TELEMEDICINE: GUIDANCE FOR PHYSICIANS IN THE PHILIPPINES

Telemedicine is defined by the World Health Organization (2010) as "the delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities". *Teleconsultation* refers more specifically to the consultation done using telecommunications, with the purpose being diagnosis, or treatment of a patient with the sites being remote from patient or physician (Deldar, et al. 2016; Van Dyk, 2014).

In the last few weeks, the CoViD-19 pandemic has transformed medical practice. This document is a volunteer effort of the faculty and graduate students of the University of the Philippines Medical Informatics Unit for:

- Filipino physicians intending to engage in telemedicine due to the disruption of healthcare brought about by the CoViD-19 pandemic; but also for
- Filipino lawmakers to consider the gaps in the current legislation on telemedicine; and
- Medical educators to develop telemedicine training.

This document is in support of the Joint Memorandum Circular 2020-0001 of the Department of Health (DOH) and the National Privacy Commission (NPC) on the use of telemedicine in the CoViD-19 response. Relevant literature and Philippine legislation defining the practice of telemedicine were reviewed by the faculty and the health informatics graduate students of the University of the Philippines Manila Medical Informatics Unit.

This guidance seeks to answer the following questions:

- Who can practice telemedicine?
  Any physician with a valid license from the Philippine Professional Regulation Commission (PRC) can engage in telemedicine with patients physically residing in the Philippines.

- What are the minimum competencies to practice telemedicine?
  Telemedicine requires proficiency in digital communication skills, clinical acumen and knowledge of technology and equipment to be used, while adhering to ethical practice.

- What are the minimum requirements to set up for telemedicine?
  A communication device such as a landline phone, cellphone with or without camera, and/or computer will be required. If using video or chat software, a stable internet connection is vital. A private, well-lit location is preferred, especially for video consult.

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Who can practice telemedicine?

Any physician with a valid license from the Philippine Professional Regulation Commission can engage in telemedicine with patients physically residing in the Philippines.

The Medical Act of 1959 in Section 10 (a), defines the practice of medicine thus, "physically examine any person, and diagnose, treat, operate or prescribe any remedy for human disease, injury, deformity, physical, mental, psychical condition or any ailment, real or imaginary." Since physically examining patients appears required of the law, it might preclude the practice of telemedicine until this law is revised. The DOH-NPC joint circular memorandum has recognized that licensed physicians may engage in telemedicine despite absence of physical contact but states that, "the gold standard for clinical care remains to be face-to-face consultation."

Section 10b of the Medical Act of 1959 provides that a person engaged in the practice of medicine, *"who shall by means of signs, cards, advertisements, written or printed matter or through the radio, television or any other means of communication, either offer or undertake by any means or method to diagnose, treat, operate or prescribe any remedy for any human disease, injury, deformity, physical, mental or psychological condition."* Written before the advent of telemedicine, it indicates "any other means of communication" and "any means or method to diagnose, treat, operate or prescribe any remedy" which can perhaps be loosely applied in the context of telemedicine. In its definition of terms, the DOH-NPC joint issuance defined telemedicine as "the practice of medicine by means of electronic and communications technologies such as phone call, chat or short messaging service (SMS), audio- and video-conferencing to deliver healthcare at a distance between a patient at an originating site, and a physician at a distant site."

It is worthwhile to note that the Medical Act of 1959 also mentions an exemption to the practice of medicine, i.e*., "any person who renders any service gratuitously in cases of emergency, or in place where the services of a duly registered physician, nurse or midwife are not available."* Taking note of "gratuitously," such exemption likely applies due to the CoViD-19 pandemic and the community quarantine, when the shortage of health professionals is felt even more acutely.

In the light of a lack of national legislation along with rules and regulations specific for the practice of medicine utilizing telemedicine by both Filipino and foreign licensed physicians catering to patients residing in the Philippines at the time of the telemedicine encounter,

it can be surmised that only Filipino licensed physicians can practice telemedicine for patients residing in the Philippines.

