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Leveraging on Telemedicine during an Infectious Disease Outbreak

Text by SMA Telemedicine Workgroup

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This Workgroup was brought together through my personal contacts in the past weeks with the aim of establishing a unified presentation for the potential use of telemedicine, specifically in the context of this current novel coronavirus (COVID-19; formerly known as 2019-nCoV) outbreak.

This Workgroup is not meant to be exclusive; it was assembled out of necessity and serendipity. Speed was essential. If you are a telemedicine provider, or if you have contacts who are interested in contributing to the Workgroup, do reach out to us. We would be very happy to have more people on board to assist our community. As technology advances, this Workgroup believes that there will be more opportunities for the appropriate use of telemedicine in other situations.

Current users on the commercially available platforms are welcome to use this advisory, as well as the accompanying "Quick-Start" workflow as a guide.

Doctors who have never used telemedicine are strongly encouraged to read the list of additional resources below to understand what telemedicine entails, before trying any of the following:

(1) Use telemedicine in their practice and exercise the same duty of care;
(2) Sign up with any of the ten commercial platforms known to us currently.

Additional resources:

1. National Telemedicine Guidelines. Available at: http://bit.ly/33QArGL.
2. Singapore Medical Council Ethical Code and Ethical Guidelines. Available at: http://bit.ly/2AxPyYU.
3. Visitor Resource Pamphlet, February 2020.

I wish to acknowledge the input and guidance from the SMA Centre for Medical Ethics and Professionalism (SMA CMEP), as well as other professional bodies in the preparation of this working guide.

Regards,

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Introduction to telemedicine

Telemedicine can be broadly categorised into four domains: tele-collaboration (ie, between healthcare professionals), tele-consultation (ie, between patient and healthcare professional), tele-monitoring (ie, remote vital signs monitoring) and tele-support (ie, administrative support). For the purpose of this circular, we will be focusing on tele-consultation between a doctor and a patient.

Telemedicine involves the exchange of information for clinical purposes between doctors and patients/caregivers via telephone, text-messaging (SMS), messaging platforms and platforms with video capabilities. Telemedicine modalities today enable the delivery of care to patients remotely, beyond providing merely general advice and follow-up phone calls to check in on patients.

Telemedicine can play an important role in long-term chronic disease management and in limited acute conditions. In recent years, more doctors are leveraging on purpose-built telemedicine platforms with video capabilities to carry out video consultations (VC). Through VC, doctors can better assess key visual cues (eg, patient expression, pallor and breathing) and inspect specific body areas, such as the throat, eyes and skin. Some telemedicine platforms that are coupled with tele-monitoring capabilities (eg, blood pressure, temperature, heart rate, pulse and oxygen saturations) can be useful in ensuring more timely clinical intervention and care coordination by the care team in chronic disease management. This can result in better delivery of healthcare and optimisation of patient outcomes.

What to take note of when starting a telemedicine service

It is important that doctors familiarise themselves with and adhere to the Singapore Medical Council (SMC) Ethical Code and Ethical Guidelines (ECEG – A6)[1] and the National Telemedicine Guidelines[2] (NTG) when providing telemedicine services.

Doctors must be aware that there are limitations with telemedicine. These include (i) the inability to perform a physical examination, (ii) lack of visual and other cues of the patient's condition when compared to an in-person consult, and (iii) technological limitations (eg, image quality, transmission lag and data breach). Therefore, not all

medical conditions can be diagnosed or treated through tele-consultation. When tele-consulting, it is important to consider the following to mitigate these limitations:

i. **Assess the patient's profile for suitability,** including age (considering the needs and ability of the elderly and young), education level, social support, functional abilities (including cognitive) and technological capabilities. The patient must be comfortable and willing to use this modality, and escalation protocol should be in place for patients who require further evaluation;
ii. **Advice on limitations of telemedicine service should be provided before consent to proceed.** This may include limitations of video resolution, potential for data breach, etc;
iii. **Recognise the challenges and limitations** in evaluating the patient's symptoms and conditions without a physical examination;
iv. **Take reasonable steps to verify patient identity prior to proceeding with consultation.** These steps taken should form part of clinical documentation;
v. **Take a thorough and comprehensive history** to better understand the circumstances of the patient;
vi. **Be reasonably confident that any physical examination of the patient is unlikely to add critical information** that could change the opinion or course of clinical management. If it may change the opinion, providers should direct the patient to an in-person consultation;
vii. **Be aware of the clinical "red flags"** which may trigger the need for a referral, an in-person consultation or urgent medical attention (ie, there should be clear escalation procedures without unduly alarming the patient); and
viii. **Clinical documentation for tele-consultation should be maintained at the same standard** as an in-person consult (ie, documentation in their medical records or clinic management system) and the mode of consult should also be documented in the case of a tele-consult.

