COMMENTARY

Clinical features, diagnosis and management of COVID-19 patients in the outdoor setting

Bushra Jamil

Abstract

In a brief span of a few months, coronavirus disease (COVID-19) pandemic has brought a major paradigm shift in operation of clinical services around the world. Infection may be mild, moderate or severe; many remain asymptomatic. High burden of non-communicable and communicable diseases theoretically puts Pakistani population at increased risk of severe COVID-19 infection. Considering the universal risk of infection, the outpatient services in Pakistan need to be redesigned. Starting with risk assessment of the facility and provision of a dedicated telephone connection, structure and workflow need to be redesigned in order to minimise risk of exposure to healthcare professionals, staff and patients. Patients with COVID-19 patients should be identified before they arrive in the facility and should be served expeditiously, in an environment which prevents cross-transmission of infection. Tele-consultation is assuming an important role. Changes which are taking place in response to Covid-19 pandemic will have far reaching effects on clinical services in Pakistan.

Keywords: Coronavirus, Signs, Symptoms, Diagnosis, Outpatient care.

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Introduction

Pakistan reported its first case of coronavirus disease (COVID-19) on February 26, 2020. Country-wide lockdown was announced on March 24 and various mitigation and suppression strategies have been introduced.[1] These have met with partial success, which is not surprising. While lockdown includes staying at home, avoiding large gatherings, and business closures. Businesses and activities are forced to close, even if they do not technically constitute assemblies. This has caused more harm than good. Number of cases continue to increase steadily, more so in areas with high population density. Karachi alone has an estimated 24,000 people per km^2.[2] Poor housing, illiteracy, and prevalent lack of civic sense, in addition to many other important factors, has made non-pharmaceutical interventions like social distancing difficult.

Under the current circumstances, it is neither recommended nor considered feasible for patients to go to their local clinic for any minor or major ailment or for follow-up, monitoring or refill of medicines for acute or chronic diseases, or for ongoing stable or unstable medical problems. While provision of adequate services for patients seeking care remains important, safety and protection of staff and doctors is taking precedence and is the new guiding principle in delivery of healthcare.

As the COVID-19 pandemic unfolds, it is important to consider that a large part of our population suffers from non-communicable diseases like diabetes, hypertension, ischaemic heart diseases, and chronic kidney disease.[3] Communicable diseases like respiratory tract infections, diarrhoeal diseases, typhoid and tuberculosis are also prevalent in our set-up.[4] By virtue of these highly prevalent endemic diseases, our population remains susceptible to severe COVID-19 infection.[5] Uninterrupted provision of care for these conditions should be ensured, while simultaneous efforts are made to contain the spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in our communities.

Information regarding SARS-CoV-2, its transmission, disease pathogenesis, diagnostic modalities and their limitations and management options is rapidly evolving. A number of countries, including Pakistan are moving towards strategic lockdown of "hotspots". This will allow resumption of normal life and open up healthcare facilities in areas where substantial transmission has not been documented.

Considering the universal risk of infection and that a substantial number of individuals may be carrying the virus asymptomatically the outpatient services in Pakistan need to be redesigned.[6] The essential steps would include risk assessment of the facility based on the types of patients seen, defined workflows to minimise risk of

Department of Internal Medicine, Aga Khan University Hospital, Karachi, Pakistan.

Correspondence: bushra.jamil@aku.edu

Ten Commandments for Safe and Smart Practice in COVID Times.