On the other hand, Filipino licensed physicians may practice telemedicine beyond national jurisdictional borders subject to applicable laws and regulations of the country of residence of the telemedicine patient-client. In addition, overseas-based Filipino licensed physicians may continue to cater to Philippine-based patients, regardless of other licenses that they possess, provided that they have retained their Philippine citizenship to similarly retain their PRC licenses. Otherwise, conditions and requirements set by the PRC for non-Filipino licensed physicians practicing in the Philippines shall apply.

In past years, legislation has been sought to define the practice of telemedicine. Proposed congressional bills include House Bill (HB) No. 6366 (The Telehealth Act of 2012), HB No. 4199 (Telehealth Act of 2014), and more recently, Senate Bill (SB) No. 1618 (The Philippine eHealth Systems and Services Act).

Section 11 of SB 1618 states that telehealth and telemedicine services, *"shall not be understood to modify the scope of medical practice or any health care provider or authorize the delivery of health care service in a setting or manner not otherwise authorized by the law."* This is similarly stated in Section 16 of HB 4199, that *"the standard of care is the same as regardless whether a health care provider provides health care services in person or by telemedicine."*

As stated in Section 5 of HB 6336, *"the DOH and the Philippine Health Insurance Corporation (PHIC) shall require telehealth practitioners in both originating and distant sites to undergo accreditation, through the National Telehealth Reference Center."* *Section 8 of the same bill sought to establish a National Telehealth Board to "establish telehealth guidelines and regulations pertinent to its practice and provision of service."* A similar body, the National eHealth Steering Committee, is provided for by Section 8 of SB 1618. Among its functions is to "create or identify the telehealth licensing and regulatory mechanisms and body to implement these." In contrast to HB 6336, SB 1618 tasks the Professional Regulation Commission to be the lead agency in accrediting telehealth practitioners with PHIC accreditation for reimbursement purposes only.

Section 10 of HB 4199 clearly enumerates who may practice telehealth: "a registered medical practitioner holding a valid Philippine license; or health care provider or licensed individual who provides health care within the scope of his/her professional license." The same section further states that, "a telehealth care provider must be registered with the DOH through a procedure established by it."

Such an accreditation or registration process for physicians who wish to engage in telemedicine is currently not in place and should be planned for in the post-pandemic scenario. With the current gaps in legislation, only physicians licensed by the Professional Regulation Commission can engage in telemedicine with patients physically residing in the Philippines.

What are the minimum competencies to practice telemedicine?

Telemedicine requires competency in the following areas: digital communication skills, clinical acumen, and knowledge of technology and equipment to be used, while adhering to ethical practice.

The Commission on Higher Education (CHED) Memorandum Order 18, series of 2016, defined the program outcomes for the Doctor of Medicine program. While telemedicine was not specifically mentioned, Article V Section 6.3 includes medical informatics under its minimum curricular content. Pathipati, et al. (2016) argue that although younger physicians are digital natives and therefore comfortable with technology, this does not necessarily assure high-quality telemedical care. They recommend that telemedical training be incorporated in the medical curriculum. Pourmand, et. al., (2020) found that inclusion of telemedicine in medical school curricula in the US has plateaued in recent years, likely due to the curricula already being full. Waseh & Dicker (2019) suggest telemedicine competencies be combined with existing medical curriculum components, such as rural care exposure and inter-professional training, instead of carving out a separate course.

Demiris (2003) also recommended incorporation of telemedicine in graduate medical informatics education, noting that keeping course content updated will be challenging given the rapid advances in technology.

Van Houwelingen, et al. (2016) identified competencies required for nursing telehealth activities. While some were already present in nursing education, they found new competencies specifically linked to telehealth activities. This has implications in training for physicians too, where requisite skill sets may be dictated by specific telemedicine scenarios or applications. Chaet, et al., (2017) discussed this as well by recommending that physicians also be proficient and comfortable in the use of telemedicine-associated available technology, including awareness of its limitations of when to shift to face-to-face consultation. Differences should be addressed by training of users with regular workshops or with guidance from their corresponding ICT departments. As an example, Jagolino et al. (2016) have recommended competency milestones for telestroke training in vascular neurology fellowship.

