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Position Paper

Correct use of telemedicine in gastroenterology, hepatology, and endoscopy during and after the COVID-19 pandemic: Recommendations from the Italian association of hospital gastroenterologists and endoscopists (AIGO)

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ABSTRACT

The purpose of the present document is to provide detailed information on the correct and optimal use of digital media to ensure continuity of care for gastroenterological patients in everyday clinical practice, in health emergencies and/or when the patient cannot reach the hospital for other reasons.

During the recent COVID-19 pandemic, telemedicine has allowed many patients with chronic diseases to access remote care worldwide, proving to be the ideal solution to overcome restrictions and carry out non-urgent routine follow-ups on chronic patients. The COVID-19 pandemic has therefore made organizational and cultural renewal essential for the reorganization of healthcare in order to ensure greater continuity of care with a minimum risk of spreading the virus to users, practitioners and their families.

These AIGO recommendations are intended to provide Italian gastroenterologists with a tool to use this method appropriately, in compliance with current legislation, in particular the proper approach and procedures for conducting a remote examination using a video conferencing tool, the so-called televisit.

In the near future, telemedicine may contribute to a possible reorganization of healthcare systems, through innovative care models focusing on the citizen and facilitating access to services throughout the entire Country.

1. Introduction

Telehealth is defined as the delivery and facilitation of health services including care, provider and patient education, and health information services. This term includes healthcare, disease diagnosis and treatment (often identified as telemedicine) and many other activities, such as preventive services, education, and public health promotion [1]. According to the European Commission, telemedicine is the provision of healthcare services using information and communications technologies in situations where the healthcare professional and the patient (or two professionals) are not in the same location [2]. The American Telemedicine Association (ATA) defines telemedicine as "the use of medical information exchanged from one site to another via electronic communications to improve a patient's clinical health status" [3].

The methods used to carry out telemedicine can be classified into two main categories: asynchronous methods (e.g., text messages, emails), which have been the main methods used in current clinical practice, and synchronous methods such as telephone support or video calls. In the last few years, technological advances

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and the widespread diffusion of computers and smart phones have led to the rapid development of telemedicine using video solutions, and its use has increased exponentially worldwide. However, it still plays only a minor role in daily clinical practice as in-person examinations remain the primary physician–patient interaction.

During the current COVID-19 pandemic, telemedicine has allowed many patients with chronic diseases worldwide to access remote care, proving to be a good solution to allow individuals to access diagnostic services and continue healthcare remotely from their own homes, without the risk of exposure in a crowded hospital or in medical practice waiting rooms [4].

National health systems around the world have been under extreme pressure since the start of the COVID-19 pandemic. In order to respond to this emergency, healthcare systems had to be completely overhauled and changed. In Europe, Italy was the first country to come to grips with the virus and its disastrous effects, which led to the approval of progressively stricter restrictions until the Italian government decided to place the entire country under total lockdown for almost two consecutive months. This has led to the closure of all non-essential or non-urgent activities and services, including most elective outpatient medical activities. Thus, in hospitals, telemedicine has proved to be an ideal solution to overcome the inability to carry out in-person examinations while continuing to provide patient care, preventing the cancellation and rescheduling of appointments, and potentially reducing the risk of infection of patients and healthcare providers (HCPs).

In particular, for the purpose of regulating the methods used to carry out telemedicine, as a result of the pandemic, on 17 December 2020 the new *National Guidelines for the Provision of Telemedicine Services* were approved by the Permanent State-Regions and Autonomous Provinces Conference. This document is playing a crucial role in the development of telemedicine in Italy, as it was drafted keeping in mind the current EU legislation on privacy (EU Regulation no. 679/2016), and also because it aims to ensure consistent development of telemedicine throughout the country, going beyond the individual regional particularities. According to the document mentioned above, telemedicine involves several services that can be provided remotely: televisits, medical teleconsultation, teleconsultation by healthcare professionals, and telereferral.

Furthermore, the recommendations provided in the framework of the *Choosing Wisely* project moved in the same direction; namely, they suggested that non-essential in-person services should have not been offered to patients if virtual tools such as telephone or online examinations were available and that non-essential treatment and laboratory tests should have been delayed whenever possible. More specifically, they stated that virtual care could often meet patients' needs more safely. Although delaying non-essential treatments or laboratory tests may free up resources for sicker patients, they emphasized the necessity of maintaining continuity of care for patients with chronic diseases, consistent with the requirements in emergencies [5].

