

UPPER RESPIRATORY TRACT INFECTION

Objectives:

1. Differentiate between viral etiologies of URTI in terms of severity.
2. Understands the transmission and prevention of viral etiologies using SARS-COV-2 as an example.
3. Identify the patients at higher risk for severe COVID-19.
4. Identify the typical presentation of COVID-19 in addition to red flags for severe presentation.
5. Utilize testing and imaging in COVID-19 patients.
6. Educate COVID-19 patients and their caregivers on monitoring the status at home with precautions to prevent transmission to others.
7. Manage COVID-19 patients.
8. Able to competently prescribe Influenza vaccine.

Done by:

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Reference:

Sources for the COVID-19 part:

1. Coronavirus disease 2019 (COVID-19) Epidemiology, virology, and prevention – UpToDate.
2. Coronavirus disease 2019 (COVID-19) Clinical features – UpToDate.
3. Coronavirus disease 2019 (COVID-19) Diagnosis – UpToDate.
4. Coronavirus disease 2019 (COVID-19) Outpatient evaluation and management in adults - UpToDate

Important Notes Extra Golden

Editing file [link](#)

Classify viral URTIs according to etiology?

- Virulent coronaviruses (SARS-CoV, MERS-CoV, & SARS-CoV-2) **most common**, Influenza, & Common cold

What are the coronaviruses that can infect humans?

7 members:

1. SARS-CoV, MERS-CoV, & SARS-CoV-2 can causes severe infection.
2. HCoV-OC43, HCoV-HKU1, HCoV-229E, and HCoV-NL63:
 - A. Cause mild symptoms (common cold)
 - B. Cause about 15% of common colds.

What is the primary mean for SARS-CoV-2 transmission?

Direct person-to-person contact by respiratory droplets which then makes direct contact of the receiving person mucus membranes in the mouth, nose, and eyes.



- A health care provider covering his eyes, nose, and mouth to avoid getting SARS-CoV-2.

How respiratory droplets are released?

- Sneezing, coughing, and talking

Typically, how far do respiratory droplets travel?

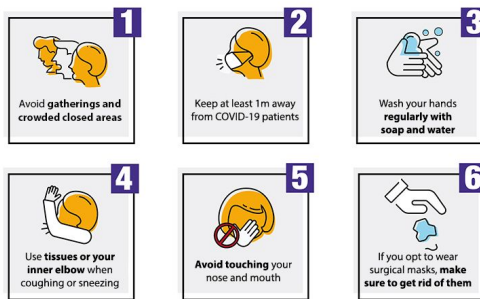
Typically, it has been recommended to distance 6 feet=2 meters, but it can be more as much as 7-8 meters as it was shown in simulation studies.

For more illustration, watch this video

[Sneezing and Coronavirus Disease 2019 \(COVID-19\)](#)



How to Prevent COVID-19?



www.moh.gov.sa | 937 | SaudiMOH | MOHPortal | SaudiMOH | Saudi_Moh

The optimal social distance is uncertain but there are multiple recommendations:

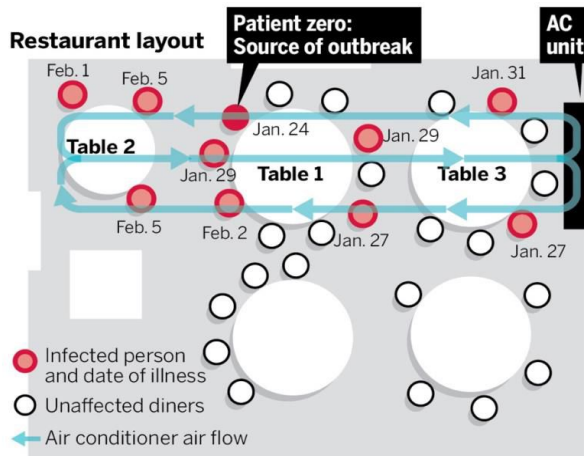
Recommended distance	
1- CDC(USA)	6 feet (2 m)
2- WHO (Global)	3 feet (1 m)
3- MOH (KSA)	1-2 m

NOTE

1. If the hands are not visibly soiled, they can be disinfected using an at least 60% alcohol sanitizer.
2. Coughing and sneezing into a tissue or your own elbow is an important step to stop the transmission of the respiratory droplets.
3. Also avoid touching the eyes, American academy of ophthalmology suggests that people not wear contact lenses, because they make people touch their eyes more frequently

HOW THE AC COULD SPREAD CORONAVIRUS

In one case study, a COVID-19 outbreak was attributed to air conditioning at a restaurant in Guangzhou, China, on Jan. 24. Here's how the virus spread from one infected person to nine diners at three different tables:



The ones who were in line of the AC air flow got infected

Table 1: Patient zero, who traveled from Wuhan, has lunch with family. Later in the day, that person falls ill with fever and cough from COVID-19. Four other family members become sick from the virus from 3-12 days afterwards.

Table 2: Three people sitting next to the infected table and in the path of the air flow of the air conditioning are stricken with the virus a week or more later.

Table 3: Air is recirculated and blown out to Table 3, where two more people contract the virus.

Source: CDC and Guangzhou Center for Disease Control and Prevention
BAY AREA NEWS GROUP

What are the secondary means for SARS-CoV-2 transmission?

1-Touching your eyes, nose or mouth with contaminated hands:

A. By touching a body part contaminated with droplets (for eg. shaking hands)

B. By touching surfaces contaminated with droplets.

2- Sharing personal items (for eg. Towels) with an infected person.