To list competencies for telemedicine, a PubMed search was conducted using the MesH terms, "telemedicine," AND "clinical competence" OR "competency-based education"; ("Education, Medical"[MeSH] OR "Education, Medical, Undergraduate"[Mesh] OR "Education, Medical, Graduate"[MeSH] OR "Education, Medical, Continuing"[MeSH]) AND "Telemedicine"[MeSH]. Pertinent results are discussed as follows.

Sapci & Sapci (2019) recommended skills training for telemedicine for nursing students. Their proposed learning outcomes can also apply to physicians:

1. Knowledge and attitude
    a. Demonstrate knowledge of the operation of telemedicine and patient monitoring technologies
    b. Identify how technology can be used in sharing information with colleagues
    c. Formulate how telemedicine can be deployed in existing pathways
    d. Demonstrate how to collect health-related data for patient monitoring
    e. Validate the potential benefits of telehealth
    f. Present confidence that technology is not difficult to use
    g. Demonstrate open-mindedness to innovations in ICT and motivational attitude

2. Technological skills
    a. Demonstrate skills to train the patient to use the equipment
    b. Formulate skills to manage telemedicine data sets, software packages and tools
    c. Apply skills to check equipment for functionality

Recognizing that a face-to-face care health encounter can be very different from a teleconsultation, Sharma, et al., (2019) proposed the following core competencies:

1. Digital communication and webside manner
    a. Optimal visualization, body language and speech (communication speed, colloquial speech, body motion and gestures), dress, camera, background, lighting and framing
    b. Graphic-assisted communication: imaging and diagnostic findings
    c. Virtual technologies: understand and troubleshoot platforms

2. Scope and standards of care
    a. Licensing: state-specific licensing requirements
    b. Billing and insurance: coverage for virtual visits
    c. HIPAA (Health Insurance Portability and Accountability Act) compliance: privacy
    d. Prescribing: legal limits of e-prescribing
    e. Virtual care pathways: appropriate follow-up and emergent response

3. Virtual clinical interactions
    a. Environmental assessment: safety, cleanliness, activities of daily living
    b. Virtual physical exam: remote exam techniques, remote monitoring devices
    c. Group interactions: management of family and group dynamics

Picot (2000) identified the types of training needed according to different applications that may be used:
1. Videoconferencing: equipment selection, medicolegal issues, ergonomic room design, recording media and storage
2. Remote telemedicine: troubleshooting, medicolegal issues, physician assistant skills, patient care, technical assessment, knowledge of a wide range of technologies, basics of imaging technologies
3. Health information structures: privacy legislation, security and confidentiality, information and database management, knowledge of computer and network technologies
4. Tele-imaging: image capture and transfer, network capacity, software interfaces, picture archiving and communication systems management, imaging standards, storage and transfer over networks
5. Home telecare: telemonitoring device troubleshooting and installation, patient education skills, medicolegal issues, knowledge of teletriage

Even using just the telephone for telemedicine requires some skills. According to Car & Sheikh (2003) the following should be the focus of training in telephone consultation skills:
- Active listening and detailed history taking
- Frequent clarifying and paraphrasing (to ensure that messages have been received in both directions)
- Picking up cues (such as pace, pauses, change in voice intonation)
- Offering opportunities to ask questions
- Offering patient education and documentation.

Ethical use of telemedicine is also a core competency. Rienits, et al., (2016) developed a lesson on telehealth consultation skills with interactive stations. They found that medical students valued learning at the ethics station the most. The questions asked at this station are also relevant locally and need to be discussed:
- Why is recording of the interview not encouraged?
- Can a patient with psychosis give informed consent to a teleconsultation?
- What could you do if the teleconnection fails?
- What could you do if your indigenous patient refuses to be filmed?

Physicians must respect ethical principles when practicing telemedicine. The World Medical Association (2018) highlighted the following guidelines: maintain mutual trust and respect between the patient and physician; ensure confidentiality, privacy, and data integrity; obtain proper informed consent (Appendix A **- Sample Patient Consent Form**); value autonomy and privacy of the physician; perform basic responsibilities of a physician; and ensure quality of care rendered.