Beyond the COVID-19 pandemic, on the one hand telemedicine could improve access to care for patients far from healthcare facilities or with many work commitments, but on the other hand could have limited use in the elderly or in those less able to use technological devices.

To date, telemedicine has been used in different areas of medicine including gastroenterology, endoscopy, and hepatology.

2. Telemedicine in gastroenterology and endoscopy

The clinical practice of gastroenterology care has rapidly transformed since the beginning of the COVID-19 crisis, with telemedicine emerging as an essential tool for providing medical care to patients while maintaining social distancing. Some positive reports by healthcare workers on the use of televisits in gastroenterology during the COVID-19 pandemic have been published, especially among inflammatory bowel diseases (IBD) specialists [6–8]. A survey was conducted to assess pandemic-related changes in clinical practice among members of the International Organization for the Study of Inflammatory Bowel Diseases (IOIBD) in April 2020. The great majority of survey respondents (84%) reported that before the onset of the COVID-19 pandemic, their visits had been performed mainly in person, with 68% of survey respondents reporting they had never carried out a video consultation at all before the pandemic. Among these respondents, 36% have now conducted at least 50% of their patient visits using video consultation during the pandemic and 27% plan to use video consultation in the future [6].

In March 2020, the publication *2nd Interview COVID-19 ECCO Taskforce* of the European Crohn's and Colitis Organisation (ECCO) called on IBD centers worldwide to adopt telemedicine to overcome the imposed restrictions and to continue to provide patient care while ensuring patient safety [8] since a reduction in the SARS-CoV-2 infection rate was thought very important for IBD patients on immunomodulatory therapy [9]. However, as stated by ECCO, immunosuppressive therapy should not be discontinued [10].

The trust in telemedicine shown by patients with gastrointestinal diseases is important since it may be a prerequisite for using this approach: high trust (>90%) in televisits among patients with IBD [11] and celiac disease (CeD) [12] have been demonstrated during the COVID-19 pandemic in Milan The acceptance rate for televisits was also high (>80% of patients) [11,12]. Enthusiasm for telemedicine among CeD patients was confirmed in a study conducted among adult patients with CeD during the first wave of COVID-19 in Italy in March 2020, in which 86% responded positively when asked about their views on remote telemedicine examinations, with some of them (about 17%) explicitly requesting it [13].

Before the pandemic, few studies evaluated the efficacy, benefits, and perception of telemedicine in gastroenterology, with most studies evaluating asynchronous remote monitoring as a method of interaction. Furthermore, most of the available data is derived from telemedicine applied to patients with IBD [14–19], with only a few studies on patients with CeD [20] or on nutrition [21]. Previous results showed that telemedicine, and in particular apps, seemed to be a reliable, cost- and time-effective clinical tool appreciated by patients [15–17]. Some studies have been published on televisits, such as that by Li et al., who aimed to assess audio-visual quality and timing among a small cohort of patients with IBD (n = 48) and reported positive findings [19], and the study by George et al. which demonstrated that telemedicine examinations were readily accessible and accurate in addressing patients' clinical issues and concerns, as well as being very time-effective, with more than 90% of patients recommending the use of telemedicine in the future [14].

2.1. Endoscopy

The use of telemedicine in endoscopy, other than in live training appointments, is mentioned sporadically in the literature in the absence of structured patient-oriented studies. The use of tele-cooperation to carry out endoscopic retrograde cholangiopancreatography (ERCP) has been evaluated as a training model when used with a trainee in digestive endoscopy [22]. In the endoscopy setting, tele-consultation and tele-cooperation (see following sections) can be used in a variety of ways: the exchange of endoscopic images or video clips (as can quickly be done in the case of capsule endoscopies) could lead to a better solution in cases of doubt or conflicting interpretation, while tele-cooperation by experienced

staff when carrying out complex procedures, if it is impossible to travel from one facility to another, could contribute to the success of complex surgical endoscopies [23,24]. During the COVID-19 pandemic, the use of telemedicine has mainly played a role in the remote triaging of patients before endoscopies are carried out [25].

