



PRIMARY HEALTHCARE TEAMWORK

Upper Respiratory Tract Infection

Objectives:

- ★ Differentiate between viral etiologies of URTI in terms of severity.
- ★ Understands the transmission and prevention of viral etiologies using SARS-CoV-2 as an example.
- ★ -Identify the patients at higher risk for severe COVID-19.
- ★ Identify the typical presentation of COVID-19 in addition to red flags for severe presentation.
- ★ Utilize and interpret testing in COVID-19 patients.
- ★ Educate COVID-19 patients and their caregivers on monitoring the status at home with precautions to prevent transmission to others.
- ★ Manage COVID-19 patients.
- ★ able to competently prescribe Influenza and SARS-COV-2 vaccines.

Color index:

Original text **Important** Doctor's notes **Golden notes** Extra

URTIs

Classifications of Viral URTIs According to Etiology

- A. Virulent corona viruses (SARS-CoV, MERS-CoV, SARS-CoV2 (COVID-19)).
- B. Influenza. (The flu, Influenza virus can result in severe Flu symptoms)
- C. Common cold. (Flu symptoms caused by viruses other than influenza virus. ex Adeno,RSV or Rhino)

What Are The Coronaviruses That Can Infect Humans?

- **7members:**
 - SARS-CoV, MERS-CoV, & SARS-CoV-2 can cause **severe infection**.
 - HCoV-OC43, HCoV-HKU1, HCoV-229E, and HCoV-NL63:
 - Cause mild symptoms (Common cold).
 - Cause about 15% of (Common cold).

Are All SARS-CoV-2 Mutations Important?

No, Most mutations in the SARS-CoV-2 genome have no impact on viral function.

What Is The Difference Between A Variant Of Interest And A Variant Of Concern?

01

Variant Of Interest

Variant with specific **genetic markers** that have been associated with changes to **receptor binding, reduced neutralization by antibodies generated against previous infection or vaccination, reduced efficacy of treatments, potential diagnostic impact, or predicted increase in transmissibility or disease severity**.

02

Variant Of Concern

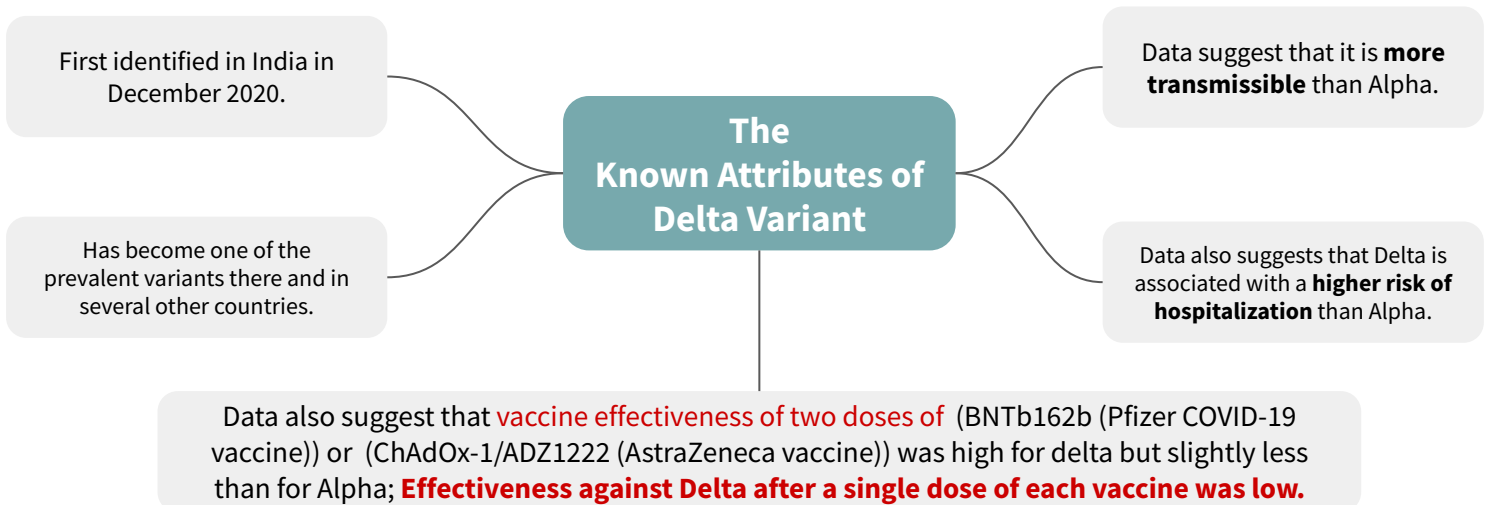
A variant for which there is evidence of an **increase in transmissibility, more severe disease** (e.g., increased hospitalizations or deaths), **significant reduction** in neutralization by antibodies generated during previous infection or vaccination, reduced effectiveness of treatments or vaccines, or diagnostic detection failures.

