ANNALS OF FAMILY MEDICINE

COVID019 Notes from the frontline

COVID-19: Notes from the Frontline, Singapore's Primary Healthcare Perspective

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Conflicts of interest: authors report none.

Abstract

Coronavirus disease 2019 (COVID-19) is a rapidly progressing global pandemic as nations struggle for containment. Singapore is known to have promptly instituted aggressive public health and containment measures. A key pillar sustaining this is the response of its primary healthcare network. It is important for healthcare systems worldwide to recognize the value of a strong coordinated response to this crisis from a primary health perspective. There are best practices for early isolation and containment of suspect cases while protecting healthcare workers and limiting cross infections that are transferable across nations. We describe our framework for how our primary care clinics respond to this pandemic in the hope others may find solutions to their unique needs. Moving forward, there is a pressing necessity for more studies to enhance our understanding of the response of primary care during these public health crises.

Ann Fam Med 2020;18. https://doi.org/10.1370/afm 2539. This is the unedited manuscript for an article to appear in a future issue of *Annals of Family Medicine*.

Introduction

Coronavirus disease 2019 (COVID-19) has spread rapidly out of China, into greater Asia and now into Europe and America

Singapore is particularly at risk due to its status as a global travel and business hub. It was among the first countries affected, confirming its first case on 23rd of January 2020.1 Singapore promptly instituted aggressive public health and containment measures, drawing from experience

with the Severe Acute Respiratory Distress Syndrome (SARS) epidemic in 2003 and the Influenza H1N1 pandemic in 2009.

It is important for healthcare systems to recognize the value of a strong coordinated response to this crisis from a primary health perspective[2], with best practices that are transferable across nations. This is essential given that the early presentation of COVID-19 infection is non-specific, with most patients presenting to primary health care clinics with mild upper respiratory tract symptoms.

However, information and data available in the rapidly evolving body of literature on the management of COVID-19 in the primary healthcare setting is inadequate. Evidence for the best possible primary health care response during the SARS[3] epidemic and the Influenza H1N1[4] pandemic is also suboptimal. This highlights the pressing necessity for more studies to enhance our understanding of the response of primary care during these public health crises.[5] We describe our framework for how primary care clinics respond to this pandemic in the hope others may find transferrable solutions to their unique needs.

Our Experience – Primary Healthcare Response in Singapore

We share our experience with the implementation of containment measures from a network of 50 private General Practitioner (GP) clinics. This includes containment and infection control strategies which are enhanced through government guidelines and logistical support.

Singapore is heavily reliant on its primary healthcare network; GP clinics are the first point of contact for most undifferentiated cases, representing 79.06% of total primary health attendances in a day.[6] During the pandemic, the clinics also must manage patients with non-respiratory tract related complaints. These patients need to be protected against the possibility of transmission of disease from positive cases during their visit. In addition, the safety of our health care workers must be secured with these containment measures, mitigating concerns and anxiety about personal safety[7] as a health care worker at the frontline, and maintaining a healthy workforce. Given the high volume of patient flow and the non-specific nature of early COVID-19 infection, GP clinics form the cornerstone of early identification and isolation of suspect cases within the vast patient pool.

As a network, during the period between 8th February 2020 and 22nd February 2020 the clinics saw a total of 56,820 attendances. 125 were identified as suspect cases and sent to the National Centre for Infectious Diseases (NCID). Of these, 3 were tested positive. During that period, 1 clinic saw a total of 1,228 patients of which 13 patients were isolated, and 2 patients were identified as suspect cases and sent to NCID.

No health care worker within the network is infected with COVID-19 at the time of writing.

Containment Measures

Visits were streamlined following a fixed protocol within our network (Figure 1 – Institution Workflow for Patients with Respiratory Tract Symptoms) within. Nurses at the reception counter triaged all patients to identify suspect cases following a strict protocol and a health declaration form (Figure 2 – Health Declaration Form and Triage Protocol) drawn from government guidelines regarding suspect case definition. These were updated according to the evolving situation locally and globally.

Once identified, the cases were immediately isolated in a designated room within the clinic premises for assessment by the doctor. If a patient fit the suspect case definition, this patient remained in isolation until evacuation by a dedicated public ambulance service to the NCID for further evaluation.