3. Telemedicine in hepatology

The largest amount of data on the use of telemedicine in hepatology comes from the United States, where the great distances between patients and healthcare facilities have allowed these activities to develop over many years.

A recent American review specifies how, even in hepatology, the term telemedicine has been used interchangeably to refer to a broad umbrella of activities including tele-visits (regular doctor–patient examination by video consultation), tele-supervision (the mid-level practitioner or general practitioner reports to colleagues in another location, with or without the patient's presence), telemonitoring (signs or symptoms sent electronically by the patient to the physician's team in another location), tele-consultation (the physician in one location presents a case to an expert in another location, with or without the patient's presence), and tele-interpretation (remote interpretation, mainly by radiologists or pathologists) [26].

A study published in 2011 demonstrated that remote treatment of hepatitis C virus (HCV) infection by general practitioners was effective [27]. The use of telemedicine for 870 patients with chronic HCV hepatitis in Departments of Corrections (DOC) demonstrated that HCV treatment through telemedicine was feasible and highly effective, with an overall sustained virological response (SVR) rate of 97%, regardless of the treatment regimen used [28].

Over the years, several virtual care delivery methods have been used, including the SCAN-ECHO (Specialty Care Access Network-Extension of Community Healthcare Outcome) program used by the Veterans Health Administration (VHA). Improved survival was demonstrated in those patients using SCAN-ECHO compared with those who did not undergo any examination, suggesting that this approach may be an effective way to improve access to care for selected patients with liver disease, particularly in rural and disadvantaged communities where access to specialist care is limited [29].

Serper et al. investigated co-management between hepatologists and general practitioners who used a virtual hepatology workflow system, especially for the remote management of patients with decompensated cirrhosis, which allowed them to manage liver-related hospitalization or to obtain a second opinion on advanced liver disease. The feasibility (i.e., ability to deliver tele-visits) and fidelity (i.e., delivery as originally intended) of the program were analyzed: 94% of patients scheduled by the referral center were reached and 85% of scheduled tele-visits were conducted [30]. In this study, 45% of patients had new tests ordered, 45% had medication changes, and 18% received transplant referrals. Possible barriers were identified in the reimbursement system, the access methods, and patient confidence in using technology [30]. Even in patients with decompensated cirrhosis, the waiting times for liver transplant referrals were significantly shorter for those using telemedicine compared with the standard method (22 days vs. 80 days and 139 days vs. 249 days, respectively). However, no significant difference was found in the waiting list for a liver transplant (325 days in the telemedicine group vs. 409 days in the standard group) [31].

A recent review showed that that telemedicine is a cost-effective and unique platform to improve HCV patients' access to quality services [32].

Since 2020, the way hepatology care is provided has changed considerably, with an American study reporting a large reduction in weekly admissions for cirrhosis during the COVID pandemic in 2020 compared with the expected trend [33].

Table 1
Definitions of telemedicine services

Tele-visit	The medical service involving remote real-time interaction between the professional and the patient, which may also involve support from a caregiver.
Tele-consultation	The remote consultation between medical practitioners that allows her/him to seek the advice of one or more other medical practitioners.
Medical tele-consultation	The health service, not necessarily medical, but specific to the health professions, which involves requesting support while providing health services.
Tele-care by health professionals	The remote interaction between any healthcare professional and the patient/caregiver by video call.
Tele-monitoring	The remote detection and transmission of vital and medical parameters, using sensors that interact with the patient or point-of-care tests.
Tele-referral	The report issued by the medical practitioner who has carried out a physical examination and diagnostic tests on a patient, whose content is typical of reports made in person and that is written and transmitted using digital and telecommunications systems.

A study on the use of telemedicine in veterans during the COVID-19 pandemic showed that the adoption of telemedicine in a hepatology clinic resulted in care similar to that offered before the pandemic, although in more appointments. A total of 935 patients were reached, of whom 87% were using telemedicine, albeit, in most cases (84%), by telephone [34]. A recent study by the Hepatology Department of the University of Buffalo demonstrated that telemedicine is an effective method for managing HCV infection among people who inject drugs (PWID) and that it is particularly effective in facilitating the initial connection with PWIDs, particularly those lacking transport; 84% of patients started treatment for their HCV through telemedicine [35].

