

**Short Communication****Appraising Telemedicine****Sunil Chaudhry¹**¹Honorary Medical Director, Bioclinitech Technologies Pvt Ltd., Mumbai & GPATutor.com, India**ARTICLE INFO***Article history:*

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ABSTRACT

Telemedicine enables exchange of medical information from one location to another using electronic communication, which is proposed to improve patient health status. In US. Published record of telemedicine was in the first half of the 20th century where ECG was transmitted over telephone. National Telemedicine Taskforce by the Health Ministry of India, in 2005, paved way for the success of various projects like the ICMR-arogyasree.¹ Telemedicine helps family physicians by giving them easy access to specialty doctors and helping them in close monitoring of patients. Indian Medical Association is training doctors adequately to use telemedicine to provide apt benefit to patients and protect themselves and their patients during Covid era.

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1. Introduction

The major advantages of telemedicine can be for saving of cost and effort of rural patients, as they need not travel long distances for obtaining consultation and treatment. In this type of scenario, telemedicine can provide an optimal solution for not just providing timely and faster access. It would also reduce financial costs associated with travel. It also reduces the inconvenience and impact to family and caregivers. Telemedicine can play a particularly important role in cases where there is no need for the patient to physically see the Doctor who is a Registered Medical Practitioner (or other medical professional), e.g. for regular, routine check-ups for continuous monitoring. Telemedicine can reduce the burden on the secondary hospitals. The doctor has an exact document of the advice provided via tele-consultation. Written documentation increases the legal protection for medical fraternity. Telemedicine provides patient's safety, as well as health workers safety especially in situations where there is risk of any contagious infections. Currently, in present pandemic telemedicine is yardstick for effective information.

Anticipation of disaster is hardly foreseen. This is more relevant in Covid times where there is mandate for effective social distancing. In country till now there was no legislation or guidelines on the practice of telemedicine, through video, phone, Internet based platforms (web/chat etc). Telemedicine will continue to grow and be adopted by more healthcare practitioners and patients in a wide variety of forms, and these practice guidelines will be a key enabler in fostering its growth in the current era of infectious domain of Corona virus.²

2. Objectives

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Telemedicine guidelines will help realize the full potential of these advancements in technology for health care delivery. This would provide norms and protocols relating to physician-patient relationship; issues of liability and negligence; evaluation, management and treatment; informed consent; continuity of care; referrals for emergency services; medical records; privacy and security of the patient records and exchange of information; prescribing; and reimbursement; health education and counselling. Wireless broadband technology has become more advanced and cell phone and internet use has become nearly irreplaceable. Patient education with images and videos, transfer of medical images like X-rays and scans, and real-time audio and video consultations have become a reality. Pharmaceutical sector is also helping Physicians by providing them to information and guidance in using different soft wares. There are sessions arranged for the practitioners. The modern day telemedicine uses computing devices belonging to the patient or physician and self-owned equipment like smartphone cameras. Recent developments have focused on electrochemical and optical biosensors, together with advances in the noninvasive monitoring of biomarkers.

The Registered medical practitioners will now need to qualify telemedicine i.e. Complete a mandatory online course within 3 years of its notification. The mode of communication for Telemedicine compromise the Video, Audio or Text based communications such as transmission of summary of patient complaints, images, lab reports and/or radiological investigations. Patients can followup with same Registered Medical Practitioner during followup. Telemedicine services should however be restricted for emergency care when alternative in-person care is available, and telemedicine consultation should be limited to first aid, life-saving measure, counseling and advise referral.²

2.1. Advantages of Telemedicine

Telemedicine increases access to care. Telemedicine improves quality of care delivery- 38% fewer hospital admissions and 31% fewer hospital re-admissions with 63% more likely to spend fewer days in the hospital. Telemedicine can increase efficiency of care delivery, reduce expenses of caring for patients.

It is important to realise that Telemedicine should support, not replace, traditional care delivery if needed.

2.2. Strengths of mode of Telecommunication:

Video through e-platforms what's app, Skype etc : Closest to an in person-consult, real time interaction, Patient identification is easier, RMP can see the patient and discuss with the caregiver, Visual cues can be perceived, Inspection of patient can be carried out. Patients are more comfortable and do respond more positively. There is sense of

satisfaction between the patient and doctor.

2.3. Audio ie Mobile Phone

Convenient and fast. Easy reach. Ubiquitous mode and real time interaction, This can be used for all issues related to the patients health including the finances.

2.4. Text Based

Suitable for urgent cases, or follow-ups, second opinions provided RMP has enough context from other sources, such as SMS.