3- Airborne route (through inhalation of particles smaller than droplets that remain in the air over time and distance) (Patients are put in -ve air pressure rooms):

A. the extent to which this occurs under natural conditions and how much this mode of transmission has contributed to the pandemic are controversial.

B. airborne precautions (eg. staff on N95 masks) are universally recommended when aerosol-generating procedures (nasopharyngeal swab, intubation...etc) are performed.



What is the estimated period of infectiousness for a COVID-19 patient?

prior to the development of symptoms and is highest early in the course of illness; the risk of transmission decreases thereafter. Transmission after 7 to 10 days of the start of illness is unlikely, particularly for an otherwise immunocompetent patients with non-severe infection.

When is the period of greatest infectiousness?

In the earlier stages of illness, when viral RNA levels from upper respiratory specimens are the highest.

-Based on a modeling study suggested that infectiousness started 2.3 days prior to symptom onset, peaked 0.7 days before symptom onset, and declined within seven days.

- Another study that evaluated over 2500 close contacts of 100 patients with COVID-19 in Taiwan, all of the 22 secondary cases had their first exposure to the index case within six days of symptom onset; there were no infections documented in the 850 contacts whose exposure was after this interval.

Does having a positive COVID-19 swab means that the person is infectious to others?

-The duration of viral RNA shedding is variable and may increase with the severity of illness.

-In some individuals, viral RNA can be detected from the respiratory tract months after the initial infection. Here we might rely on symptoms to **discontinue isolation**

-Detectable viral RNA, however, does not always indicate the presence of infectious virus, and there appears to be a threshold of viral RNA level below which infectiousness is unlikely.

Can asymptomatic COVID-19 patients transmit infection?

- First of all, we have to differentiate between pre-symptomatic and asymptomatic, pre-symptomatic are patients who initially have no symptoms but later develop symptoms, asymptomatic are patients who never show symptoms.
- Transmission of SARS-CoV-2 from infected asymptomatic individuals **different transmission from previous covids** (including those who later developed symptoms and thus were considered pre-symptomatic) has been well documented.
- In a study of American passengers on a cruise ship that experienced a large SARS-CoV-2 outbreak, SARS-CoV-2 infection was diagnosed in 63 percent of those who shared a cabin with an individual with asymptomatic infection, compared with 81 percent of those who shared a cabin with a symptomatic individual and 18 percent of those without a cabin-mate.
- In conclusion, both asymptomatic and pre-symptomatic can transmit infection, but pre-symptomatic appear to spread it more. **We should inform/test all who was in contact with the infected person during the Pre-symptomatic period (1-3 days).**

What are the factors that affects the risk of transmission of COVID-19?

- 1-Masks (best if both wore masks, then if the patient only wore mask, lastly if the healthy person only wore mask).
- 2-Distance.
- 3-Duration of contact in minutes.
- 4-Ventilation and filtration of the air (most of the transmission occur indoor).

What are the settings with the highest number of secondary COVID-19 cases?

- 1- Among household contacts
- 2- In health care settings when personal protective equipment was not used (including hospitals and long-term care facilities) (eg. **Nursing home outbreaks in western countries with high elderly death rates**)
- 3- In other congregate settings where individuals are residing or working in close quarters (eg, cruise ships, detention facilities...etc.) **Hajj**

What are the groups with a potential exposure to COVID-19?

1. “Close contact” with a suspected or confirmed COVID-19 case (including during the 48 hours prior to that patient developing symptoms and regardless of whether the individuals involved were wearing masks).
2. International travelers especially from countries with widespread community transmission.

What are the criteria of “close contact”?

1. Distance less than 2 meters.
2. Duration of 15 minutes or more.

*Please note that the above criteria are not based on strong evidence, and they are more of an operational definition, the type of interaction is important for example if the infected person coughs or sneezes directly into the face of the exposed individual this will increase the possibility of transmission.



What should an asymptomatic person with a potential exposure to COVID-19 do?

1. Self-quarantine at home for the whole incubation period (14 days) following the last exposure.
2. Maintaining at least 6 feet (2 meters) from others at all times.
3. Avoiding contact with individuals at high risk for severe illness.
4. Twice-daily temperature checks with monitoring for fever, cough, or dyspnea.
5. If they develop clinical manifestations, they should continue to stay at home away from other household members and contact their medical providers, call 937, visit **تظمن** clinics or any other clinic.

If a person with a potential exposure undergoes a COVID-19 test and the result is negative, would that shorten his quarantine period?

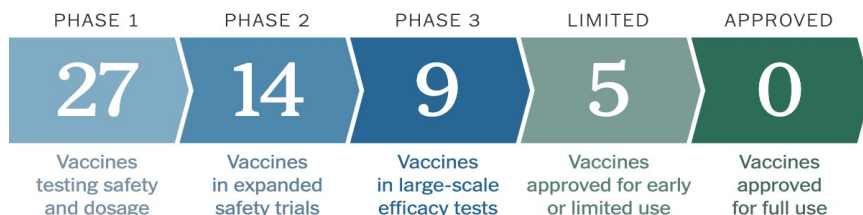
No, a negative test does not shorten the quarantine period. Incubation period median 4-5 days, could be longer in some.
Health care workers recommended to take a second swab.

What are the approaches to prevent COVID-19 that are under investigation?