The EASL-ESCMID position statement for the management of patients with chronic liver diseases (CLD) during the COVID-19 pandemic indicated to hepatologists that they should have promoted telemedicine in outpatient settings (prioritizing outpatient contacts and avoiding the nosocomial spread of the SARS-CoV-2 virus among patients and healthcare workers), and at the same time maintaining the standard of care for patients requiring immediate medical attention [36]. To manage autoimmune liver diseases, hepatologists in Lombardy recommended postponing follow-up visits until the end of the pandemic emergency, being proactive in sending general information and recommendations to patients in advance (e.g., using mailing list), using on-demand online consultations in addition to telephone consultations, and arranging drug dispensing with the local pharmacy for therapy maintenance [37].

4. Current legislation on telemedicine in Italy

The provision of telemedicine in accordance with the Italian Code of Medical Ethics [38] and with the new Italian national guidelines (Indicazioni nazionali per l'erogazione di prestazioni in telemedicina Repertorio atti n. 215/CSR del 17 dicembre 2020, see supplementary file 1) on telemedicine [39] is discussed below. Telemedicne terminology and possibilities are reported in Table 1 and Table 2.

5. AIGO Quality Committee position statements on the correct use of telemedicine

In September 2020, the Italian Association of Hospital Gastroenterologists and Endoscopists (AIGO) commissioned a panel of experts to produce statements addressing the use of telemedicine

Table 2
How to perform a televisit

What is a tele-visit?	A tele-visit is a synchronous interaction between the medical practitioner and the patient (possibly involving the presence of a caregiver) aimed at maintaining patient monitoring and follow-up.
What can be performed during a tele-visit?	Various health services can be provided (monitoring, prescription of drugs, adjustment of drug and diet therapy, prescription of examinations). Tele-visits should only be carried out for follow-ups after in-person visits.
How should the tele-visit be performed?	Before a tele-visit is started, the patient must be identified, informed of the possibilities and limitations of the technology used and must give verbal consent before starting the healthcare service. The relevant report must be drawn up and, if necessary, the treatment plan must be updated, and electronic prescriptions must be generated. The report should indicate whether a caregiver is present and whether the connection is suitable.
Reporting	At the end of the tele-visit, a report indicating the method used to provide the service (tele-visit) must be signed by the medical practitioner and made available to the patient. The digitally signed report, or scanned with a stamp and a handwritten signature, can be shared through a link on the platform which is compliant with current data protection legislation. Each tele-visit must include the administrative recording of the service and the methods for collecting and invoicing the corresponding payment, if due.
What if the tele-visit is not possible?	If it is not possible to carry out a telemedicine examination for any reason, the assistance of a caregiver may be requested with the patient's consent. This must be included in the final report. Telephone consultations, which may be carried out if this is not possible, should not be considered as a telemedicine method.

(see supplementary file 3). The panel was composed of gastroenterologists/endoscopists and supported by a lawyer. Regular conference calls, web-based exchanges, and two meetings were scheduled. Key questions were developed following the PICO format and successively voted on by means of a Delphi process [40].

All panelists voted for the statements by filling in a questionnaire sent using Google Forms (Google, Mountain View, USA). All participants in the consensus group received a secure link to the voting document by email and voted anonymously. Consensus for a statement was agreed if at least 80% of the respondents strongly agreed or agreed with that statement. The levels of agreement were: strongly agree, agree, moderately agree, moderately disagree, disagree, and strongly disagree.

The statements voted on are reported in supplementary file 2.

Five questions and answers about telemedicine in gastroenterology

1. What are tele-visit, tele-consultation and tele-cooperation?

Tele-visit (or Tele-examination) is defined as a healthcare service in which the medical practitioner interacts with the patient (through a real-time connection that allows the patient to be seen and supported by the caregiver if necessary), resulting in the prescription of drugs or treatments. This differs from telephone contacts or triage (made to assess the need for a quick in-person or remote examination or the possibility of postponing it).

Other telemedicine methods are tele-consultations (remote consultations between one or more medical practitioners) and tele-cooperation (interaction between HCPs with assistance by one to another HCP providing a medical service).