SARS-COV-2 (COVID-19)

The SARS-CoV-2 Variants Of Concern (Place First Detected)

V1	Alpha (UK)
V2	Beta (South Africa)
V3	Gamma (Japan/Brazil)
V5	Delta (India)
V6	Epsilon (California, USA)

What Are The Known Attributes Of The Delta Variant



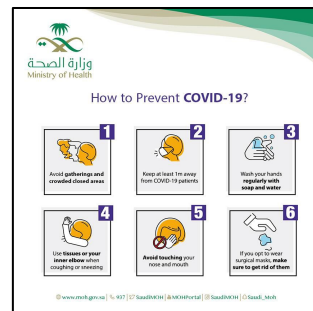
Primary Vs Secondary Mean For SARS-CoV-2 Transmission

- **Primary mean:**
 - 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.
- **Secondary means:**
 - Touching your eyes, nose or mouth with contaminated hands:
 - By touching a body part contaminated with droplets (eg. shaking hands)
 - By touching surfaces contaminated with droplets.
 - Sharing personal items (eg. Towels) with an infected person.
 - 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:**
 - The extent to which this occurs under natural conditions and how much this mode of transmission has contributed to the pandemic are controversial.
 - This is more likely to occur in closed and poorly ventilated areas.
 - Airborne precautions (**Staff on N95 masks**) are universally recommended when aerosol-generating procedures (nasopharyngeal swab, intubation...etc) are performed.

SARS-COV-2 (COVID-19)

How Respiratory Droplets Are Released

- Sneezing, coughing, talking or breathing.
- Notes:
 - If the hands are not visibly soiled, they can be disinfected using an at least 60% alcohol sanitizer.
 - Coughing and sneezing into a tissue or your own elbow is an important step to stop the transmission of the respiratory droplets.
 - 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.

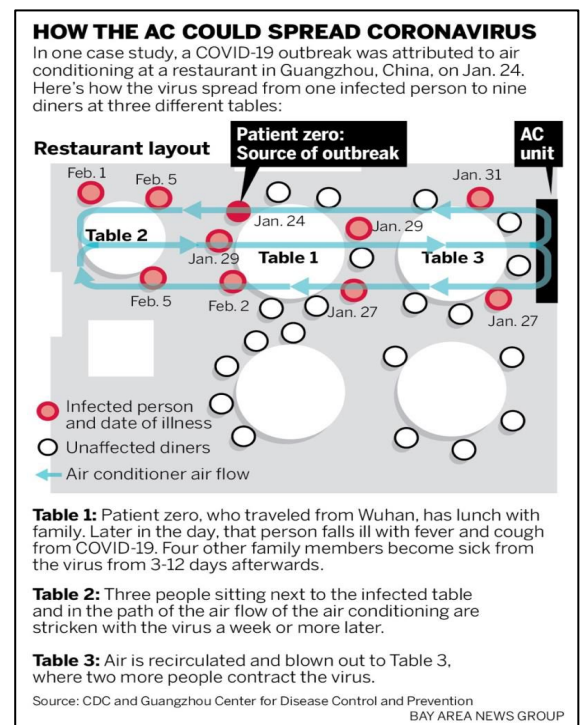


Typically, How Far Do Respiratory Droplets Travel?

- 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](#).
- The optimal social distance is uncertain but there are multiple recommendations:

Recommended Distance

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



The ones who were in line of the AC air flow got infected.
Note that not everyone got the infection indicating that many factors can affect the transmission.

SARS-COV-2 (COVID-19)

SARS-CoV-2 (COVID-19) Cont..