1. Vaccines.
2. Post exposure prophylaxis:
 - a. hydroxychloroquine: available data suggests it is not effective.
 - b. Monoclonal antibodies: still under investigation. **If available could be given to elderly/healthcare workers for protection for 3-4 months.**

Coronavirus Vaccine Tracker

By Jonathan Corum, Denise Grady, Sui-Lee Wee and Carl Zimmer Updated September 15, 2020



<https://www.nytimes.com/interactive/2020/science/coronavirus-vaccine-tracker.html>

What are the presentations of COVID-19?

1. Asymptomatic (some of the patients are asymptomatic at presentation, but they later develop symptoms).
2. Symptomatic:
 - A. Mild (no or mild pneumonia).
 - B. Severe (eg, with dyspnea, hypoxia, or >50 percent lung involvement on imaging).
 - C. Critical (eg, with respiratory failure, shock, or multiorgan dysfunction).

What are the risk factors for severe disease?

Comorbidities the CDC classifies as established or possible risk factors for severe COVID-19

Established risk factors:

- 1. advanced age especially 65 or more:** in all adults, even those <65 years of age, increasing age is associated with increased risk for severe disease.
Symptomatic infection in children and adolescents appears to be relatively uncommon; when it occurs, it is usually mild, although severe cases and complications have been reported
- 2. Serious Cardiovascular disease:**
 - a. Heart failure
 - b. Coronary artery disease
 - c. Cardiomyopathies
- 3. Type-2 Diabetes mellitus.**
- 4. Sickle cell disease**
- 5. Immunocompromised state from solid organ transplant.**
- 6. Cancer.**
- 7. Chronic kidney disease.**
- 8. Obesity (BMI ≥ 30).**
- 9. Chronic obstructive pulmonary disease**

Possible risk factors:

1. Hypertension or high blood pressure
2. Asthma (moderate to severe)
3. Cerebrovascular disease
4. Cystic fibrosis
5. Immunocompromised state from hematopoietic cell transplant, HIV, use of corticosteroids or other immunosuppressive agents, other immunodeficiencies
6. Neurologic conditions, such as dementia.
7. Liver disease
8. Pregnancy
9. Pulmonary fibrosis
10. Smoking
11. Thalassemia
12. Type-1 diabetes mellitus

What is the incubation period for COVID-19?

Within 14 days following exposure, with most cases occurring approximately four to five days after exposure. (median)



When should you suspect COVID-19?

New-onset fever and/or respiratory tract symptoms (eg, cough, dyspnea). It should also be considered in patients with severe lower respiratory tract illness (eg, pneumonia) without any clear cause. Other consistent symptoms include myalgias, diarrhea, and smell or taste disturbances.

Although these syndromes can occur with other viral respiratory illnesses, the likelihood of COVID-19 is increased if the patient has any of the following epidemiological links:

1. Resided in or has traveled within the prior 14 days to a location where there is community transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2; ie, large numbers of cases that cannot be linked to specific transmission chains).
“in communities with widespread transmission any patient with typical symptoms is a COVID-19 patient until proven otherwise even if they have not been tested or have an initial negative test result.”
2. Has had close contact with a confirmed or suspected case of COVID-19 in the prior 14 days.

On which factors do we consider that the community has a widespread transmission or not?

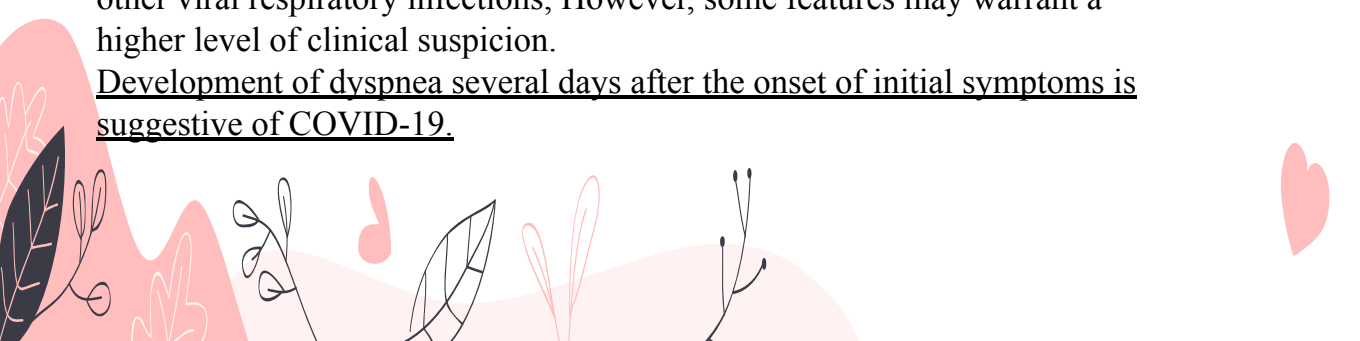
1. New COVID-19 case counts
2. Incidence rate (new cases per 100,000 people), and
3. New case trajectory (whether the number of new cases is going up, going down, or staying the same over time)

Source: CDC

Can we distinguish COVID-19 from other viruses based on symptoms & signs?

No specific clinical features that can reliably distinguish COVID-19 from other viral respiratory infections, However, some features may warrant a higher level of clinical suspicion.

Development of dyspnea several days after the onset of initial symptoms is suggestive of COVID-19.



What are the most common COVID-19 symptoms and their frequency?