1	Consider everyone infected. Asymptomatic patients and co-workers also pose a risk
2	Establish tele-consultation. Minimise direct patient contact wherever possible
3	Patients should book an appointment before coming. Verbal screening on telephone will complement triage at the entrance of the healthcare facility
4	Keep hands clean; use alcohol-based hand rub or regular soap and water between patients, after removing gloves and after touching surfaces
5	When dealing with patients, surgical mask, gown and gloves are essential. Higher level of PPE is required when handling patients with respiratory complaints and risk of aerosolization.
6	Make sure that coworkers, staff, patients and their attendants are wearing a mask at all times when they are in the healthcare facility. Patients and their attendants can wear cloth masks or scarves
7	Ensure adequate ventilation in the facility. Keep doors and windows open. Strategically placed pedestal fans and exhausts are safer. Air-conditioning in patient areas increases risk of transmission
8	Maintain a distance of 6 feet during interactions with patients. Reorganise patient waiting areas to ensure this. Close interactions should be swift and with proper PPE
9	Devise and implement a cleaning strategy. Highly contaminated surfaces should be wiped with chlorine-based solution after each patient encounter. All common areas should be disinfected at least 2-3x per shift
10	Keep a separate set of work clothes and shoes and shower after completing work shift. Check temperature daily. If symptoms develop, get yourself tested

exposure to healthcare professionals (HCPs) and patients, standard operating procedures (SOPs) to ensure that possible patients with COVID-19 are identified and served expeditiously and appropriately.

Approximately 80% of infected, symptomatic individuals have mild to moderate symptoms, including mild pneumonia.[7] These patients require outpatient management in clinics or through tele-consultation. This stable group, where some of the patients may potentially progress to severe or critical stage, is a low-priority group and may not get appropriate and timely care. A large portion of currently available resources are directed towards patients with severe (14%) or critical (5%) disease, who require hospitalisation (often prolonged) and intensive care with invasive ventilation and monitoring.

Clinical Features

Clinical manifestations of COVID-19 have been fairly uniform in different parts of the world. These are easily identifiable and can be used for triage of patients and subsequent diagnostic and management decisions in the outdoor setting.

COVID-19 infection can be asymptomatic, presumably, in a large majority of people.[6] Symptomatic patients present with fever (up to 99% of cases), cough, fatigue, anorexia, shortness of breath, and myalgias. These typically develop after a median 4-5 days of exposure.[7] SARS-CoV-2 attacks many cell types in the body, but primarily infects pulmonary macrophages. Therefore, the predominant clinical manifestations are respiratory in nature. In a small percentage of patients, abdominal pain, nausea, vomiting and diarrhoea has been reported.[7] This is important to note because a patient presenting with non-respiratory, predominantly gastrointestinal symptoms could still be suffering from COVID-19 and may be missed at triage.

Older adults and those with other comorbid conditions may not present with typical complaints. In a small percentage of patients, headache, confusion, rhinorrhoea, sore throat and haemoptysis may be the presenting features.[7] Anosmia and ageusia have also been reported occasionally.

Diagnosis

Suggestive clinical features in the setting of pandemic are sufficient for presumptive diagnosis of COVID-19. Subsequent management decisions are linked to confirmation of diagnosis using Reverse transcription polymerase chain reaction (RT-PCR) on nasopharyngeal and/or oropharyngeal swab.[8] Other respiratory secretions like tracheal aspirate and bronchoalveolar lavage can also be submitted for RT-PCR and have a higher sensitivity but are relevant in hospitalised, intubated patients. Universal testing is recommended but limited availability of diagnostic kits necessitates a tiered approach which allows testing in those most likely to have serious infection and a high potential of spread to others.

Other tests which have been used in other countries include antigen-detection test and Xpert Xpress SARS-CoV-2 test which is performed on the GeneXpert platform.[8] Serology for IgM and IgG can be used as supplementary test to support the diagnosis. Serological tests are important to assess the extent of infection and exposure in healthcare workers and in the community, and are also essential for screening donors for convalescent plasma treatment.

There are several clinical screening tool apps available for COVID-19.[9] These are helpful for triage and for deciding which patient should be offered diagnostic testing.

Management

For mild cases, management is supportive. Preliminary reports on in vitro activity or clinical use of chloroquine, hydroxychloroquine, azithromycin, and antiviral agents like remdesivir, oseltamivir, lopinavir/ritonavir, umifenovir, favipiravir, and other immunomodulating agents like tocilizumab, ivermectin, and colchicine have been published.[10] The current available data is insufficient to support or refute use of any of these agents and multicenter studies are under way. These medications are currently being used singly or in combination, mostly for management of hospitalised patients with moderate to severe disease. No firm recommendations are available for their use in mild infection. Therefore, patients coming to outpatient clinics with mild symptoms may not be candidates for compassionate, off-label use of some of these drugs, which have their own adverse effects.