- **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 **peaked between 2 days before and 1 day after symptom onset**, and then declined within seven days.
 - Transmission after 7 to 10 days of the start of illness is unlikely, particularly for an otherwise immunocompetent patients with non-severe infection.
- **Does having a positive COVID-19 swab means that the person is infectious to others?**
 - **No**, 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.
 - 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 (including those who later developed symptoms and thus were considered pre-symptomatic) has been well documented.
 - Asymptomatic or pre-symptomatic individuals are less likely to isolate themselves from other people.
 - 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% in those who shared a cabin with an individual with asymptomatic infection.
 - 81% of those who shared a cabin with a symptomatic individual.
 - 18% in those without cabin-mate.
 - In conclusion, both asymptomatic and pre-symptomatic can transmit infection, but pre-symptomatic appear to spread it more.
 - The issue with asymptomatic or pre-symptomatic individuals is that they are less likely to isolate themselves from other people.
- **What are the factors that affects the risk of transmission of COVID-19?**
- Masks (best if both wore masks, then if the patient only wore mask, lastly if the healthy person only wore mask).
- Distance.
- Duration of contact in minutes. (Total not necessary continues)
- **Ventilation and filtration of the air (most of the transmission occurs indoor).**

SARS-COV-2 (COVID-19)

SARS-CoV-2 (COVID-19) Cont..

- **What are the settings where most transmission of COVID-19 happen?**
 - Among household contacts.
 - In health care settings when personal protective equipments were not used (including hospitals and long-term care facilities).
 - In other congregate التجمعات settings where individuals are residing or working in close quarters (eg, cruise ships, detention facilities, workplace...etc.).
- **What are the groups with a potential exposure to COVID-19?**
 - **“Close contact”** with a suspected or confirmed COVID-19 case from 2 days (before onset of symptoms in symptomatic or collection of a swab in asymptomatic). This is irrespective of whether the person with COVID-19 or the contact was wearing a mask or whether the contact was wearing respiratory personal protective equipment (PPE).
 - **International travelers:** Especially from countries with widespread community transmission.
- **What are the criteria of “close contact”?**
 - **Distance less than 2 meters.**
 - **A cumulative duration of 15 minutes or more within 24 hours.** Ex, three individual 5-minute exposures for a total of 15 minutes, **Doesn't have to be continuous 15 min.**
 - 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?**

What should he do?	Fully vaccinated (2 weeks after the 2nd dose)	Not fully vaccinated
Self-quarantine at home	No need	14 days after last exposure
Social Distancing	Maintain at least 6 feet (2 meters) from others at all times	
Contact with individuals at high risk for severe illness	Avoid	
Monitoring of symptoms and temperature	Twice daily	
What to do if you develop symptoms	Stay at home away from other household members and contact their medical providers, call 937, visit تظمن clinics or any other clinic.	

- **Are there other options for the quarantine period after possible contact with a COVID-19 case?** The following options to shorten quarantine are acceptable alternatives:
 - Quarantine can end **after Day 10 without testing** and **if no symptoms** have been reported during daily monitoring:
 - With this strategy, residual post-quarantine transmission risk is estimated to be about 1.4%.
 - Quarantine can end **after Day 7** if diagnostic **tests done on day 5 or later is negative** and **if no symptoms** were reported during daily monitoring:
 - With this strategy, the residual post-quarantine transmission risk is estimated to be about 4%.

SARS-COV-2 (COVID-19)

SARS-CoV-2 (COVID-19) Cont..

- **What are the approaches to prevent COVID-19?**
 1. Pre-exposure prophylaxis:
 - A. Vaccines.
 2. Post-exposure prophylaxis:
 - A. Monoclonal antibodies: the USA FDA has issued an emergency use authorization (EUA) to use the monoclonal antibody casirivimab-imdevimab to prevent severe SARS-CoV-2 infection in select individuals over 12 years of age. (Selected cases)
 - B. Hydroxychloroquine: available data suggests it is not effective.
 - C. Ivermectin: has only been evaluated in low-quality unpublished studies.
- **What are the COVID-19 vaccines approved and are in use currently in KSA?**