- **Cough** in 50 percent
- **Fever** (subjective or $>100.4^{\circ}\text{F}/38^{\circ}\text{C}$) in 43 percent
- **Myalgia** in 36 percent
- **Headache** in 34 percent
- **Dyspnea** in 29 percent
- **Sore throat** in 20 percent
- **Diarrhea** in 19 percent
- **Nausea/vomiting** in 12 percent
- **Loss of smell** (typically reported early in the course of illness) **or taste, abdominal pain, and rhinorrhea** in fewer than 10 percent each

What are the important questions to ask in history for a patient with suspected COVID-19?

We should assess Time course and development of dyspnea:

1. the first day symptoms began.
2. the presence of dyspnea.
3. the day of dyspnea onset.
4. Ask the patient to describe the “difficulty in breathing” in his own words.
5. assess the ease and comfort of their speech (eg, if they can speak comfortably in complete sentences).
6. “What activities that you could previously do without difficulty are now causing you to be out of breath?”
7. "Has this gotten worse over the last one, two, or three days?"
8. “Are you breathing harder or faster than usual when sitting still?”
9. “Can you no longer do your usual household activities due to shortness of breath?”
10. “Does walking cause you to feel dizzy?” (indications for severity)

Dyspnea or SOB is a common COVID-19 complaint, when it is considered as a red flag?

- mild dyspnea is common.
- worsening dyspnea, particularly dyspnea at rest, and more severe chest discomfort/tightness, are concerning symptoms and suggest the development or progression of pulmonary involvement.

Typically, after how many days do COVID-19 symptoms worsen?

5 days to a week after the onset of symptoms. do safety netting for people at risk who get symptoms; eg. “monitor your O₂” or “Come to the ER if your SOB gets worse”

How can we use home-based oxygen saturation testing to monitor COVID-19 patients?

- There are many portable oxygen saturation testing devices that can be used at home, in addition many recent models of smart watches can also measure oxygen saturation.
- Patients are advised to use their pulse oximeter on warm fingers, as readings obtained on cold digits may not be as accurate.
- Patients should check his oximetry twice daily.
- Patient should come for an in-person evaluation in a health care facility if the value drops below 95 percent on room air.
- For patients who have an oxygen saturation of ≥ 95 percent on room air, the decision on in-person evaluation depends on other clinical features such as severity of dyspnea, risk for severe disease, and assessment of overall acuity.
- A normal oxygen saturation level cannot be used to exclude clinically significant respiratory involvement in a patient with concerning symptoms such as progressive or severe dyspnea or high overall acuity level.
- Although normal oximetry can be reassuring, there is no guarantee that respiratory status will not deteriorate as illness progresses.
- If the patient oxygen saturation is 90% or less he will have to go to the ED and most likely would need admission.

Clinical features are more important, O₂ saturation just helps in decision making.



Portable oximeter than can be used at home



Smart watch with the ability to detect oxygen saturation

What are the conditions that should be met in order to allow the patient to be managed at home without the need for an in-person evaluation?

1. The patient can reliably report worsening symptoms.
2. The patient can self-isolate for the anticipated duration of illness

Should every COVID-19 patient get a CT scan of the lungs?

No, the American College of Radiology (ACR) recommends not using chest CT for screening or diagnosis of COVID-19 and recommends reserving it for hospitalized patients when needed for management. **For more severe cases**

Who should get tested for COVID-19?

1. Symptomatic patients- عيادات تظمن - or any other healthcare setting designated to deal with COVID-19 patients.
 - a. Any symptomatic patient with symptoms and signs suggestive of COVID-19.
 - b. The diagnosis of COVID-19 cannot be definitively made in a symptomatic patient without microbiologic testing.
2. Asymptomatic individuals: - مراكز تأكد -
 - a. Early identification of infection in congregate living facilities that house individuals at risk for severe disease (eg, long-term care facilities, correctional and detention facilities).
 - b. Screening hospitalized patients at locations where prevalence is high (eg, $\geq 10\%$ PCR positivity in the community).
 - c. Prior to time-sensitive surgical procedures or aerosol-generating procedures (for eg, upper GI endoscopy).
 - d. Prior to receiving immunosuppressive therapy. **We do it with TB also**

Next part was skipped by the Dr

 - e. Following close contact with an individual with COVID-19 (this includes neonates born to mothers with COVID-19). However, the time to detectable RNA following exposure is unknown, so the optimal time to test for COVID-19 following exposure is uncertain; five to seven days post exposure is recommended based on the average incubation period. Even if a contact has a negative viral test following exposure, quarantine is still suggested in most cases.

What is the preferred diagnostic test for COVID-19?

Nucleic acid amplification testing (NAAT), most commonly with a reverse-transcription polymerase chain reaction (RT-PCR) assay, to detect SARS-CoV-2 RNA from the upper respiratory tract.
















(RT-PCR) assay is a type of NAAT

In some settings, antigen testing (**quick, cheap but less sensitive**) may be the initial test used, **but the sensitivity of antigen tests is lower than that of NAATs**, and negative antigen tests should be confirmed with an NAAT test.

What are the recommended specimens for SARS-CoV-2 NAAT? Center of Disease Control and Prevention (CDC) recommends collection of one of the following specimens:

- A. Nasopharyngeal swab specimen, collected by a healthcare professional. (**most commonly used**)
- B. Nasal swab specimen from both anterior nares, collected by a health care professional or by the patient on-site or at home.
- C. Nasal or nasopharyngeal wash/aspirate, collected by a healthcare professional.
- D. Oropharyngeal swab specimen, collected by a healthcare professional.