Safe Practice in Outdoor Clinics

While outdoor clinics are planning to resume their routine work, it is important that administrative steps are taken to make the facility safe in terms of layout, ventilation, and managing swift patient flow. The box highlights the important points for safe and smart practices in the hospital settings.

Ventilation requirements

All outdoor facilities should be well-ventilated. Air-conditioning allows recirculation of air and can facilitate droplet and aerosol-based transmission of infection.[11] Strategically placed pedestal fans, exhaust fans and open doors and windows can reduce risk of transmission within the facility. Direction of current should be maintained from clean to contaminated areas and should be exhausted out at a safe distance from human habitation.

Work flow and Infection Control

Staff and doctors should be provided with personal protective equipment (PPE) and trained in donning and doffing and appropriate disposal of waste and contaminated PPE. Facility administration should be responsible for laundering of reusable PPE.

Clinics may be reorganised into COVID- and non-COVID areas. Triage desk should be established outside the facility or at the entrance and should be manned by staff trained in administering a verbal risk assessment tool, a checklist, or an application to segregate possible symptomatic COVID-19 from apparently non-infected patients. It is important to realise that despite screening at triage, some patients will end up in the presumed "non-COVID area" of the clinic. Therefore, infection control measures should be implemented in all areas. Staff at triage desk should wear a regular surgical mask and gloves at all times, perform regular hand hygiene and maintain a distance of 6 feet from patients and their attendants at all times.

Any patient with possible SARS-CoV-2 infection may be directed to predefined area. A mask should be handed over to the patient (if not wearing one already), and alcohol-based hand rub if available should be offered before allowing the patient to proceed. Subsequent PPE and infection prevention and control (IPC) requirements will be in accordance with the risk which will depend on the type of patients and services which are being offered.

For resource-limited settings, alcohol-based hand rubs and/or wash basin with soap and water should be available in all areas. Minimum PPE in pre-identified "non-COVID" areas include surgical mask and gloves. For pre-identified "COVID" area, surgical mask, goggles or a face shield, gown and gloves are important.

In clinics catering to patients with respiratory problems, N-95 mask with goggles or face shield, gown and gloves are essential. Some guidelines recommend cap and overshoes as well. If patient appears to be in distress with tachycardia, tachypnoea, confusion, and/or hypoxia, immediate referral to a pre-identified COVID hospital should be arranged.

Exposure

A system of reporting exposure should be in place along with a plan of testing and referral for isolation or quarantine of clinical and non-clinical staff who are either exposed or develop signs and symptoms suggestive of infection.

Telemedicine: An Integral Part of Outpatient Services

Telemedicine has been operating in Pakistan for the last 15 years.[12] It has been successfully implemented for managing both non-communicable diseases and infectious diseases especially in far-flung areas. In the outpatient setting, this strategy is most suited to ensure continuity of care of patients with stable chronic conditions. Acute conditions which are mild and do not require hospitalisation, can also be dealt with through tele-consultation. Under the current circumstances, tele-consultation has expanded rapidly to meet the rising demands of patients who are restricted to their homes. Once the restrictions of lockdown are eased, it can be expected that telemedicine will not only continue to operate but has the potential of becoming the norm for

many subspecialties of medicine.

Conclusion

COVID-19 can have serious consequences not only for elderly patients with comorbid conditions but also for healthcare workers. Symptoms can be mild or severe; any patient presenting to a healthcare facility, irrespective of the nature of complaints, should be considered infected. Diagnostic screening is important to identify and isolate infected individuals and to block transmission in the community. Tele-consultation and appropriate use of PPE, combined with work flow modifications and secure air-handling can make healthcare facilities safe.

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