Statement 1. In all its forms, telemedicine is a healthcare service that could be used whenever necessary or possible in gastroenterology, hepatology and endoscopy.

Vote result: strongly agree 85%, agree 15%, moderately agree 0%, moderately disagree 0%, disagree 0%, strongly disagree 0%

Statement 2. Televisit (or Tele-examination) is a synchronous interaction between the medical practitioner (e.g., gastroenterologist, hepatologist, nutrionist) and the patient (possibly involving the presence of a caregiver) aimed at maintaining patient monitoring and follow-up.

Vote result: strongly agree 85%, agree 15%, moderately agree 0%, moderately disagree 0%, disagree 0%, strongly disagree 0%

Statement 3. Tele-consultation is a synchronous interaction between healthcare workers aimed at getting opinions and advice about a particular patient. During tele-consultation, examinations or images (including endoscopic images) may also be viewed to improve the consultation's final outcome.

Vote result: strongly agree 100%, agree 0%, moderately agree 0%, moderately disagree 0%, disagree 0%, strongly disagree 0%

Statement 4. Tele-cooperation is a synchronous interaction between healthcare workers to provide specific assistance when providing healthcare service (e.g., in digestive endoscopy).

Vote result: strongly agree 85%, agree 15%, moderately agree 0%, moderately disagree 0%, disagree 0%, strongly disagree 0%

2. What are the reasons for arranging a tele-visit?

Tele-visits, nowadays, are mainly used for continuity of care (follow-up) in patients who need outpatient services that do not require an objective examination, for instance, if the patient:

a) requires service as part of a personalized care plan/diagnostic and therapeutic care pathways
b) is included in a follow-up pathway for a known disease
c) is suffering from a known disease and needs checking or monitoring, confirmation, adjustment, or change of ongoing therapy
d) requires a medical history assessment for the prescription of diagnostic tests or staging of a known or suspected disease
e) requires the medical practitioner to verify the results of examinations undertaken, followed by the prescription of further tests or therapy.

Statement 5. During the execution of the different forms of gastroenterological telemedicine, various health services can be provided (monitoring, prescription of drugs, adjustment of drug and diet counseling, prescription of examinations).

Vote result: strongly agree 70%, agree 30%, moderately agree 0%, moderately disagree 0%, disagree 0%, strongly disagree 0%

Statement 6. Tele-visits should only be carried out for follow-ups after diagnosis.

Vote result: strongly agree 85%, agree 15%, moderately agree 0%, moderately disagree 0%, disagree 0%, strongly disagree 0%

3. How should a tele-visit be arranged?

As a rule, these services are requested and booked by the specialist treating the patient. The centralized online appointment booking system allows the appointments to be managed, thus providing the opportunity to book both conventional and remote services. Alternatively, the medical practitioner preliminarily assesses which patients among those booked can be examined without being present and contacts them (or has them contacted) by telephone, asking them if they are willing to undergo a tele-visit. The patients must be informed that the televisit can only occur if they have an internet connection and a device with a microphone and a camera. The patients must verbally consent to the remote visit and provide the email address, at which they will receive an email

