Post-emergency teleconsultations during COVID crisis: TELE-SCOPE tool’s feedback and epidemiological analysis

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Abstract

Introduction: The severe acute respiratory syndrome-coronavirus 2 pandemic spread quickly. Health professionals are facing new challenges and looking for new ways to provide care in the context of lockdown and physical distancing. The Saint Vincent de Paul Hospital has leveraged its recent post-emergency teleconsultation solution (TELE-SCOPE), to address some COVID situations. Thanks to the usual follow-up teleconsultation within 24 h after their emergency discharge and the introduction of an additional one six days after, the eligible patients are able to return home earlier. This article provides feedback on how teleconsultation helps manage such a crisis. We also present an analysis of the treated population.

Materials and methods: The study includes the cases of 239 patients presenting symptoms of COVID-19 infection with a COVID score <4 over a period from 16 March to 11 May 2020. These were patients from the emergency department (ED) or COVID units. We based our analysis on the patient’s medical files and an individual survey.

Results: One hundred and eighty-four teleconsultations (with video) and 143 phone calls were carried out. By the end of the teleconsultations, 92.9% were getting better and did not need further follow-up, 5.9% were reconvened to the ED, and 2.5% were hospitalized. No patient died, nor did get hospitalized in intensive care. In total, 95.6% are strongly or rather satisfied with the care provided by teleconsultation and 87.7% of patients are ready to reuse TELE-SCOPE as a means of monitoring in the context of the epidemic.

Conclusion: The teleconsultations are efficient and safe to follow patients with confirmed or suspected non-severe COVID infection (COVID score <4) after discharge from the emergency room or hospitalisation. It protects the patients and practitioners. The patient’s satisfaction is high.

Keywords

COVID, telemedicine, general, emergency room, survey, digital health, general, teleconsultation

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Introduction

Overcrowding in the emergency department (ED) is a worldwide problem.1 For several years in France, EDs have been suffering from a lack of infrastructure and staff.2

The COVID crisis added difficulty due to social distancing, the possibilities of rapid worsening, and life-threatening risk.

In this context, TELE-SCOPE happened to be a useful tool.

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What is TELE-SCOPE?

TELE-SCOPE is an innovative post-emergency teleconsultation solution for patient aftercare. It has run since January 2020 in the ED of Saint Vincent de Paul Hospital in Lille (France), with the ambition to face serious overcrowding.

TELE-SCOPE’s goal is the early discharge from the emergency room (ER) thanks to a follow-up teleconsultation within 24 h. Target patients are those who come for minor reasons defined by the Classification clinique des malades aux urgences classifications 2 and 3 (see Appendix 1). Persistent or undefined pain with no confined to bed indication as well as unexplained fever without complication signs and antibiotic therapy introduction are the most common indications. Usually, those patients stay in the ER for a short-term follow-up hospitalisation.

To conduct teleconsultation – which is a consultation carried out remotely using audiovisual telecommunications between doctor and patient – patients need a smartphone with video and internet connection. A secured App software is used. Teleconsultation leads to several potential outcomes: second clinical examination, additional exams, hospitalization, or end of care.

The challenge behind this first experimentation was for TELE-SCOPE to be effective in monitoring patients, in detecting potential aggravations and ultimately reassuring patients while decreasing ED’s overcrowding.

TELE-SCOPE’s deployment during COVID crisis in France

On 17 March 2020, the French government declared a national lockdown to control COVID’s epidemic. Limitation of human-to-human contacts and social distancing was new high stakes.3 Teleconsultation seems appropriate to manage these new issues because the distance protects both the caregiver and the patient while guaranteeing the quality and safety of care.4

Just before lockdown, on 16 March, we included TELE-SCOPE in our ED’s COVID protocol, using this ready-to-work tool. Fifteen patients benefited from teleconsultation in the first three days.

On 19 March, TELE-SCOPE was generalized in our hospital guidelines for COVID’s management. Target patients were all patients discharged from ED and from COVID units with suspected or confirmed COVID status (COVID score ≤4; see Appendix 2). The COVID infection was suspected in patients with symptoms described by World Health Organisation. COVID status was confirmed by polymerase chain reaction and chest tomodensitometry.