What are the minimum requirements to set up for telemedicine?

At the minimum, a communication device such as a landline phone, cellphone with or without camera, and/or computer will be required. If using video or chat software, a stable internet connection is vital. A private, well-lit location is preferred, especially for video consult.

Hardware

In low resource settings, there have been telemedicine services using only landline phone calls, cellphone messages or SMS (Okoroafor, et al., 2017; Delgoshaei, et al., 2017). Text-based functions could be classified under *synchronous* type of teleconsultation. However, recommendations from the American Telemedicine Association, National Health Services (UK), and the Office of the National Coordinator for Health Information Technology (ONC), include use of imaging peripherals.

To look for camera resolutions that could be applicable, a PubMed Search was done using the following terms "Telemedicine" AND "megapixels" OR "pixels" OR "camera". Another PubMed Search also looked into different subspecialties with focus on visual diagnosis such as "Teledermoscopy" OR "Teleophthalmology".

In a teledermoscopy study done by Barcui & Lima (2018), a cellphone camera with 8 megapixels would allow a match rate of 90% as compared to face-to-face diagnosis. While a teleophthalmology study in rural Brazil by Riberio, et al., (2014) showed an 85% accuracy using a cellphone camera with 5 megapixels.

Software

With the increasing use of smartphones, people have used these not only for personal matters but also to communicate with their physicians especially during the pandemic.

Aside from Facebook and Messenger, the Play Store (Android) and the App Store (iOS) charts for Social Communication have currently these top three instant messaging apps namely, Viber, WhatsApp, and Telegram. A comparative study (Table 1) among these in terms of security of communication recommended the use of Telegram over the two for its capability of synchronization, fast service, reliable backup, and better security feature (Sutikno, et al., 2016).

Table 1. Whatsapp, Viber and Telegram in assessing the security

Security Criteria	WhatsApp	Viber	Telegram	Telegram (Secret Chats)
Is communication encrypted in transit (all user communications are encrypted along all the links in the communication path)?	√	√	√	√
Is communication encrypted with a key the provider does not have access to (all user communications are end-to-end encrypted)?	√	-	√	√
Can correspondent's identity be independently verified?	√	-	-	√
Are past communications secured if keys are stolen?	√	-	-	√
Is the code open to independent review?	-	-	√	√
Is the crypto design well-documented?	√	√	√	√
Has there been an independent security audit?	√	√	√	√

Note: Table from "WhatsApp, Viber and Telegram which is Best for Instant Messaging?", by Sutikno, T., Handayani, L., Stiawan, D., and Riyadi, M. A., 2016, International Journal of Electrical and Computer Engineering (IJECE), Volume 6, p. 913.

Deepak et al. (2020) also noted that WhatsApp can serve as an interface between dermatologists and patients during these times because it can deliver both real time video consultation and store and forward service with end-to-end encryption.

Some countries, such as the US, have relaxed regulations during the CoViD-19 crisis to allow the use of applications such as FaceTime, Facebook Messenger, Hangouts, Zoom and/or Skype (HHS.Gov, 2020).

Additionally, the following has been listed to be HIPAA-compliant video communication products by their vendors and as such, these vendors will enter into an HIPAA business associate agreement (BAA) for these products (HHS.Gov, 2020).

- Skype for Business / Microsoft Teams
- Updox
- VSee
- Zoom for Healthcare
- Doxy.me
- Google G Suite Hangouts Meet
- Cisco Webex Meetings / Webex Teams
- Amazon Chime
- GoToMeeting
- Spruce Health Care Messenger

Note: The HIPAA BAA offered by these vendors have not been reviewed by the US Office of Civil Rights. Moreover, this list does not constitute an endorsement, certification, or recommendation of specific technology, software, applications, or products. There may be other technology vendors that offer HIPAA-compliant video communication products that will enter into a HIPAA BAA with a covered entity. Further, this does not mean endorsement of any of the applications that allow for video chats listed above.

