation to clinical practice (six questions) ([Supplementary Data](#)).

The survey was available online from December 15, 2020, to February 10, 2021. Clinicians were invited by means of e-mail and website to participate to this national survey. One reminder e-mail was sent to increase the response rate. We used the SurveyMonkey website to administer our questionnaire (<https://fr.surveymonkey.com/>).

Categorical variables are described as frequencies (percentage). The chi-square test was used for samples

and Fisher's exact test was used for small samples ( $n \leq 5$ ). For each test, statistical significance was set at a two-sided  $p$  value of less than 0.05. Analyses were performed with RStudio software version 3.5.1 R.

## Results

### Population Characteristics

A total of 142 TOs answered the survey. Most respondents were pneumologists (73.9%), 18.3% were medical oncologists, and 7.7% had another medical specialty (thoracic surgeon, radiation oncologist, general medical doctor). Overall, 47 (33.1%) were aged under 40 years old, 43 (30.3%) between 40 and 50, and 52 (36.6%) more than 50; 107 (75.3%) physicians worked at a public hospital (hospital center or university hospital center), 16 (11.3%) at a cancer center, and 19 (13.4%) in private hospitals. Only 13 (9.2%) have never conducted teleconsultations. Of those using this tool for patient management, 6 (4.7%) had conducted teleconsultations before the COVID-19 pandemic (before 2020), and 123 (95.3%) had started since the pandemic. Most physicians (72.9%) had a moderate monthly usage of this tool (<10 teleconsultations/mo), 17.1% a high usage (between 10 and 30 teleconsultations/mo), and 10.0% a very high usage (>30 teleconsultations/mo).

### Teleconsultation Organization and Process

Of the 142 TOs, 76.1% felt that they had the right equipment to carry out a teleconsultation. Only 32.4% of the clinicians reported never encountering technical problems with their software or their patients' software during the teleconsultation. In addition, 47.2% used teleconsultation without a video, and 16.2% used mostly or exclusively teleconsultation with a video.

Furthermore, 69.7% of TOs estimated that the average length of the teleconsultation was shorter than in a physical consultation. The distribution of speaking time compared with an in-person consultation was experienced by TOs as equivalent, increased in favor of the doctor, or increased in favor of the patient for 50.0%, 41.7%, and 8.3% of the participants, respectively.

### Factors Leading to Propose a Teleconsultation

The general criteria that have led to carry out a teleconsultation were the following: the epidemic context of COVID-19 (79.6%), the geographic distance between the patient home and the hospital (76.8%), a request from the patient (57.0%), the age (25.4%), or the general state (30.3%) of the patients precluding transportation.

Only two clinicians (1.4%) proposed a teleconsultation during an initial consultation; 76 (53.5%)

Table 1. Participant Answers According to Their Medical Structure

Survey Item	Hospital Center	University Hospital Center	Cancer Center	Private Clinic	p Value
n (%)	44	63	16	19	
Age (y)					0.039
<40	10 (22.7)	29 (46.0)	5 (31.2)	3 (15.8)	
40-50	19 (43.2)	12 (19.0)	6 (37.5)	6 (31.6)	
>50	15 (34.1)	22 (34.9)	5 (31.2)	10 (52.6)	
Medical specialty					<0.001
Pneumologist	36 (81.8)	52 (82.5)	3 (18.8)	14 (73.7)	
Medical oncologist	7 (15.9)	8 (12.7)	7 (43.8)	4 (21.1)	
Other	1 (2.3)	3 (4.8)	6 (37.5)	1 (5.3)	
Teleconsultation frequency (per mo)					0.029
Never	2 (4.5)	4 (6.3)	1 (6.2)	6 (31.6)	
<5	23 (52.3)	20 (31.7)	5 (31.2)	4 (21.1)	
5-10	12 (27.3)	22 (34.9)	3 (18.8)	5 (26.3)	
10-30	5 (11.4)	11 (17.5)	4 (25.0)	2 (10.5)	
>30	2 (4.5)	6 (9.5)	3 (18.8)	2 (10.5)	
Start date					0.026
Before COVID-19 (before 2020)	2 (4.5)	3 (4.8)	0 (0.0)	1 (5.3)	
Since COVID-19 (since 2020)	40 (90.9)	56 (88.9)	15 (93.8)	12 (63.2)	
Not practicing	2 (4.5)	4 (6.3)	1 (6.2)	6 (31.6)	
Medical involvement for teleconsultation logistic					0.001
With medical involvement	28 (63.6)	26 (41.3)	3 (18.8)	9 (47.4)	
Without medical involvement	14 (31.8)	34 (54.0)	12 (75.0)	5 (26.3)	
Not concerned	2 (4.5)	3 (4.8)	1 (6.2)	5 (26.3)	
Overall duration of the teleconsultation (compared with a physical consultation)					0.488
Equivalent	10 (22.7)	10 (15.9)	4 (25.0)	2 (10.5)	
Shorter	28 (63.6)	47 (74.6)	10 (62.5)	14 (73.7)	
Longer	5 (11.4)	3 (4.8)	0 (0.0)	1 (5.3)	
Other	1 (2.3)	3 (4.8)	2 (12.5)	2 (10.5)	
Activity distribution					0.439
Exclusively phone teleconsultation	24 (54.5)	27 (42.9)	8 (50.0)	8 (42.1)	
Exclusively video teleconsultation	1 (2.3)	1 (1.6)	0 (0.0)	2 (10.5)	
As many phone teleconsultations as video teleconsultation	2 (4.5)	5 (7.9)	2 (12.5)	0 (0.0)	
Principally phone consultation	8 (18.2)	21 (33.3)	3 (18.8)	3 (15.8)	
Principally video consultation	6 (13.6)	6 (9.5)	2 (12.5)	5 (26.3)	
Overall opinion on teleconsultation					0.220
No contribution	10 (22.7)	5 (7.9)	0 (0.0)	5 (26.3)	
Moderate improvement	27 (61.4)	45 (71.4)	12 (75.0)	10 (52.6)	
Important improvement	3 (6.8)	8 (12.7)	2 (12.5)	2 (10.5)	
Total change	2 (4.5)	0 (0.0)	1 (6.2)	0 (0.0)	