Doctors are advised to consider the above and develop protocols for medical conditions that they wish to manage via tele-consulting prior to providing the service.

In the setup of a telemedicine service, doctors should also consider the following components:

i. VC platform
   - To safeguard the privacy of the consultation, doctors should use VC platforms with end-to-end encryption. These include the common consumer platforms in use today.

- Reasonable steps should be taken to confirm the identity of the person on the other end of the consultation.
- A chaperone should be present if the patient is undressing in front of the camera.

ii. Laboratory tests and vital signs monitoring

- Where required to manage patients over tele-consultation, doctors should consider the arrangements for laboratory, diagnostics and vital signs monitoring.
- This may include workflows for mobile phlebotomy and identifying registered, suitable and inter-operable vital signs medical devices.

iii. E-payment system

- A payment method, preferably electronic, should be set up to allow patients to pay for consults and/or medications remotely.

iv. Medication delivery (optional)

- For the provision of medications following the consult, doctors can consider the following options:
  - Request for patients or their family members to collect medications from the clinic
  - Work with logistics service providers (ie, delivery partners) to provide medications delivery from clinics
  - Partner with retail pharmacies to supply and deliver medications to patients
- Whether medication is supplied or delivered from the clinic or pharmacy, doctors and pharmacists should comply with the Singapore Standards for the Supply and Delivery of Medication (SS SDM 644).

Use of telemedicine in the current COVID-19 infection outbreak

Besides playing a crucial role in chronic disease management, telemedicine can also be a supplementary tool at the doctors' disposal for fights against infectious disease pandemic to limit spread and exposure.

As mentioned in the *Straits Times Forum* on 29 January 2020,[3] telemedicine has been identified as a possible method to manage patients in the community during infectious disease outbreaks and to prevent further spread of disease. As we fight the spread of the COVID-19, telemedicine can allow patients to contact their doctors remotely and receive immediate medical attention without physical contact, where appropriate.

The golden rule of stopping any infectious disease outbreak is to break the chain of transmission. This can be achieved by isolating patients who have the disease and quarantining close contacts or people who have been exposed to the communicable disease.

It is possible for patients who are on leave of absence or in quarantine to be managed in situ via monitoring. However, there is a need to align the triggers with the latest Case Definition and to ensure that these can be reasonably assessed over telemedicine. This will reduce the burden on the healthcare system and resources can be diverted to patients who have more severe symptoms.

All doctors should refer to the Ministry of Health (MOH) website for the up-to-date Case Definition of a COVID-19 suspect case.

Considerations to setting up telemedicine services for clinics

The Workgroup advises patients who are feeling unwell (excluding emergency medical conditions) to contact their family doctor via a telephone consult first. Based on the prevailing Case Definition, doctors should then exercise sound clinical judgement to determine whether an in-person consult or a VC is necessary to help them determine the next course of action (ie, escalate as a suspected case or to continue with standard management).

Doctors currently with no VC capabilities can either (i) refer patients to a telemedicine provider with VC capabilities, (ii) sign on with an existing telemedicine provider or (iii) purchase a telemedicine platform with VC services (as indicated above). Telemedicine providers should make their contact details easily available to all doctors for easy referral, and to the public as well through various social media or Internet platforms.

Process of tele-consultation specific to the current Covid-19 infection outbreak

Patient Registration / Verification

- Refer or escalate patient with serious conditions requiring urgent in-person management (eg, chest pains and respiratory distress)
- Request for name, date of birth, NRIC number, gender, residential address, allergy status, past medical history and existing medications
- Ascertain current location of patient – to direct emergency services if necessary

History-taking (for upper respiratory tract infection [URTI])

Screen for COVID-19 suspect criteria

(*refer to the latest update of MOH Suspect Case Definition for COVID-19 for further details*)

- Review travel history (recent travel history to China within 14 days before onset of illness), exact location of travel and/or any hospital visits
- Any close contact* with patients diagnosed with COVID-19
    - Including occupational risk factors as defined in the prevailing Case Definition
- Fever
- Cough
- Breathlessness
- Generalised malaise
- Myalgia
- Nasal congestion and discharge
- Sneezing
- Sore throat or hoarseness
- Watery and/or inflamed conjunctivae
- Others: Headache, diarrhoea, nausea, symptoms possibly suggestive of pneumonia (shortness of breath, delirium, chest pain, wheeze)
- Onset/course/duration of symptoms, characteristics of discharge/sputum
- Review allergens, seasonal problems, exposure to irritants/smoke
- Review history of respiratory disease (asthma, bronchitis)

**Close contact defined as: anyone who provided care for patient, including healthcare worker or family member, or who had other similarly close physical contact, anyone who stayed at the same place as a case.*