Material and methods

This paper is a longitudinal observational descriptive study of our work during the COVID crisis. We analysed the characteristics of the patients and short-term outcomes for them. Their level of satisfaction was assessed via a telephonic survey.

The study took place in Saint Vincent and Saint Philibert hospitals between 16 March and 11 May 2020.

Teleconsultation proceeding

Two teleconsultations were conducted to detect complications ahead of time. The first one was on the day after discharge and the second one on the sixth day of the onset of the disease. The physician could programme additional teleconsultations at the time deemed appropriate for the patient. A permanent telephone number was available for the patients to get in touch with an ED physician 24/7. Teleconsultation was carried out by videoconference or, if not possible, by a simple call.

Recruitment

All the patients with a teleconsultation appointment after their discharge from ED or COVID unit hospitalization were included between 16 March and 11 May 2020. These patients benefited from aftercare due to either a confirmed or suspected COVID infection. They have a COVID score below 4.

Exclusion criteria

Other suspected or confirmed pathology. Formal indication for hospitalisation. Inability to carry out the teleconsultation.

Data collection

The epidemiological data were extracted from the patient’s medical files.

Patient’s survey

Fifteen days after the last consultation, the patients were called for a satisfaction survey (see Appendix 3). All the patients have been called only once between 31 March 2020 and 28 September 2020.

The first part of the survey assessed their level of satisfaction with teleconsultation. The second part aimed to evaluate the clinical evolution after teleconsultation.

Ethics

Patients received a letter asking for their consent to participate in this observational study.

Statistical analyses

Statistical analyses were carried out using R software version (3.6.1) by the biostatistics unit of the clinical research and innovation delegation of the hospital.
Results
Two hundred and thirty-nine patients were monitored between 16 March and 11 May 2020, when the epidemic reached its peak, by carrying out 184 teleconsultations (in 135 patients) and 143 phone calls (in 107 patients). One patient refused to be included in the study. In total, 72.4% of teleconsultations concerned patients discharged from the ER and the remaining 27.6% concerned 66 post-hospitalisation patients.

Epidemiological analysis
The characteristics of the monitored sample are listed in Table 1.

The sample was ranging from 15 to 94 years old, with an average age of 41.3, 55.6% were female.
Asthma (16.3%) and obesity (14.6%) were the main comorbidities. The average COVID score was 2.
Among the 111 patients who responded on whether they were smoking or not, 62.2% indicated they were smokers.
Following the teleconsultation, 219 patients (91.6%) progressed favourably and did not need any more follow-up. Fourteen patients (5.8%) were reconvened to the ED for a new clinical examination, and six patients (2.5%) were hospitalised.
No patient died, nor was hospitalized in intensive care.
Sample’s experienced symptoms are listed in Table 2.
The predominant symptoms were cough, dyspnoea, and fever. In total, 21.8% of the patients experienced ageusia and 20.5% experienced anosmia. Six patients showed signs of skin lesions.
Seventeen (7.2%) patients presented associated bacterial pneumonia.
Sixty-four patients (26.8%) were treated with antibiotics, prescribed by our staff or by the family doctor before consulting in ED.

Table 1. Description of the sample (%) (N=239).

| Variable                        | Value   |
|--------------------------------|---------|
| Age: years (mean ± SD)          | 41.3 ± 15.6 |
| Gender: male/female             | 44.4%/55.6% |
| Asthma                          | 16.3%   |
| Obesity                         | 14.6%   |
| Diabetes                        | 7.9%    |
| Pregnancy                       | 8.6% of the female |
| Psychiatric history             | 7.1%    |
| Unspecified respiratory history | 5.0%    |
| Immunosuppression               | 3.8%    |
| COPD*                           | 2.1%    |
| Heart failure                   | 1.3%    |
| Renal failure                   | 0.4%    |
| Average COVID score             | 2       |

*COPD: chronic-obstructive-pulmonary-disease.

Satisfaction survey
Among the 239 patients, 143 patients did not answer to the phone call. One patient refused to participate in the research, 95 patients were surveyed.

Ninety-five patients completed the telephone questionnaire at least 15 days after the scheduled teleconsultation date. Of these, one patient did not complete any consultation (either teleconsultation or phone call).