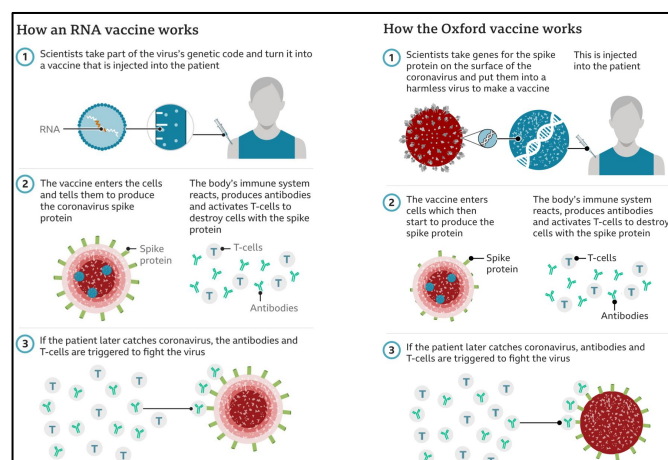
Vaccine	How it works	Common side effects	Serious adverse effects (rare)
Pfizer-BioNTech	Messenger RNA	<ul style="list-style-type: none"> - Local injection site reactions - Systemic symptoms (fevers, chills, fatigue, myalgias, headache) 	<ul style="list-style-type: none"> - Anaphylaxis (approximately 5/ million) - Myocarditis/pericarditis (approximately 16 per million among 16-39 year olds)
Oxford-AstraZeneca	Viral vector		<ul style="list-style-type: none"> - Very rare thrombotic complications associated with thrombocytopenia: - Cerebral venous sinus thrombosis (169 of ≈ 34 million) - Splanchnic vein thrombosis (54 of ≈ 34 million) - Guillain-Barre syndrome (227 cases/51 million)
Moderna	Messenger RNA	-	<ul style="list-style-type: none"> - Anaphylaxis (approximately 2.8 per million) - Myocarditis/ pericarditis (approximately 16 per million among 16-39 year olds)

- None of the vaccines have been studied head-to-head, and thus comparative efficacy is uncertain. Differences in the magnitudes of effect reported from phase III trials could be related to factors other than efficacy, including differences in the trial populations and locations, timing of the trials during the pandemic, and study design.
- Most efficacy estimates were determined with a median follow-up of two months after vaccination.

SARS-COV-2 (COVID-19)

SARS-CoV-2 (COVID-19) Cont..

- **What are the Contraindications to COVID-19 vaccines?**
 - The only contraindications to COVID-19 vaccination are allergic reactions to the COVID-19 vaccines or their components. Specifically, they are:
 - **Severe allergic reaction:** (eg, anaphylaxis) to a previous COVID-19 vaccine dose or to a component of the vaccine.
 - **Immediate allergic reaction:** of any severity (including hives) developing within four hours of a previous COVID-19 vaccine dose or known (diagnosed) allergy to a component of the vaccine. Symptoms of immediate reactions are listed on the CDC website. Isolated hives that develop more than four hours after vaccine receipt are unlikely to represent an allergic reaction to the vaccine.
 - The mRNA vaccines (Pfizer and Moderna), each contain polyethylene glycol, and Oxford-AstraZeneca contains polysorbate. Other components of COVID-19 vaccines are listed on the CDC website.
- **What are the Precautions to COVID-19 vaccines?**
 - Precautions to vaccination also consist of allergic reactions. These precautions warrant longer post-vaccination monitoring than usual:
 - Immediate allergic reaction to any other (non-COVID-19) vaccine or injectable therapy.
 - Contraindication to an mRNA COVID-19 vaccine is a precaution to viral-vector because of potential cross-reactive hypersensitivity.
 - Contraindication to viral-vector is a precaution to an mRNA vaccine because of potential cross-reactive hypersensitivity.
- **Are patients on anticoagulant therapy allowed to get vaccinated?**
 - Anticoagulation is not a contraindication to vaccination; excess bleeding is unlikely with intramuscular vaccines in patients taking anticoagulants.
 - Such patients can be instructed to hold pressure over the injection site to reduce the risk of hematoma.
- **How long should patients receiving COVID-19 vaccines be monitored for immediate reactions?**
 - The following warrant monitoring for 30 minutes:
 - Precautions to the administered vaccine.
 - History of anaphylaxis due to any cause.
 - All other individuals are monitored for 15 minutes.



SARS-COV-2 (COVID-19)

SARS-CoV-2 (COVID-19) Cont..