Healthcare providers should inform patients that these may still have potential privacy risks. "Public-facing" apps such as Facebook Live, Twitch or Tiktok should not be used to provide telemedicine care.

The American Medical Association Telemedicine (2020) Playbook suggested that when selecting a telemedicine software or vendor, the provider should evaluate them according to security, usability, and customer service. A live demonstration, case reports and word-of-mouth referrals would help the provider select a software that is in alignment with their specific goals to pursue telemedicine.

Google has made available a vendor security assessment questionnaire (VSAQ) to help clients evaluate the readiness to provide secure systems. The questionnaire is available at vsaq-demo.withgoogle.com . Doctors are advised to require potential vendors to fill up the VSAQ, attest, and attach it in the contract.

Internet Connection

In order to meet the demand for clear audio and video needed for telemedicine consults, the following minimum bandwidth speeds are recommended by the Office of the National Coordinator for Health Information Technology (ONCHIT accessible at HealthIT.gov) with some modifications for the Philippine setting based on estimations from Search Unified Communications. In principle, the number of simultaneous users matter. A minimum of 2 Mbps per user is recommended for a resolution of HD720p and a frame rate of 30fps.

Below is a summary table for recommended minimum bandwidth speeds per type of health care provider.

Table 2. Recommended minimum bandwidth speeds for different types of health care providers

	Single Physician Practice	Barangay/ Rural Health Clinic	Small Physician Practice	Nursing Home	Clinic / Large Physician Practice	Hospital	Academic / Large Medical Center
Number of Physicians	1	1 to 3	2 to 4	5	5 to 25	up to 50	up to 500
Internet Bandwidth Requirement	2 Mbps	2 to 6 Mbps	4 to 8 Mbps	10 Mbps	10 to 50 Mbps	100 Mbps	1000 Mbps
Supports practice/clinic/hospital management functions, email, and web browsing	YES	YES	YES	YES	YES	YES	YES
Allows for concurrent use of high-quality video consultations and EHR[1] or EMR[2], if any	YES	YES (including CHITS[3])	YES	YES	YES	YES	YES
Capable of real-time image transfer	NO	NO	NO	NO	YES	YES	YES
Possible use of HD video consultations	YES	YES	YES	YES	YES	YES	YES
Enables non-continuous remote monitoring	YES	YES	YES	YES	YES	YES	YES

[1] Electronic Health Record (EHR); [2] Electronic Medical Record (EMR); [3] Community Health Information Tracking System (CHITS)
Note: Table adapted from from "What is the recommended bandwidth for different types of health care providers?" by Office of the National Coordinator for Health Information Technology and "How to calculate video conferencing bandwidth requirements" by Lazar, I, Search Unified Communications.

It must be noted that estimating bandwidth requirements can be affected not just by number of concurrent users or devices, but also location, real-time transactions, hardware, storage technology. In order to estimate the speed and quality of the internet connection, one may use internet speed testing sites, such as https://www.speedtest.net/.

Office Space & Lighting

Greenhalgh (2020) advises a private, quiet, and well-lit room to be used in telemedicine consultation. Rheuban (2018) from the American Medical Association, advises seats designed for a comfortable interaction and the platform table for the computer secure to avoid wobbling. The camera should be at eye level. Krupinski (2014) further elaborates to recommend planning the layout of the office space with respect to ventilation, air conditioner or heating, and any equipment that will be used must be within easy reaching distance from the seat. For lighting, they also recommend the use of white light, fluorescent day-light or full crescent bulb instead of incandescent. While most practices will likely be home-based, a single-color background would be recommended, such as light-blue, and clutter should be avoided. This is so that both participants can focus without distraction. The audio can also "*make or break*" the conversation. Echo can be eliminated in carpeted rooms (Major, 2005)

Attire & Decorum

Part of professionalism is to wear appropriate attire. This also applies even if working from home. Petrilli, et al., (2015) previously observed that older patients prefer physicians wearing formal attire and white coats. However, according to Demiris, et al. (2010) light-colors and white coats can increase reflection and glare on digital screens. While various noisy patterns and bright colors can look good on some people, it may not translate well to screen monitors (Wade, 2018; Whitzman, 2016).