According to the natural progression of upper respiratory tract infections, non-suspect cases were given 3 to 5 days of home medical leave and were highlighted for subsequent review via the group's electronic medical records system. This enabled clinicians to track cases and allowed for longitudinal information flow within the network. Patients were then contacted by the clinic and reviewed via telephone call on the last day of their medical leave. Those who reported persistent symptoms were advised to visit the clinic for further workup while those who reported worsening symptoms such as breathlessness may be brought from their home via the public ambulance service directly to the NCID for further evaluation. In the event a patient felt a progression of symptoms during the period of medical leave, they could either consult a doctor via the network's telemedicine mobile application or make a physical trip to the clinic for evaluation.

These measures worked in concert with government containment measures such as a mandatory 14-day stay-home leave on returning travelers from high-risk regions of the world.

Infection Control Measures

Extensive infection control measures were put in place to prevent cross-contamination from potential positive cases to other patients and health care workers.

All medical staff within the network were promptly updated on new developments via multiple communication channels such as through email and secure mobile chat groups. This minimized difficulties with information access.

Appropriate training for health care workers was also enforced using one-to-one sessions and multimedia information guides. All medical staff were trained in the appropriate use and disposal of personal protective equipment (PPE). Doctors planned the management and disposition of patients according to the latest directives from the Ministry of Health while nurses were instructed in appropriate decontamination. This optimizes the education of infection control measures at the level of the individual healthcare workers.

PPE resources were provided by both institution and government stockpiles with reassurance of adequate supplies for staff protection throughout the pandemic (Figure 3 – PPE provided). PPE was worn by reception staff for all patients at the counter, and by doctors during patient consultation – in both isolation room and normal consult room. Compliance to PPE guidelines is strictly enforced at all levels.

If a suspect case was identified and sent to NCID, the clinic would undergo subsequent decontamination prior to resuming services.

Conclusion

While hospitals and health systems are under tremendous strain during this pandemic, it is essential to bear in mind that prompt measures to contain and mitigate this should start at the grassroots level. These measures aim to identify and isolate cases early, reducing the burden of triage at hospital level, overcoming barriers of communication and education, while protecting

our patients and healthcare workers. It is our hope that our experience may contribute towards a framework which other health care systems may adapt to their unique needs. Moving forward, we envision that our experience would prompt more widespread examination of the role of primary healthcare in pandemics such that globally, primary healthcare networks may mount prompt and effective evidence-based responses.

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Figure 1. Institution workflow for patients with respiratory tract symptoms.