- **What are the clinical presentations of COVID-19?**
 - **Asymptomatic** (some of the patients are asymptomatic at presentation, but they later develop symptoms).
 - **Symptomatic:**
 - Mild (no or mild pneumonia).
 - Severe (eg, with dyspnea, hypoxia, or >50 percent lung involvement on imaging).
 - Critical (eg, with respiratory failure, shock, or multi-organ dysfunction).
- **What are the risk factors for severe COVID-19 disease?**
 1. **Age is the strongest risk factor for severe COVID-19 outcomes (≥ 65 years)**
 2. **Co-morbidities that are supported by meta-analysis/systematic review: Defined as having a significant association with risk of severe COVID-19 illness.**
 - Cancer.
 - Cerebrovascular disease.
 - Chronic kidney disease.
 - COPD (chronic obstructive pulmonary disease).
 - Diabetes mellitus, type 1 and type 2.
 - Heart conditions (such as heart failure, coronary artery disease, or cardiomyopathies).
 - Obesity (BMI ≥ 30 kg/m²).
 - Pregnancy and recent pregnancy.
 - Smoking, current and former.
 3. **Co-morbidities that are supported by mostly observational (e.g., cohort, case-control, or cross-sectional) studies:**
 - Down syndrome.
 - HIV (human immunodeficiency virus).
 - Neurologic conditions, including dementia.
 - Overweight (BMI ≥ 25 kg/m², but < 30 kg/m²).
 - Other lung disease (including interstitial lung disease, pulmonary fibrosis, pulmonary hypertension).
 - Sickle cell disease.
 - Solid organ or blood stem cell transplantation.
 - Substance use disorders.
 - Use of corticosteroids or other immunosuppressive medications.
 4. **Co-morbidities that are supported by mostly case series, case reports, or, if other study design, the sample size is small Conditions included might be less common.**
 - Cystic fibrosis & Thalassemia.
 5. **Co-morbidities that are supported by mixed evidence:**
 - Asthma.
 - Hypertension.
 - Immune deficiencies.
 - Liver disease.
- **What is the incubation period for COVID-19?**
 - Within 14 days following exposure, with **most cases occurring approximately 4 to 5 days after exposure.**

SARS-COV-2 (COVID-19)

SARS-CoV-2 (COVID-19) Cont..

- **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 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. may warrant a higher level of clinical suspicion. **Development of dyspnea several days after the onset of initial symptoms is suggestive of COVID-19.**
- **On which factors do we consider that the community has a widespread transmission or not?**
 - New COVID-19 case counts.
 - Incidence rate (new cases per 100,000 people), and
 - New case trajectory (whether the number of new cases is going up, going down, or staying the same overtime) CDC.
- **What are the most common COVID-19 symptoms and their frequency?**
 - Cough in 50%
 - Fever (subjective or >100.4°F/38°C) in 43%
 - Myalgia in 36%
 - Headache in 34%
 - Dyspnea in 29%
 - Sore throat in 20%
 - Diarrhea in 19%
 - Nausea/vomiting in 12%
 - Loss of smell (typically reported early in the course of illness) or taste, abdominal pain, and rhinorrhea in fewer than 10% each.

SARS-COV-2 (COVID-19)

SARS-CoV-2 (COVID-19) Cont..

- 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?** (Indication of the 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. (He may need hospital admission)
- **Typically, after how many days do COVID-19 symptoms worsen?**
 - 5 days to a week after the onset of symptoms.
- **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 fingers may not be as accurate.
 - Patient 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% on room air**.
 - For patients who have an oxygen saturation of $\geq 95\%$ 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, patient will have to go to the ED and most likely would need admission.**

- Portable oximeter than can be used at home.
- Smart watch with the ability to detect oxygen saturation.
- Clinical features are more important than O₂ sat.



SARS-COV-2 (COVID-19)

SARS-CoV-2 (COVID-19) Cont..

- **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 expected duration of illness.
- **Who should get tested for COVID-19?**
 1. **Symptomatic patients:** - عيادات تطمن - or any other healthcare setting designated to deal with COVID-19 patients.
 - Any symptomatic patient with symptoms and signs suggestive of COVID-19.
 - The diagnosis of COVID-19 should be confirmed in a symptomatic patient using microbiologic testing with a swab for PCR.
 2. **Asymptomatic individuals:**
 - 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.
 - 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.
 - In some settings, antigen testing 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 is the test performance based on the type of the specimen collected for COVID-19 PCR test?**
 - Lower respiratory tract specimens may have higher viral loads and be more likely to yield positive tests than upper respiratory tract specimens. For eg. bronchoalveolar lavage and sputum. The problem with lower respiratory tract specimen is they are not practical since they are difficult to obtain & **Used one only in hospitals.**
 - Upper respiratory tract specimens, nasopharyngeal, nasal, and saliva specimens have similarly high sensitivity, whereas the sensitivity of oropharyngeal swab specimens is lower.