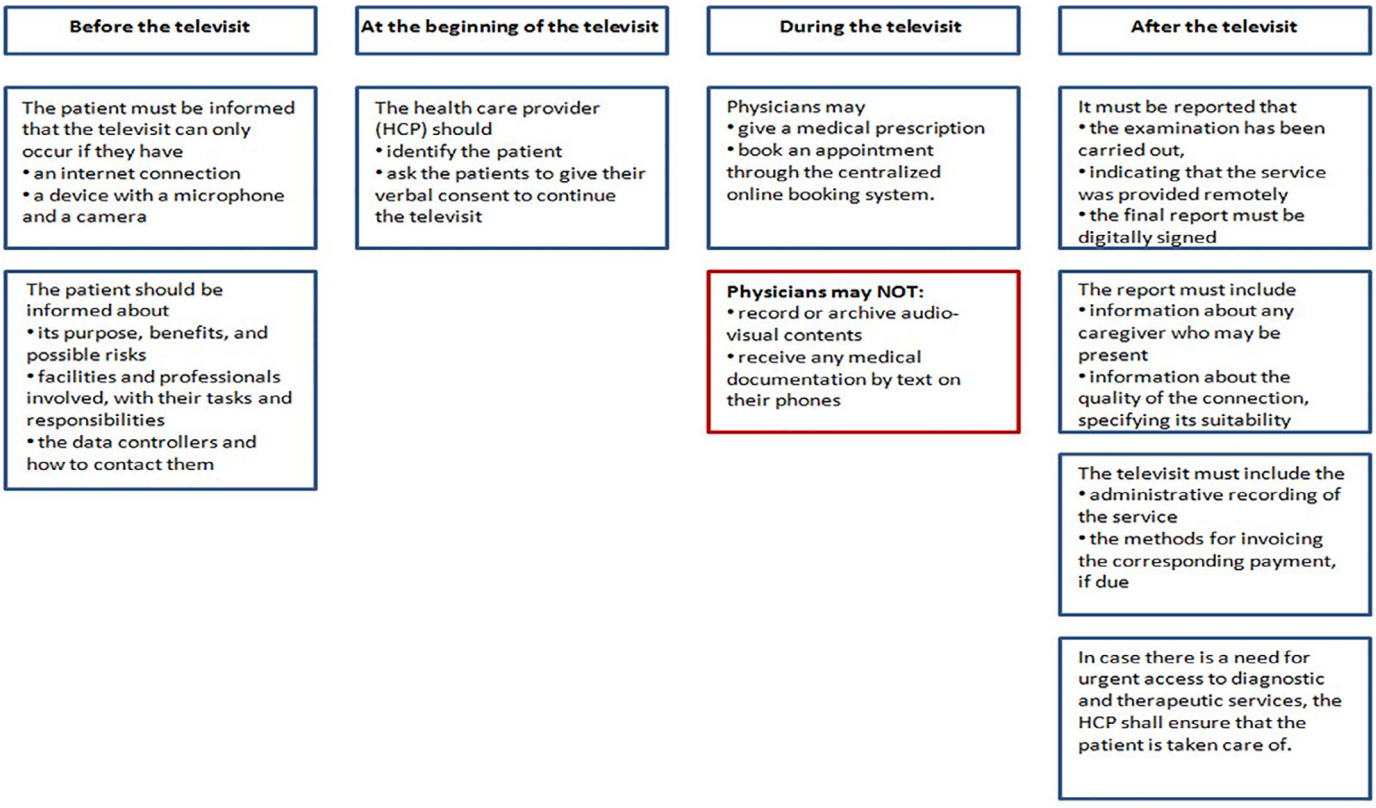

Fig. 1. What to remember before, during and after a televisit

containing the link for connecting and the instructions for the correct use of the platform used. Moreover, the patients should be invited to read the information on data protection, which is generally available on the hospital's website, and to provide their consent. The hospital's digital tools should already have been configured with standard written communication and video conferencing applications that comply with the current data protection regulations (EU Regulation 679/2016).

At the beginning of the tele-visit, the medical practitioner should identify the patient and must ask the patients to give their verbal consent to continue the tele-visit. Acceptance should be preceded by adequate information, allowing the patient to be aware of the following aspects:

- Purpose, benefits, and possible risks
- Facilities and professionals involved, with their tasks and responsibilities
- Information management and access to personal and clinical data
- The data controllers and how to contact them.

It should also be noted by HCPs and patients that a televisit is not a substitute for in-person visits, as it is not possible to carry out essential parts of a physical examination.

During the tele-visit, physicians may give a medical prescription and book an appointment through the centralized online booking system but may not record or archive audio-visual content and may not receive any medical documentation by text on their phones. If necessary, they must share it with the patient during the tele-consultation through the camera used for the video call or through screen-sharing if provided by IT support. With regard to email as a means of communication, it is currently not advisable to send sensitive data. Consequently, the AIGO commission thought it is worth considering which tools (e.g., certified email) could be used to solve this critical issue in the near future.

The report must include information about any caregivers who may be present, and information about the quality of the connection, specifying its suitability. In case there is a need for urgent access to diagnostic and therapeutic services, the specialist shall ensure that the patient is taken care of.

Statement 7. Before a gastroenterological tele-visit is started, the patient must be identified, informed of the possibilities and limitations of the technology used and must give verbal consent before starting the healthcare service.