Among the 94 patients, 64 (68.8%) performed a teleconsultation and 29 (31.2%) received a phone call. There is a lack of data for a single patient.

Of the 94 patients, 91.6% found the installation of the application easy (33.3% tend to agree, 58.3% strongly agree).

Among the 64 patients who performed a teleconsultation, 91.8% reported a good quality of sound and images.
Concerning overall satisfaction with care, 2 (2.2%) patients disagree, 2 (2.2%) tend to disagree, 40 (44%) tend to agree, and 47 (51.6%) strongly agree.
In total, 43.1% of those performing the teleconsultation declared they would have preferred to consult with their family doctor.
In total, 87.7% of patients are ready to reuse TELE-SCOPE as a means of monitoring in the context of the epidemic.

Discussion
At the beginning of the sanitary COVID crisis, hospitals were unready and suffered from shortages, in particular masks. Some ready-to-use tools have been diverted from their usual use. This is the case of the post-emergency tool TELE-SCOPE.

TELE-SCOPE’s responsiveness was immediate and the training of the team of doctors who volunteered in solidarity due to the high number of teleconsultation requests was quite rapid and remarkable.

Table 2. Repartition of main symptoms (%).

| Variable                        | Value   |
|--------------------------------|---------|
| Cough                          | 155 (64.9%) |
| Dyspnoea                       | 135 (56.5%) |
| Fever                          | 126 (51.9%) |
| Chest pain                     | 89 (37.2%)  |
| Headache                       | 62 (25.9%)  |
| Asthenia                       | 58 (24.3%)  |
| Body aches                     | 55 (23.0%)  |
| Ageusia                        | 52 (21.8%)  |
| Anosmia                        | 49 (20.5%)  |
| Unspecified flu syndrome       | 44 (18.4%)  |
| Diarrhoea                      | 43 (18.0%)  |
| Abdominal pain                 | 41 (17.2%)  |
| Anxiety                        | 32 (13.4%)  |
| Sore throat                    | 24 (10.0%)  |
| Rhinorrhea                     | 23 (9.6%)   |
| Skin lesions                   | 6 (2.4%)    |
We had a significant percentage of patients followed by phone calls instead of a videoconference due to technical installation difficulties or lack of equipment.

Some patients did not perform the two teleconsultations as planned for different reasons. Because they had passed the sixth day of symptoms (period at risk of complications) or because they were reconvener in ER or hospitalised. Finally, some patients were lost to follow-up.

We observed that this population was quite young, confirming previous literature, bearing in mind that the young present a good prognosis form of COVID without complications. The severity criteria such as respiratory, cardiac or renal failure were as expected poorly represented.

The symptoms experienced by the patients were coherent with those of HAS (French health authority) referential and in the same proportions.5

None of the patients died, nor went to intensive care and six were hospitalized. This tends to confirm the right recruitment of patients from the ED and the safety of the use of teleconsultation for patients with a COVID score <4.

Teleconsultation brought great satisfaction to most of the patients. And almost all are ready to use it again if necessary.

The limitations of this study are the lack of data on the outcome of patients returning to the ED or hospitalised. Moreover, only a part of the patients followed up in teleconsultation could be contacted and answered the questionnaire. The literature review finds another study of COVID follow-up via teleconsultation. In the USA, Steel et al.6 like us, had followed up patients by teleconsultation 24 h after their discharge from the ER. The difference was in the recruitment of patients. The patients included by Steel et al.6 were COVID patients with a saturation of between 90% and 94%. These patients went home with oxygen and a pulse oximeter. After this study, the American National Institute of Health classified COVID-19 patients with a SpO2 <94% as severe and requiring hospital management. Our inclusion criteria therefore seem to be more suitable and safe. A French team also followed patients discharged from hospital with nasal oxygen therapy.7 Seventy-three patients were monitored using a remote questionnaire that allowed automatic and early detection of complications. The results were encouraging as no deaths or unplanned emergency hospitalisations were reported. In this study, early discharge home of patients who still required low-oxygen therapy seems to be safe.

This French study could lead us to broaden our inclusion criteria in the event of a new epidemic wave.