COVID-19, coronavirus disease 2019.

and 40 (28.2%) for patients under active treatment without imaging or with imaging, respectively; and 114 (80.3%) for patients undergoing post-treatment surveillance.

Regarding the tumor and treatment characteristics, tumor stage was not a factor in the decision of proposing a teleconsultation for 76.1% of the participants. Of the TOs, 67 (47.2%) reported never offering teleconsultation for SCLC. For patients with NSCLC, TOs considered teleconsultation as a suitable option for 87.3% of patients undergoing surveillance, 41.5% of patients undergoing radiochemotherapy, 61.3% of patients undergoing

post-radiochemotherapy maintenance immunotherapy, 45.1% of patients undergoing chemoimmunotherapy, 64.8% of patients undergoing immunotherapy as a single agent, and 83.3% of patients undergoing tyrosine kinase inhibitor therapy.

The frequency of clinicians never using teleconsultation was higher in private clinics than in other health care structures ( $p = 0.029$ ). The involvement of clinicians in the logistical coordination of teleconsultation was significantly more frequent in public hospitals than in other structures and lower in cancer centers ( $p = 0.001$ ) (Table 1).

**TO Feedback**

Overall, 57.7% of the respondents reported that the explanations given to patients were less well understood than during a physical consultation and to have been more solicited by their patients after the teleconsultation in 30.9% of the cases. This tool was considered to be of no contribution, a moderate contribution, a significant contribution, or a revolution in the practice for 14.1%, 66.2%, 10.6%, and 2.1% of the respondents, respectively. In their future practice, participants were expected to decrease, stabilize, or increase their teleconsultation activity in 18.3%, 52.8%, and 23.2% of the cases, respectively.

**Discussion**

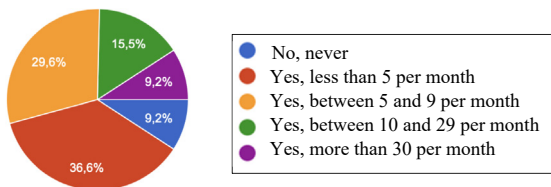
Our study provides for the first time, in the thoracic oncology landscape, an assessment of teleconsultation through a questionnaire (Fig. 1). On the basis of the responses of 142 TOs, our main finding is that 95.3% of those had an experience of teleconsultation, which actually started after the beginning of the COVID-19 pandemic.

Teleconsultation seems to lead to a shorter time for the interaction between the physician and the patient, as compared with in-person consultation, possibly owing to the absence of physical examination;

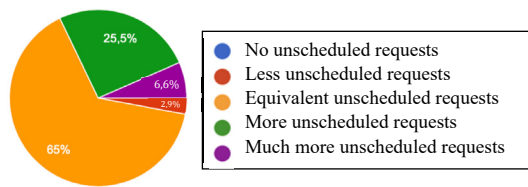
meanwhile transportation time from the patient home to the hospital is saved.<sup>6</sup> Such virtual interaction between oncologists and patients may actually reduce understanding between patients and families, leading to an increased number of subsequent requests thereafter. In our survey, 32% of the oncologists reported to be more often contacted back after a teleconsultation. Moreover, 63% of the physicians felt that the value of teleconsultation was lower than during a physical consultation. Obviously, our study is only based on a survey evaluating the TO feelings about teleconsultation, and prospective data comparing patients followed by teleconsultation or physical consultation would be necessary to confirm this impression.