EXAMPLES OF TESTS FOR CURRENT INFECTION WITH SARS-COV-2

	STANDARD MOLECULAR TEST: RT-PCR	PAPER-BASED ANTIGEN TESTS	PAPER-BASED RNA TESTS
WHAT IT DETECTS	Genetic material from the virus 	Pieces of virus proteins 	Genetic material from the virus 
SAMPLE COLLECTION	Nose or throat swab 	Nose or throat swab (varies for tests in development) 	Varies: saliva, cough mucus, nose or throat swab 
TIME TO RESULTS	Typically 1-4 hours, but high test volumes can mean days to weeks 	About 15 minutes, but some still in development may take less than 10 minutes 	One hour or less 
COST AND EASE	Typically must be sent to a lab Cost ~\$50 	Approved tests need instruments, pending tests might not Cost <\$10 	Tests may need instruments, still pending Cost <\$10 
CONFIDENCE IN RESULTS	Gold standard, very reliable 	Considered less reliable than RT-PCR 	May be less reliable than RT-PCR, evaluations ongoing 

SOURCE: REPORTING BY T. NGUYEN AND R. EHRENBERG

What if the results came back positive for a NAAT test using PCR following a positive antigen test?

- A positive nucleic acid amplification test (NAAT; eg, RT-PCR) for SARS-CoV-2 generally confirms the diagnosis of COVID-19.
- No additional diagnostic testing is necessary.

Does persistent positive COVID-19 swabs means continued infectiousness?

No, a patient with COVID-19 can have detectable SARS-CoV-2 RNA in upper respiratory tract specimens for weeks after the onset of symptoms; however, prolonged viral RNA detection does not necessarily indicate ongoing infectiousness

What if the results came back negative for a NAAT test using PCR?

- For many individuals, a single negative NAAT result is sufficient to exclude the diagnosis of COVID-19.
- However, false-negative NAAT tests (eg, RT-PCR) from upper respiratory specimens have been well documented.
- If initial testing is negative but the suspicion for COVID-19 remains (eg, suggestive symptoms without evident alternative cause) and confirming the presence of infection is important for management or infection control, **testing should be repeated.**
- The optimal timing for repeat testing is not known; it is generally performed 24 to 48 hours after the initial test.

What the advantages and disadvantages of antigen testing compared to NAAT?

Advantages:

1. Quicker.
2. Cheaper.
3. More accessible (can be done at point of care).

Disadvantages:

1. Limited evidence on their accuracy.
2. less sensitive than NAAT.

Do a negative antigen test rule out COVID-19?

It does not rule out SARS-CoV-2 infection.

Negative antigen test results should be confirmed using a sensitive NAAT if the clinical suspicion is high. **If positive then great but if negative then doesn't rule out**

Can a patient present with a positive test of SARS-COV-2 in addition to a positive test of another virus?

- Yes, if influenza and respiratory syncytial virus (RSV) are circulating in the community, it is reasonable to also test for these viruses when testing for SARS-CoV-2, as this could have management implications.
- Coinfection with SARS-CoV-2 and other respiratory viruses, including influenza, has been reported in the literature.
- However, detection of another viral (or bacterial) pathogen does not necessarily rule out SARS-CoV-2 especially where there is widespread transmission.

Influenza vaccine this year is important

Can a person become re-infected with SARS-COV-2?

- So far data is limited.
- the CDC suggests that the possibility of reinfection be considered if a patient has a positive NAAT more than three months after the initial infection, and in such cases, the patient should repeat isolation and close contacts should be traced.
- a positive test within the three months after the onset of initial infection is less likely to reflect reinfection.

Still under investigation.

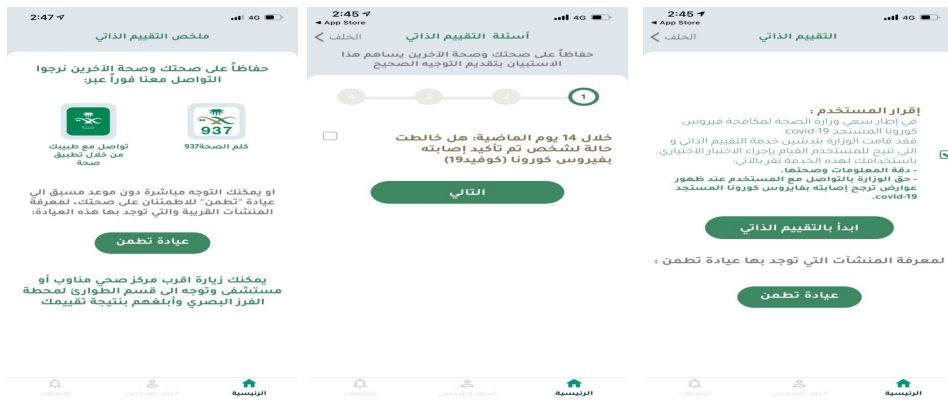
Re-infection is less severe than 1st infection and still not clear if it's infectious.

What is the optimal way to manage patients with suspected or confirmed COVID-19 in outpatient setting?

The optimal way is to have an outpatient continuum of care management program that includes:

1. Self-assessment tools:

can guide patients through questions and suggest when to seek medical care; by following the guidance, many patients with mild illness may be able to recover at home on their own without needing to come in direct contact with a health care provider.