E mails, Fax: Convenient and easy to document. No separate infrastructure required. E. mails can attach patient reports which doctor can access easily and respond back in time²

3. Template often used in mobile for Telemedicine

3.1. Mandate of Patient Consent

Patient consent is necessary for any telemedicine consultation. Needs to be documented in terms of SMS from patient very clearly that he or she wish to interact with doctor on a particular issue. Video clip can also be used. This is valid for immediate consultation or the first consult or the followup consultation known as subsequent consult which can be within 6 month. Patient needs to type Accept in mobile or say Yes for Consult in video clip.

The following should be communicated to patient before the doctor starts consultation

Kindly Type: **“Accept”** prior to the beginning of appointment.

3.2. Telehealth visit template: Disclaimer

Please note the visit may be limited without physical exam. If your symptoms are not improving or worsening you need to go to nearest emergency room to be evaluated in person.

Appointment times Monday through Saturday Put clinic timings here. Sunday closed for routine interaction. For urgent cases only.

3.3. Consultation fee

As decided by Physician. Time limit : Be specific and limit to 10-15 minutes only. In cases patient wish to show area affected they can use whatsup call.

Please note for better evaluation, please provide all information in a single phone call. The aim is to provide quality care in current covid pandemic.

4. Improved Professional Education

Many undergraduate students use a laptop computer from the day they begin their first course, for such activities as

downloading printed materials, videos and tutorials, and accessing medical information.

At the postgraduate level, examples abound of telemedical applications being used for the purpose of education. Examples include the self-test applications for some specialties that can be accessed on the Internet, the ability to access lectures given by distant specialists using videoconferencing facilities, and more recently the setting of simulators for teaching practical skills, such as intubation for anesthetists and endoscopy for surgeons.³

5. Situational Analysis

The Registered Medical Practitioners should exercise their professional judgment to decide whether a telemedicine consultation is appropriate in a given situation or an in-person consultation is needed in the interest of the patient. They should consider the mode/technologies available and their adequacy for a diagnosis before choosing to proceed with any health education or counseling or medication. They should be reasonably comfortable that telemedicine is in the patient's interest after taking a holistic view of the situation. Every patient/case/medical condition may be different, for example, a new patient may present with a simple complaint such as headache while a known patient of Diabetes may consult for a followup with emergencies such as Diabetic Ketoacidosis which is an emergency, frequently requires hospital admission.

5.1. Patient Education

Practicing doctor may impart health promotion and disease prevention messages. These could be related to diet, physical activity, cessation of smoking, contagious infections and so on. Likewise, he/ she may give advice on immunizations, exercises, hygiene practices, mosquito control etc

6. Epidemiological Surveillance

Telemedicine applications for epidemiological surveillance are gradually reaching new heights with the development of technology such as geographic information systems (GISs). This would be more relevant during the current pandemic of Covid.

1. It can give new insight into geographical distribution and gradients in disease prevalence and incidence and valuable insight into population health assessment.
2. It also provides valuable information of differential populations at risk based on risk factor profiles.
3. It helps in differentiating and delineating the risk factors in the population
4. It also helps in interventional planning, assessment of various interventional strategies and their effectiveness
5. It can play a pivotal role in anticipating epidemics

6. It is an essential tool in real-time monitoring of diseases, locally and globally

6.1. Technical constraints

1. **Lack of basic amenities:** In India, nearly 40% of population lives below the poverty level. Basic amenities like transportation, electricity, telecommunication, safe drinking water, primary health services, etc. are missing. No technological advancement can change anything when a person has nothing to change.
2. **Literacy rate and diversity in languages:** Only 65 % of India's population is literate with only 2% being well-versed in English. Telemedicine has option to use any vernacular language, hence this is not a constraint.

7. Legal and ethical considerations for telemedicine in developing countries

No guidelines were found addressing issues specific to telemedicine in developing countries, although the subject has been raised. WHO has identified the need for additional medical resources in the developing world and has proposed telemedicine as a possible solution. ISRO (Indian Space Research Organization) made a modest beginning in telemedicine in India with a Telemedicine Pilot Project in 2001, linking Chennai's Apollo Hospital with the Apollo Rural Hospital at Aragonda village in the Chittoor district of Andhra Pradesh. setting up of a National Telemedicine Task Force by the Health Ministry, in 2005, were some of the other positive steps by the government. International projects like the Pan-African eNetwork Project and the SAARC (South Asian Association for Regional Co-operation) Telemedicine Network Projects have also been taken up as an initiative of the External Affairs Ministry strategically placing Indian telemedicine in the global scenario.⁴

8. Public Health and Telemedicine

The technology involved in telemedicine allows providers and patients to be almost anywhere, this is one of the key factors in providing quality healthcare to the needy. With the advent of telemedicine, distance is no longer a hurdle in providing healthcare to the remote areas. The initial challenge for the commencement of the programme posed by the lack of a primary center for practicing telemedicine services in many remote areas was resolved with the kick off of mobile telemedicine units with satellite communication.⁶

Amid the novel Covid outbreak, the guidelines were issued to decongest the healthcare facilities as doctors can consult the patient remotely which would protect the patients and the doctors from virus transmission, and does not disrupt the lockdown measures.