Vote result: strongly agree 100%, agree 0%, moderately agree 0%, moderately disagree 0%, disagree 0%, strongly disagree 0%

Statement 8. The relevant gastroenterological report must be drawn up and, if necessary, the treatment plan must be updated, and electronic prescriptions must be generated. The report should indicate whether a caregiver is present and whether the connection is suitable.

Vote result: strongly agree 85%, agree 15%, moderately agree 0%, moderately disagree 0%, disagree 0%, strongly disagree 0%

4. What should the patient be reminded of after the tele-visit?

At the end of the tele-visit, the report, indicating that the service was provided remotely, must be digitally signed in order to allow it to be added to the patient's electronic health record. Alternatively, another IT tool that complies with the current data protection regulations could be used, such as, for example, the confidential link available on the telemedicine platform. Once the tele-visit has been concluded, it must be reported that the examination has been carried out, for accounting purposes according to the applicable regulations as a specific tele-visit or a generic gastroenterological visit.

The tele-visit must include the administrative recording of the service and the methods for collecting and invoicing the corresponding payment, if due.

Statement 9. At the end of the tele-visit, a report indicating the method used to provide the service (tele-visit) must be signed by the HCP (gastroenterologist) and made available to the patient.

Vote result: strongly agree 85%, agree 15%, moderately agree 0%, moderately disagree 0%, disagree 0%, strongly disagree 0%

Statement 10. The digitally signed gastroenterological report, should be available on the patient's electronic health record, or scanned with a handwritten signature, can be shared through a link on the platform, according to the current data protection legislation.

Vote result: strongly agree 85%, agree 15%, moderately agree 0%, moderately disagree 0%, disagree 0%, strongly disagree 0%

Statement 11. Each tele-visit must include the administrative recording of the service and the methods for collecting and invoicing the corresponding payment, if due.

Vote result: strongly agree 85%, agree 15%, moderately agree 0%, moderately disagree 0%, disagree 0%, strongly disagree 0%

5. What can be done if the visit cannot be carried out by telemedicine?

In the case of interaction with a patient who does not have the necessary technology or cannot rely on the assistance of a caregiver, telephone contact may also be considered, although this does not represent a telemedicine method; it should also be tracked and recorded in the patient's medical record, specifying the method and content of the consultation.

Telemedicine services do not include telephone triage or telephone consultations carried out by HCPs. This may be used to ask for explanations about a visit, and to evaluate whether a face-to-face or remote examination is necessary, or whether it could be postponed to a later date by scheduling a new appointment.

Statement 12. If it is not possible to carry out a telemedicine examination for any reason, the assistance of a caregiver may be requested with the patient's consent. This must be included in the final report.

Vote result: strongly agree 70%, agree 30%, moderately agree 0%, moderately disagree 0%, disagree 0%, strongly disagree 0%

Statement 13. Telephone gastroenterological consultations, which may be carried out if televisit is not possible, should not be considered as a telemedicine method.

Vote result: strongly agree 70%, agree 15%, moderately agree 0%, moderately disagree 0%, disagree 15%, strongly disagree 0%

6. Conclusions

Telemedicine is a tool born out of new technologies and new methods of communication. Even though remote interaction with HCPs and the sending of documents or high-resolution images are now possible, telemedicine has not yet been widely used in patient management.

However, the severity of the COVID-19 pandemic and its consequent lockdowns, resulting in the inability to travel, provided a significant boost to the use of technology (telemedicine) mainly to maintain adequate clinical monitoring of chronic patients (televisits), to exchange information for managing difficult situations or complex patients (tele-consultation), or to provide healthcare services with the help of remote specialists (tele-cooperation).

The pandemic has taught us to make the best use of digital technologies in terms of both their advantages and their limitations. It is therefore very likely that these methods, which are very popular with patients and cost-effective, will continue to be used after the pandemic. This is the reason why it is essential to build on the experience we have been forced to gain over the past months to use this instrument in correct way (Fig. 1).

In all its different forms, telemedicine will likely play a vital role in the implementation of so-called digital health, in line with modern times and the needs of healthcare providers and patients.

Conflict of interest

The authors declare no conflict of interest

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.dld.2021.06.032.

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