2. Initial telephone triage (for eg. 937):

- Can often determine which patients are appropriate for self-care at home, which patients warrant a timely clinician telehealth visit (televisit), and which patients warrant an outpatient clinic visit or urgent emergency department (ED) evaluation.
- Any patient with symptoms suggestive of respiratory compromise or hypoxia (eg, significant dyspnea at rest or mental confusion) should be referred for urgent in-person evaluation.

3. Clinician telehealth (telephone call or video platform-based) visits (initial evaluation and follow-up visits):

for eg. In KSUMC family medicine department has a dedicated messaging app number (Whatsapp) for follow up of COVID-19 patients.














4. COVID-19 testing. (مراكز تأكد و عيادات تطمن)

5. A separate outpatient respiratory clinic or dedicated space within an ambulatory clinic appropriated for the care of patients with COVID-19 and other respiratory problems. (for eg. Acute respiratory diseases' clinic (flu clinic) and عيادات تطمن)

6. In addition, the outpatient clinic should have a close, coordinated relationship with the local emergency department (ED) and function in partnership within the continuum of care program.

What instructions should you educate a patient with COVID-19?

See the following illustrations

 Home care for people with suspected or confirmed COVID-19 Take care of yourself and your family		 Home care for people with suspected or confirmed COVID-19 Take care of yourself and your family	
For ill people		For caregivers	
<p>If you are ill with fever and cough</p>  <p>Clean hands frequently with soap and water or with alcohol-based hand rub.</p>	 <p>Stay at home; do not attend work, school or public places. Rest, drink plenty of fluids and eat nutritious food.</p>	<p>Ensure the ill person rests, drinks plenty of fluids and eats nutritious food.</p> 	<p>Wear a medical mask when in the same room with an ill person. Do not touch the mask or face during use and discard it afterward.</p> 
 <p>Stay in a separate room from other family members, but if not possible wear a medical mask and keep a distance of at least 1 meter (3 feet) from other people. Keep the room well-ventilated and if possible use a dedicated bathroom.</p>	 <p>When coughing or sneezing, cover mouth and nose with flexed elbow or use disposable tissue and discard after use. If you experience difficulty breathing, call your health care facility immediately.</p>	<p>Frequently clean hands with soap and water or alcohol-based rub, especially:</p> <ul style="list-style-type: none"> after any type of contact with the ill person or their surroundings before, during and after preparing food before eating after using the toilet 	<p>Use dedicated dishes, cups, eating utensils, towels and bedlinens for the ill person. Wash dishes, cups, eating utensils, towels, or bedlinens used by the ill person with soap and water.</p> 
 <p>Identify frequently touched surfaces by the ill person and clean and disinfect them daily.</p>	 <p>Call your health care facility immediately if the ill person worsens or experiences difficulty breathing.</p>	 www.who.int/covid-19	

How to manage the symptoms of COVID-19 patients?

Non-pharmacological therapy: OSCE start with non pharmacological then pharans...

Symptom	Fluids & hydration	Saline irrigation	Humidified air	Honey
Fatigue	✓			
Fever	✓			
Nose/sinus congestion		✓		
rhinorrhea		✓		
cough			✓	✓ in children (don't give it to less than 1 year old) Botulism

How to manage the symptoms of COVID-19 patients?cont'd.

Pharmacological therapy:

Symptom	Paracetamol (preferred to start with before NSAIDS)	NSAIDS (mainly ibuprofen) -Second line if no response to paracetamol. -Use lowest effective dose.	Antihistamines Oral/topical* eg. cetirizine	Decongestants: Oral (pseudoephedrine)* /topical (xylometazoline)** named atrovin	camphor, menthol, & eucalyptus oils ointment (in children ≥ 2 years) Vicks	Over the counter cough medications, for eg. dextromethorphan
Fatigue	✓	✓				
Myalgias	✓	✓				
Headache	✓	✓				
fever	✓	✓				
rhinorrhea			✓			
Nose/sinus congestion			✓	✓		
Cough: -persistent -or interferes with sleep or causes discomfort					✓	✓ Dextromethorphan Suppresses cough centrally in the brain not peripherally

*Don't give it to patients with coronary artery disease or uncontrolled hypertension.

**Advise patient not to use it more than 5 days in order to avoid rebound rhinitis after stopping it.

The symptomatic management outlined in the above 2 tables is applicable for other viral and bacterial causes of URTI. both are old forums used to treat symptoms of flu & common cold and can be applied here

Should you prescribe hydroxychloroquine for COVID-19 patients?

- Although some observational and unpublished reports have suggested a clinical benefit of hydroxychloroquine, those are subject to a number of potential confounders (bias).
- Clinical trials have not suggested a clear clinical benefit for patients with COVID-19, including those managed in the outpatient setting.
So far what is the one drug that shows to help hospitalized patients on ventilators/low O2? Dexamethasone

How to advise patients with COVID-19 on use of their chronic diseases' medications?

- We advise patients who use nebulized medications to avoid their use in the presence of others and to use a metered dose inhaler preparation instead, when possible, to avoid potential aerosolization of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).
- For patients taking an immunosuppressive medication, we consult with the prescribing clinician about the relative risks and benefits of temporarily discontinuing it.

How to advise a patient with COVID-19 to achieve safety netting?