**Conclusion**

TELE-SCOPE can help respond to the main challenge of the COVID crisis, which is to limit human-to-human contact and protect both physicians and patients. Teleconsultation provides a high level of satisfaction for patients. This study has some limitations: lack of data on the outcome of patients returning to the ED or hospitalised. Only a part of the patients followed up in teleconsultation could be contacted and answered the questionnaire.

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**Appendix 1. CCMU classification**

CCMU = Classification clinique des malades aux urgences

| Clinical classification of emergency department patients. |
|----------------------------------------------------------|
| CCMU 1 | Stable clinical condition |
| CCMU 2 | Stable clinical condition |
| CCMU 3 | Unstable clinical state |
| CCMU 4 | Life-threatening condition |
| CCMU 5 | Critical condition |

| Immediate resuscitation actions |

**Appendix 2. COVID score**

| COVID score | 3 | 2 | 1 | 0 | 1 | 2 | 3 |
|-------------|---|---|---|---|---|---|---|
| Age         |   | ≤65 |   | ≥65 |   |   |   |
| Respiration rate | ≤8 | 9–11 | 12–20 | 21–26 | ≥25 |   |   |
| Oxygen saturation | ≤91 | 92–93 | 94–95 | ≥96 |   |   |   |
| Any supplemental oxygen | Yes | No |   |   |   |   |   |
| Systolic blood pressure | ≤90 | 91–100 | 101–110 | 111–219 | ≥220 |   |   |
| Heart rate | ≤60 | 61–70 | 71–80 | 81–90 | 91–110 | 111–130 | ≥131 |
| Consciousness | Alert | Drowsiness, lethargy, coma, and confusion |
| Temperature | ≤35.0 | 35.1–36.0 | 36.1–38.0 | 38.1–39.0 | ≥39.1 |   |   |
Appendix 3. Patient’s questionnaire

Patient survey

Date:

Age: years old
Gender: □ male □ female
Has the patient performed his teleconsultation? □ YES □ NO
It was: □ a vidéo téléconsultation □ a phone call
Did you perform the teleconsultation: □ alone □ with the help of somebody

| Before the teleconsultation: | Disagree | Tend to disagree | Tend to agree | Strongly agree |
|------------------------------|----------|------------------|--------------|---------------|
| Do you think a teleconsultation was suitable for your situation? |          |                  |              |               |
| Would you have preferred to see your family doctor? |          |                  |              |               |
| Did you have any apprehension about this new means of consultation? |          |                  |              |               |
| If yes, why? |          |                  |              |               |
| □ Technical difficulty |          |                  |              |               |
| □ Poor connection quality |          |                  |              |               |
| □ Lack of physical examination |          |                  |              |               |
| □ other: ................................. |          |                  |              |               |

| After the teleconsultation: | Disagree | Tend to disagree | Tend to agree | Strongly agree |
|-----------------------------|----------|------------------|--------------|---------------|
| Installing the App was easy |          |                  |              |               |
| The quality of communication was good (sound, image) |          |                  |              |               |
| Are you satisfied with this follow-up? |          |                  |              |               |
| Would you be ready to do other teleconsultation if necessary? |          |                  |              |               |
What happened after your teleconsultation?
- End of care
- I was called back to the ED for medical examination
- I carried out additional examinations: ☐ in St Vincent hospital ☐ in another place
  - Completing these exams was quick and easy:
    - ☐ Disagree ☐ Tend to disagree ☐ Tend to agree ☐ Strongly agree
- ☐ I consulted my family doctor:
  - ☐ As recommended by the emergency doctor
  - ☐ On my own initiative:
    - Why?
      - ☐ To inform him of the situation
      - ☐ To get a prescription
      - ☐ To get a sick note
      - ☐ For a second opinion
      - ☐ Other: ................
- ☐ I consulted a specialist
- ☐ I have been hospitalised: ☐ within 72 h ☐ after 72 h
  - If hospitalisation within 72 h, in which I hospital? ☐ St Vincent/ St Philibert ☐ Other
    - If hospitalisation in Saint Vincent hospital:
      - Are you satisfied with the reception of conditions for this direct hospitalisation?
        - ☐ Disagree ☐ Tend to disagree ☐ Tend to agree ☐ Strongly agree