Ultimately, teleconsultation leads to a major shift in the semiotics approach, as identification of clinical signs is virtually absent. From the survey, the TOs do not consider equally teleconsultation in the different clinical situations in thoracic oncology. Patients with SCLC are judged as poor candidates due to the aggressive behavior and the potential unexpected events. In addition, patients receiving chemotherapy may present with severe side effects that may not suit with teleconsultation. Other studies could look more broadly at the contribution of telemedicine for thoracic oncology pathologies, such as mesothelioma or thymic tumors, for which therapeutic progress is constant.<sup>7,8</sup>

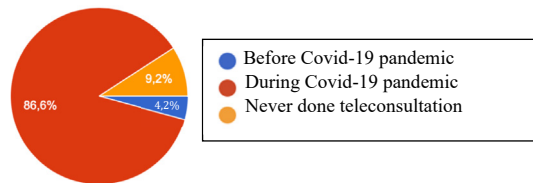
1) Have you ever conducted teleconsultation as part of your professional practice? (142 responses)



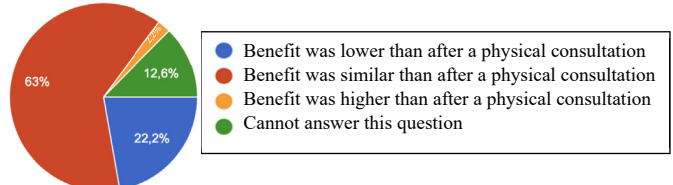
4) Do patients make additional unscheduled requests between visits at the hospital after a teleconsultation? (137 responses)



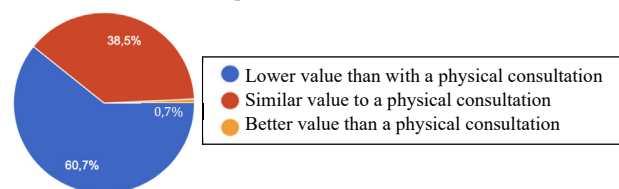
2) Since when have you been conducting teleconsultations? (142 responses)



5) After teleconsultations, compared to a physical consultation, what is your feeling about the benefit you were able to bring to patients: (135 responses)



3) What do you think that the understanding of patients during teleconsultation (135 responses):



6) Which statement reflects your overall opinion about teleconsultation for your medical practice (132 responses)

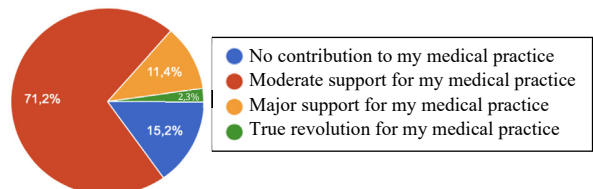


Figure 1. Highlight results of survey.

Meanwhile, virtualization of the physician and patient relationship might lead to patient nomadism, facilitating multiple second opinions. Such “uberization” may actually lead to complex decision-making among therapeutic choices, proposed by multiple physicians, and may delay the actual initiation of treatment, especially if opinions differ.<sup>9</sup> Moreover, currently available health care-approved technologic systems are often limited, potentially leading all information not to be adequately captured.<sup>10</sup>

There is a crucial need to develop more adapted tools. The legal framework for teleconsultation also has to be consolidated. The security of medical data may be a concern when we know that most clinicians use unsecured telecommunication platforms, with the risk of health data being exposed. Moreover, considering virtual consultation without clinical examination is sufficient to treat patients and may even accelerate the ongoing development of automated tools, such as chatboxes, based on algorithms or even artificial intelligence systems.<sup>11</sup>

Finally, the training of medical students will have to be radically reshaped to integrate these aspects. Evidence needs to be generated to assess the value of teleconsultation versus physical consultation. In France, most medical school deans recently agreed that training in telehealth is insufficient and must rapidly be implemented.<sup>12</sup>

To our opinion, virtual consultation should then remain a tool among others to be integrated in a global follow-up and management of patients; clinical interactions are part of the unique expertise of physicians, especially in oncology. How to optimally implement and assess the actual value of telemedicine tools along with the clinical approach remains challenging, and the availability of technologies should not bypass the key principles of clinical medicine and generation of evidence.

## CRedit Authorship Contribution Statement

**Quentin Dominique Thomas:** Conceptualization, Data curation, Formal analysis, Writing—original draft, Writing—review and editing.

**Clémence Basse:** Conceptualization, Supervision, Formal analysis, Validation, Writing—review and editing.

**Yaniss Belaroussi:** Conceptualization, Formal analysis, Writing—review and editing.

**Sophie Beaucaire-Danel, Catherine Daniel, Xavier Quantin:** Supervision, Validation, Writing—review and editing.

**Nicolas Girard:** Conceptualization, Supervision, Validation, Writing—original draft, Writing—review and editing.

## Supplementary Data

Note: To access the supplementary material accompanying this article, visit the online version of the *JTO Clinical and Research Reports* at [www.jtocrr.org](http://www.jtocrr.org) and at <https://doi.org/10.1016/j.jtocrr.2022.100333>.

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