- Counsel all patients on the warning symptoms that should prompt evaluation by telehealth visit and in-person, including emergency department (ED) evaluations.
- These include new onset of dyspnea, worsening dyspnea, dizziness, and mental status changes such as confusion.
- Patients are educated about the time course of symptoms and the possible development of respiratory decline that may occur, on average, one week after the onset of illness.
- -In addition, we assess the availability of support at home, ensure that they know who to call should they need assistance, and reinforce when and how to access emergency medical services.
- Patients with obstructive lung disease (eg, COPD or asthma) are specifically advised to closely monitor their respiratory status, and are cautioned not to presume that any worsening shortness of breath is due to an exacerbation of their underlying lung disease.

When to schedule follow up for COVID-19 patients?

-For most patients (with mild symptoms), follow up is preferred to be done via phone calls or virtual visits and should be scheduled on days 4, 7, and 10 (following the onset of clinical illness).

When should a patient with non-severe COVID-19 infection discontinue isolation as he/she is no longer infectious?

Criteria for discharging patients from isolation (i.e., discontinuing transmission-based precautions):

1- Without testing:

• For symptomatic patients:

10 days after symptom onset, plus at least 3 additional days without symptoms (including without fever and without respiratory symptoms)

• For asymptomatic cases:

10 days after positive test for SARS-CoV-2

For example, if a patient had symptoms for two days, then the patient could be released from isolation after $10 \text{ days} + 3 = 13$ days from date of symptom onset;

for a patient with symptoms for 14 days, the patient can be discharged ($14 \text{ days} + 3 \text{ days} =$) 17 days after date of symptom onset;

for a patient with symptoms for 30 days, the patient can be discharged ($30+3=$) 33 days after symptom onset).

2- With testing two negative PCR tests at least 24 hours apart can be used.

What should we tell the patient about the expected timeframe for recovery?

- We educate patients about the wide variability (depending on comorbidities and age) in time to symptom resolution and complete recovery from COVID-19.
- Recovery on average is around two weeks for mild infections and three to six weeks for severe disease.



What are the factors that determines the recovery time for COVID-19 patients?

1. age.
2. pre-existing comorbidities.
3. illness severity.

b-Rhinosinusitis (Part two)

Classify Rhinosinusitis according to etiology?

Infectious (viral, bacterial, fungal) and non-infectious (allergic rhinitis, nasal polyps, tumors, mucus plug, septal deviation).

Classify infectious Rhinosinusitis according to etiology?

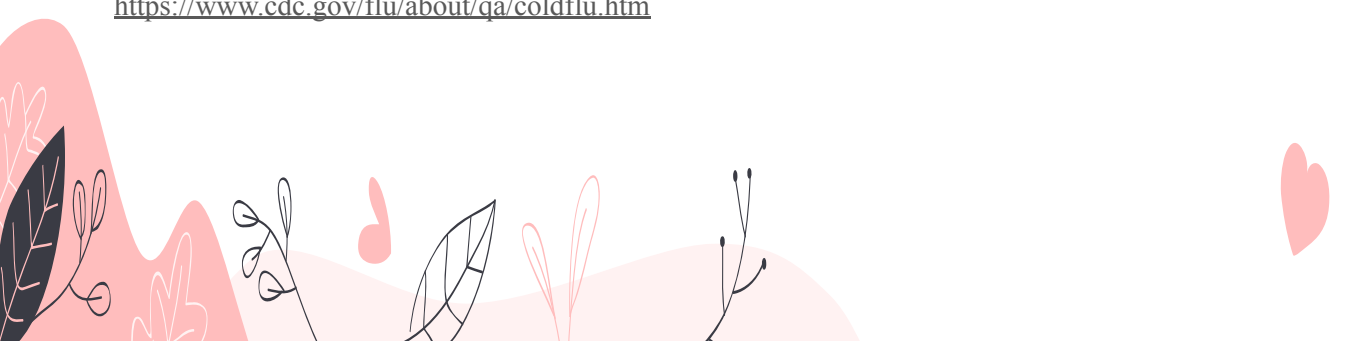
- **Viral:** Influenza viruses, coronaviruses, Rhinoviruses, adenoviruses...etc
- **Bacterial:** S. pneumonia, H. influenzae and M. catarrhalis
- **Fungal:** Aspergillus

How to differentiate between common cold and influenza?

1-It can be difficult to tell the difference between them based on symptoms alone. In general, the flu is worse than the common cold.

2-Flu can have very serious associated complications: such as pneumonia, bacterial infections, or hospitalizations.

<https://www.cdc.gov/flu/about/qa/coldflu.htm>





How many types of Influenza viruses are there?

4

A, B, & C can affect human, while **D** affects pigs and cattle

What are other viruses' families that can cause common cold?

Rhinoviruses, Coronaviruses(HCoV-OC43, HCoV-HKU1, HCoV-229E, and HCoV-NL63), and adenoviruses, human respiratory syncytial virus (in adults), parainfluenza viruses.