Patient Examination

- Patient examination will be limited to what you are able to see or hear during the VC
- Temperature using home thermometer (any antipyretics taken?)
- Blood pressure, heart rate, respiratory rate at home
- Observe general appearance (well/comfortable vs unwell/toxic)
- Visualise patient's respiratory effort (look for signs of respiratory distress, including nasal flaring, usage of accessory muscles, inability to complete sentences)
- Inspect
    - Eye: Note "allergic shiners", tearing, redness and eyelid swelling
    - Nose: Note any nasal discharge, redness/swelling
    - Throat: Guide patient through opening their mouth and positioning their opened mouth in front of camera. May require external light source
    - Skin and mucous membrane: Check for cyanosis
    - Ear: Ask patient to turn head to right and left to observe for any swelling/redness over mastoid process
- Palpation: instruct patient to self-examine head and neck for enlarged or tender lymph nodes

NB: *In the event the doctor notes that there are suspicious signs of pneumonia that require a physical examination with auscultation of the lungs, the doctor should ask the patient to seek an in-person consultation.*

Management of High-Risk Case (ie, patients who meet the Case Definition)

- All suspect cases of COVID-19 are to be isolated and admitted
- Call ambulance on behalf of patients
- Submit MD131 through online CDLENS portal or fax, under "Other significant disease: 2019 novel coronavirus"
- Conveyance of patients:
    - If patient is medically stable, send to hospital via the dedicated ambulance service at 6220 5298 (available 24/7):
        - Persons aged 16 years and above (including pregnant women) will be sent to the National Centre for Infectious Diseases
        - Children below the age of 16 years will be sent to Children's Emergency Department, KK Women's and Children's Hospital
    - If patient is medically unstable (ie, breathless, hypotensive), call for Singapore Civil Defence Force ambulance at 995:

        - Inform the ambulance operator that you are referring a suspect case of pneumonia with relevant travel history (aligned to the prevailing Case Definition)
    - While waiting for ambulance, advise patient to:
        - wear a surgical mask at all times
        - practice self-isolation and avoid contact with others

Management of other cases (ie, patients who do not meet the Case Definition)

- Standard URTI treatment protocol
- Encourage patient to wear a surgical mask and practise precautionary measures to prevent the spread of disease
- Encourage patient to isolate himself/herself until the symptoms are resolved
- To monitor symptoms and to call back if symptoms deteriorate (ie, breathlessness, worsening cough, chest pain)
- Provide patient with a medical certificate of appropriate duration

Management of patients with symptoms suggestive of severe respiratory disease, but do not meet COVID-19 suspect criteria

- Patient to be escalated to the emergency department
- Encourage patient to wear a surgical mask and practise precautionary measures to prevent the spread of disease

For patients who know that they meet the COVID-19 infection suspect criteria, screening and escalation via minimally a phone consult is encouraged. Both doctors practising in physical clinics and telemedicine providers should call the MOH dedicated hotline for patient accordingly.

For general URTI management, text-only, phone-only, or text and phone-only consults are unlikely to meet the required professional standard as outlined in the SMC ECEG. Doctors should either escalate the patient to a VC or an in-person consult. This is to ensure that visual cues are considered prior to diagnosing and prescribing treatment.

Telemedicine for patients with chronic diseases condition(s)

During this period, we understand that patients with chronic disease conditions need to continue with their regular follow-up with their doctors. As such, doctors may consider the use of telemedicine to follow up with their patients during this period to limit their patients' exposure to the infectious disease.

Doctors should ensure that patients are able to provide their recent readings (eg, blood pressure, glucometer readings, recent blood tests if available) during or prior to the tele-consultation so that the doctor can make the necessary changes to their medication dosing regimen.

Cost of telemedicine

Doctors should be explicit about the itemised cost of their telemedicine services, including information on medication costs, delivery charges and prevailing taxes, if applicable.

References

1. Singapore Medical Council. SMC Ethical Code and Ethical Guidelines (2016 Edition). Available at: http://bit.ly/2AxPyYU. Accessed 5 February 2020.

   A6 Telemedicine

   1. If you engage in telemedicine, you must endeavour to provide the same quality and standard of care as in-person medical care. This includes ensuring that you have sufficient training and information to manage patients through telemedicine. Otherwise, you must state the limitations of your opinion.
   2. You must give patients sufficient information about telemedicine for them to consent to it. You must also ensure that your patients understand any limitations of telemedicine that may affect the quality of their care in relation to their specific circumstances.
2. Ministry of Health, Singapore. National Telemedicine Guidelines. 2015. Available at: http://bit.ly/33QArGL. Accessed 5 February 2020.
3. Dr Lee PS. Forum: Telemedicine can help prevent local outbreak. The Straits Times 2020. Available at: http://bit.ly/2vjyO8K. Accessed 5 February 2020.