Table 1: Chronology for Telemedicine Guidelines:⁵

Proposed Guideline	Society involved
Doctor-patient communication by-mail (1997)	American Medical Informatics Association
Security issues surrounding patient information (1996)	British Medical Association
Code of conduct for medical and health websites (2000)	Health on the Net Foundation
Guidelines for disclosure, patient privacy and quality content issues (2000)	Internet Health Coalition
Guidelines for online doctor-patient communication (2001)	US medical malpractice insurers and medical societies
Patient guidelines	Queensland Telemedicine Network
Guidelines for teleradiology (2005)	American College of Radiology
Guidelines for telepsychiatry (1998)	American Psychiatric Association
Online psychiatry (2000)	International Society for Mental Health
Realtime telepsychiatry (1999)	Royal Australian and New Zealand College of Psychiatrists
Telemedicine in homecare (2002)	American Telemedicine Association
Telepathology (1999)	American Telemedicine Association
Tele-ophthalmology (2004)	American Telemedicine Association
Surgical practice of telemedicine (1999)	SAGES
Teledermatology (1999)	American Academy of Dermatology
How to take clinical photographs using a digital camera	American Telemedicine Association
Ethical guidelines in telemedicine (1997)	Finnish Medical Association
WMA statement on accountability, responsibilities and ethical practice of telemedicine (1999)	World Medical Association
National Initiative for Telehealth Framework of Guidelines (2003)	Canadian National Initiative for Telehealth (NIFTE)
Recommended Guidelines and Standards for the Practice of Telemedicine in India (2003)	Department of Information Technology, Govt of India

9. Disadvantages of Telemedicine

9.1. Requires additional training

It is expected that the health facilities providing telemedicine options, must spend additional time as well as money for training the experts in order to enrich them with the much needed technical knowledge.

9.2. Reduce care continuity

Several telemedicine events help the patients to continuously change their physicians which result in a reduced effective care.

9.3. Licensing issues

Sometimes providers training telemedicine are required by certain states to possess a valid license for the state in which the patient is actually located.

9.4. Technological restrictions

There have been lots of innovative programs recently, telemedicine still continues to be technologically limited. It is possible for the broadband connections to malfunction, video chatting gadgets to function improperly and so on.⁷

10. Perception toward the use of telemedicine

About 80% patients and all the doctors reported their satisfaction on the quality of treatment given through telemedicine. Approximately, 90% of the participants found telemedicine cost-effective and 61% of the doctors found an increase in patient's inflow apart for their regular practice. Problems encountered in telemedicine were 47% in technical issues and 39% in time scheduling by doctors and 31% of patients were uncomfortable to face the camera, and 24% had technical issues.⁸

11. Future of Telemedicine

According to a Technology report, there will be a huge uptick in telemedicine patients as doctors adopt telehealth platforms and start to offer virtual care. In 2013, the estimate of telehealth patients was less than 350,000. That's a 19,000% increase over only five short years ie 7 million U.S. telemedicine patients in 2018.

While the idea of video-chatting a doctor online might have seemed sci-fi a decade ago, today's patients are very open to the idea. 74% of surveyed patients would use telemedicine services.

Things like internet access, smartphones using whatsapp call and Skype have shown patients that it's possible, even simple, to connect with others online.

In the age of the Affordable Care Acts and rising health insurance costs, employers have turned to telemedicine as a way to balance the budget according to a Towers Watson

survey, 37% of employer respondents in 2014 said they expected to offer telemedicine services to employees next year.

A Software advisory survey also found that only 16% of patients would prefer to go to the emergency room for a minor medical problem if they could use telemedicine services instead.⁹

Virtual or Tele/Video conferences should be attempted to ensure social distancing as face-to face meetings may not be suitable, particularly for Ethics committee meetings, which approve the conduct of clinical trials at desired site.¹⁰

COVID -19 has forced the healthcare world to do a 180° turn on telemedicine and what awaits this technology in the future. Telemedicine could be a big part of the answer - both now, and in a post-pandemic world for years to come.

12. Source of Funding

None.

13. Conflict of Interest

None.

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