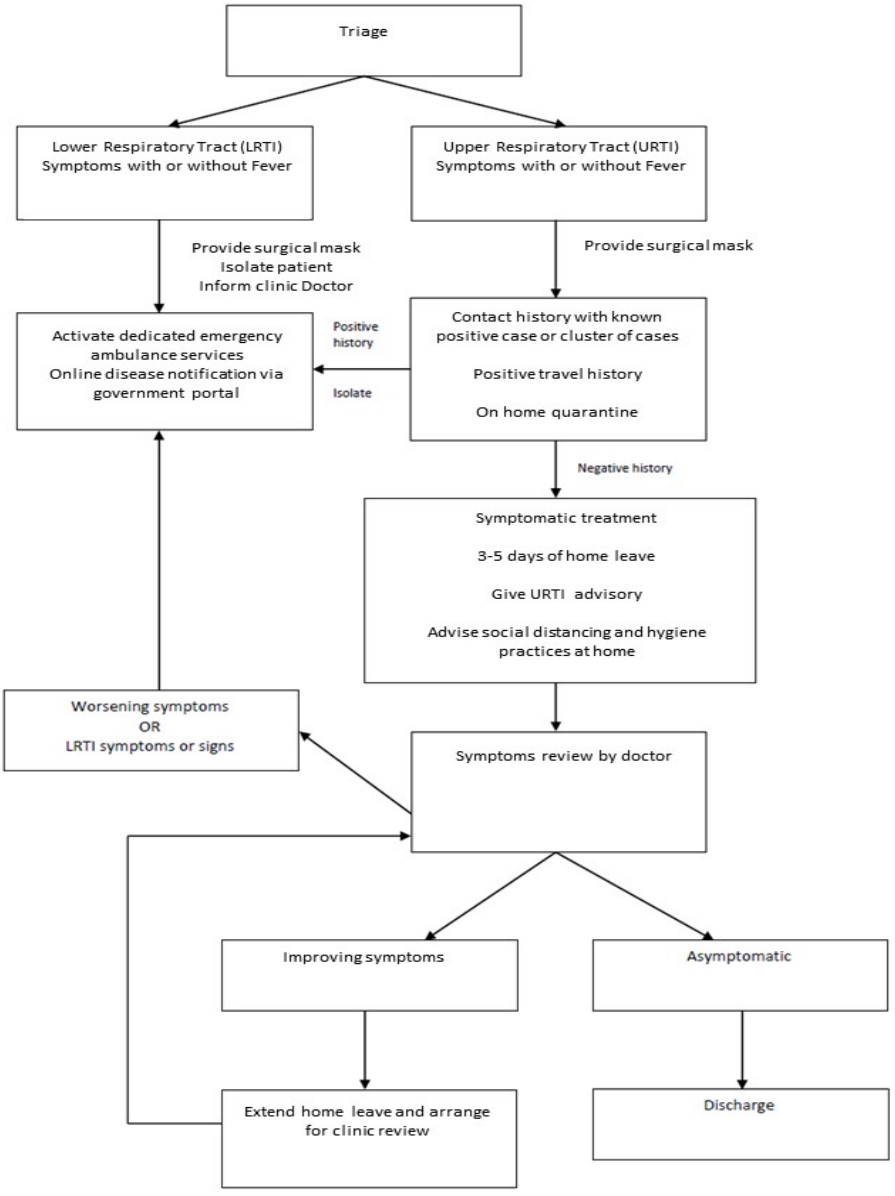

Figure 2 - Health declaration form and triage protocol.

Health Declaration Form

Name: _____
姓名:

NRIC/Passport Number: _____
身份证 / 护照号码:

Date of Visit: _____

Screening Questionnaire
健康申报问题

1. Are you currently having fever OR any flu symptoms such as coughing, running nose, sore throat? ☐ Yes 有 ☐ No 没有
   您目前有发烧或任何流感症状，例如咳嗽，流鼻涕，喉咙痛吗？
2. Are you currently having chest tightness or breathing difficulties? ☐ Yes 有 ☐ No 没有
   您目前感到胸闷或呼吸困难吗？
3. Are you currently serving leave of absence (compulsory leave from work due to recent close contact or travel to high risk areas)? ☐ Yes 有 ☐ No 没有
   您目前还在缺席假的期间吗？(这是指由于最近与患者密切接触或因为前往高风险地区而导致的强制性休假)
4. Have you been a close contact or exposed to a confirmed case or suspect case of Covid-19 (Wuhan pneumonia) in the last 14 days before the onset of symptoms? ☐ Yes 有 ☐ No 没有
   在症状发作之前的 14 天，您是否有密切接触或接触确诊的 Covid-19(武汉肺炎)病例或可疑病例？
5. Have you travelled to other countries in the last 14 days before the onset of symptoms? ☐ Yes 有 ☐ No 没有
   在症状发作之前的 14 天，您曾去过其他国家吗？

   Please list down the countries you had travelled to.
   请列出您去过的国家.
   _____
6. Have you visited any hospital in other countries in the last 14 days before the onset of symptoms? ☐ Yes 有 ☐ No 没有
   您是否在症状发作前的 14 天到过您是否去过其他国家的任何医院？

Patient's temperature: _____

Staff instruction

Staff to note

1. **Yes to Q2** +/- fever>38 = provide mask, wait at ARI area and notify Doctor immediately to see at isolation
2. **Yes to Q1** +/- fever>38 = provide mask, wait at Acute Respiratory Infection (ARI area) and see in isolation
3. **Fever>38 + Yes to any Q3 to Q6** = provide mask, wait at Acute Respiratory Infection (ARI area) and see in isolation
4. **Fever>38 + No to all questions** = provide mask, wait at non-ARI area
5. **Yes to any Q3 to Q6, but no fever and no to Q1 and Q2**= provide mask, ask reason for encounter
   - If vomiting or diarrhoea symptoms, wait at ARI area and see in isolation
   - No symptoms and coming for routine healthcheck= wait at non-ARI area
   - Other symptoms not related to respiratory symptoms or gastrointestinal symptoms= wait at non-ARI area, notify doctor

Figure 3. Personal protective equipment.