What physicians do in front of the camera is also important, as angle or vantage point might emphasize bad posture or habits such as fidgeting. Simple actions such as turning away to write notes can make one disappear from the view of the patient. If there is a picture-in-picture feature, disable this setting. Look at the patient. Wearing headsets may ensure additional privacy, but if the area is secluded, focus should be made in projecting a natural environment (Gonzales, 2017).

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Appendix A - Sample Patient Consent Form

Philippine Medical Association
Consent Form for Telemedicine Consultation

Patient Name: _____ Birthday(MM/DD/YEAR): _____
Age: _____ Address: _____ Cellphone No: _____
Email Address: _____ Medical Record No: _____

Introduction and Purpose:
Telemedicine is the use of telephone, cellphone, computer or electronic gadget that will enable me as a patient to communicate with my doctor/s for the purpose of diagnosis, treatment, management, education and follow-up care when a face-to-face consultation is not possible. Telemedicine consultations may involve live two-way audio and video, patient pictures, medical images, patient's medical records and other things that may be pertinent to the consultation.

Electronic systems will utilize network and software security protocols to protect patient identity, privacy and confidentiality and to safeguard data and prevent corruption of data against intentional or unintentional corruption.

By participating in this teleconsultation, I acknowledge that a **physician-patient relationship** is formed at my request.

Nature of the telemedicine consultation: It was explained to me by my doctor that a video conferencing technology will be used to conduct a telemedicine consultation. I understand that as in the face-to-face consultation, I will be asked to give my history, share my laboratory test and imaging results and other documents pertinent to my concerns. Moreover, I may be asked to show certain body parts as may be considered important to form a diagnosis. This is in view of the fact that my doctor will not be in the same room as I am and would not be able to perform the necessary physical examination on me.

Benefits: Through the use of telemedicine, I will obtain a medical evaluation and impression of my condition. I may receive guidance on monitoring my condition and the next steps to do should my condition change, specific prescription on what to take, instructions on what laboratory and imaging tests to do.

Potential Risks: I understand there are potential risks in using this technology, including technical difficulties, interruptions,poor transmission of images leading to misdiagnosis and consequently mistreatment, no access to paper charts/medical records, delays and deficiencies due to malfunction of electronic equipment and software, unauthorized access leading to breach of data privacy and confidentiality.

All consultations are considered confidential but given the nature of technology, I understand that despite using appropriate measures, my doctor cannot guarantee the

safety of my personal data from data hacking. Therefore I cannot hold my doctor liable for any data that may be lost, corrupted, destroyed or intercepted or the illegal use of my data arising from a breach in security.

Data Privacy and Confidentiality: I agree to share my personal data with the clinic or hospital staff of my doctor in order to facilitate scheduling of my consultation and for billing purposes. I agree not to record in video or audio format nor divulge the details of my consultation in compliance with the Data Privacy Act of 2012.

Rights: I have the right to:
1. Ask non-medical staff to leave the telemedicine consultation room.
2. Terminate the telemedicine consultation and the physician-patient relationship at any time.
3. Obtain a copy of the information obtained and recorded during the telemedicine consultation
4. Be assisted by a family member or caregiver in the set-up of the telemedicine at home and to answer some questions.

Limitations: The clarity of the images, audibility of the sound, the speed of the internet, the presence of background noise all affect the quality of the telemedicine consultation. Physical examination as done in the usual face-to-face consultation is not possible and is therefore a big limitation to the process of making a diagnosis.

In case of an urgent concern: It is my doctor's responsibility to refer me to the nearest hospital in case he deems my concern to be urgent and would warrant immediate action and management by doctors. My doctor's responsibility ends with the conclusion of the telemedicine consultation.

By signing this consent form, I hereby declare that
    I have read this form and that I fully understand what is stated here.
    I was given the opportunity to ask questions and my questions were answered.
    I have discussed these with my doctor and
    I fully understand the risks and benefits of telemedicine consultation as they were shared in a language that I can understand.

_____   _____   _____
Signature of Patient/Legal Representative   Date   Time