Harrison's Principles of Internal Medicine, 19e > Chapter 223, Table 223.1

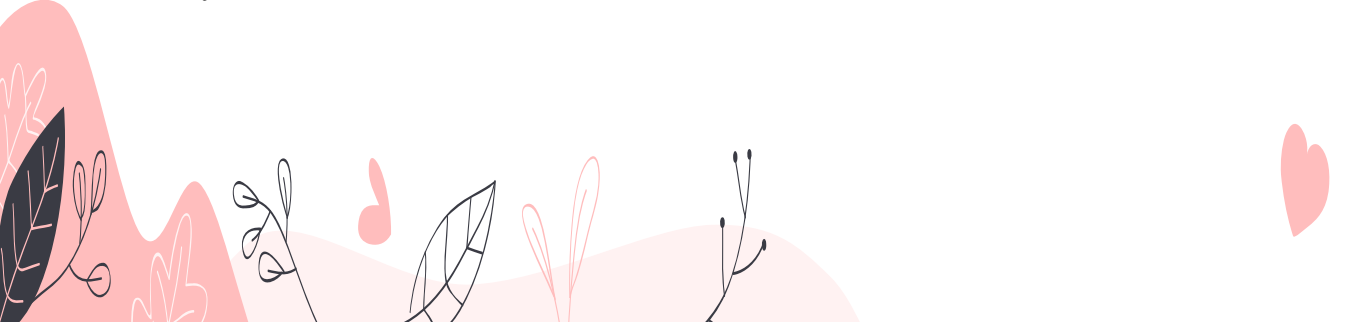
Compare between the 3 influenza viruses' types that affects humans in terms of the following: causing epidemics, & antigenic stability.

1. **Influenza type A is antigenically highly variable and is responsible for most cases of epidemic influenza.** Type A is usually the worst type. Eg H1N1
2. Influenza type B may exhibit antigenic changes and sometimes causes epidemics.
3. Influenza type C is antigenically stable and causes only mild illness in immunocompetent individuals.

Jawetz, Melnick, & Adelberg's Medical Microbiology, 27e >
Chapter 39: Orthomyxoviruses (Influenza Viruses)
INTRODUCTION

What is the incubation period of influenza?

1-7 days



How to properly exam a patient with rhinosinusitis?

Nose:

Anterior rhinoscopy:

Mucosal edema and erythema and nasal discharge (purulent, greenish or brownish)

Then you should examine the throat, and ears



Pictures are from: Management Of Rhinosinusitis In Adults In Primary Care Professor Dr Salina Husain

What are the diagnostic tests for influenza?

Similar to Covid-19

Test	description	Advantages	
Rapid Influenza Diagnostic Tests (RIDTs)	antigen detection tests	Quick results	-sensitivity 62.3% -specificity 98.2% -False negative results occur more commonly than false positive results. - a negative result does NOT exclude a diagnosis of influenza in a patient with suspected influenza. (similar to what we mentioned before about SARS-COV2)
RT-PCR	More accurate but takes longer time.		
Viral culture	When influenza is suspected and antiviral treatment is indicated, antiviral treatment should begin as soon as possible and should not wait for the results of testing.		

<https://www.cdc.gov/flu/professionals/antivirals/summary-clinicians.htm>

How to prevent influenza & common cold?

- 1- Same as COVID-19.
- 2- Influenza vaccination yearly.

Is there an antiviral for influenza? Yes, It's called Tamiflu/Oseltamivir and should be used early in treatment.

The influenza vaccine is recommended for whom?

Recommended for all persons six months and older who do not have contraindications.

What is the frequency of influenza vaccination?

Yearly.

Children six months to eight years of age who have not received influenza vaccination before require two doses for the first season.

They should receive their first dose as soon as vaccine becomes available, followed by a second vaccination no earlier than four weeks later.

What does the influenza vaccine contain?

3-4 strains. it changes from season to season, with one or more vaccine strains replaced annually to provide protection against viruses that are anticipated to circulate during the upcoming season.

When should the influenza vaccine be offered?

During fall season

A patient planning for Hajj asked you when is the best time to take the influenza vaccine?

It is preferred to be taken at least 2 weeks before Hajj in order for antibodies to develop.

What are the contraindications to the influenza vaccine?

A previous severe allergic reaction to influenza vaccine is a contraindication to future receipt of the vaccine.

What are the Precautions to the influenza vaccine?

- Moderate or severe acute illness with or without fever. **Patients might blame his symptoms on the vaccine instead of his illness.**
- Guillain–Barré syndrome within 6 weeks following a previous dose of influenza vaccine.

QUESTIONS

1) Which one of the following is an established risk factor for severe Covid-19 disease as per the CDC ?

- 1- Asthma
 - 2-CVD
 - 3-COPD
 - 4-hypertension
- (The same Q came but copd was displaced by obesity)

2)Which one of the following is the most common symptoms of COVID-19?

- 1-cough
- 2-fever
- 3-headache
- 4-myalgia

3)Which one of the following scenarios is the second best with regard to prevention of SARS-COV-2 infection?

- 1-if neither the patient nor the contact wear masks
- 2-if only the contact wears a mask
- 3-if only the patient wears a mask
- 4-if both pt and contact wear mask

4)For asymptomatic pt with a potential exposure to COVID-19, what is the frequency of checking his symptoms and sign daily?

- 1-no need to check
- 2-one time daily
- 3-two time daily
- 4-three time daily

5)Pt with covid19 called u saying that he started having the symptoms on 1st of september, then his symptoms disappeared on the 5th of december. When should he discontinue transmission based precautions ?

- 1- 6th of September
- 2-8th of September
- 3-11th of September
- 4-14th of December

6)Pt was diagnosed with covid19 symptoms on wednesday on which day he become infectious to others ?

- 1- Saturday
- 2-Sunday
- 3-Monday
- 4-Tuesday

Ans:

- 1) 3
- 2) 1
- 3) 3
- 4) 3
- 5) 4
- 6) 3