SARS-COV-2 (COVID-19)

SARS-CoV-2 (COVID-19) Cont..

- **What if the results came back positive for a NAAT test using PCR?**
 - 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:**
 - Quicker.
 - Cheaper.
 - More accessible (can be done at point of care).
 - **Disadvantages:**
 - Limited evidence on their accuracy.
 - 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.
- **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.
 - Coinfection with SARS-CoV-2 and other respiratory viruses, including influenza, has been reported in the literature.
 - Detection of another viral (or bacterial) pathogen does not necessarily rule out SARS-CoV-2 especially where there is widespread transmission of SARS-CoV-2.

SARS-COV-2 (COVID-19)

SARS-CoV-2 (COVID-19) Cont..

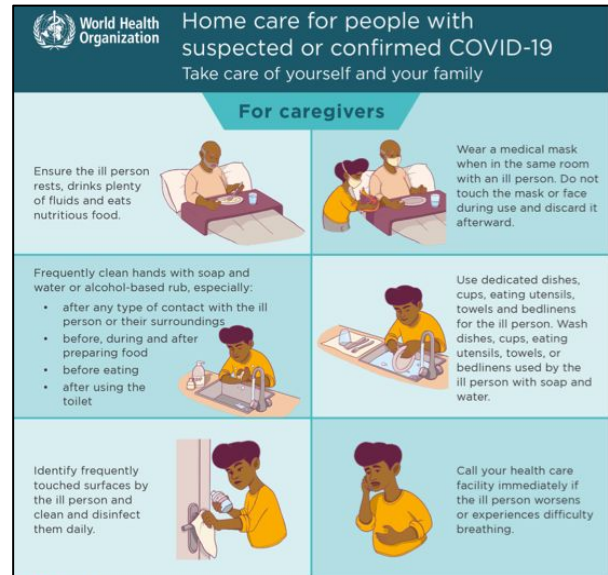
- **Can a person become re-infected with SARS-CoV-2?**
 - Overall, the short-term risk of reinfection (eg, within the first few months after initial infection) appears low. Nevertheless, sporadic cases of probable reinfection have been documented.
 - In the United States, the CDC suggests that the possibility of reinfection be investigated in patients who:
 - Have a repeat positive NAAT ≥ 90 days after the initial infection, regardless of symptoms **or**
 - Have a repeat positive NAAT 45 to 89 days after the initial infection **AND** have symptoms consistent with COVID-19 (with no alternative explanation or in the setting of recent exposure)
 - And in such cases, the patient should repeat isolation and close contacts should be traced.
- **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): eg. In KSUMC family medicine department has a dedicated messaging app number (Whatsapp) for follow up of COVID-19 patients.
 4. **4.COVID-19 testing.** (مراكز تأكد و عيادات تظمن)
 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 تظمن. In addition, **the outpatient clinic should have a close, coordinated relationship with the local emergency department (ED)** in order to facilitate transfer of patients.



SARS-COV-2 (COVID-19)

SARS-CoV-2 (COVID-19) Cont..

- What instructions should you educate a patient with COVID-19?
 - See the following 2 illustrations:



Management of SARS-CoV-2 (COVID-19):

- How to manage the symptoms of COVID-19 patients?
 - **Non-pharmacological therapy:** (Always start with Non-pharmacological)

Symptom	Fluids & hydration	Saline irrigation <small>Never use tap Water, and if you do, you must heat it at least for 3-5 mins</small>	Humidified air	Honey
Fatigue	✓			
fever	✓			
Nose/sinus congestion		✓		
rhinorrhea		✓		
cough			✓	✓ in children (don't give it to less than 1 year old)

- **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* (for eg. loratadine)	Decongestants Oral (Pseudoephedrine*)/topical (xylometazoline**)	camphor, menthol, & eucalyptus oils ointment (in children ≥2 years) <small>Vicks. Should be applied on the upper chest so you can inhale it. Large amounts cases seizure in children</small>	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

The symptomatic management outlined in the above 2 tables is applicable for other viral and bacterial causes of URTI.

*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.

SARS-COV-2 (COVID-19)

Management of SARS-CoV-2 (COVID-19):

- **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 reevaluation 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 when 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).
 - For patients at risk of severe illness, we generally schedule the first follow-up telehealth visit within 24 hours.
- **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 using tests:**
 - **For symptomatic patients: 10 days after symptom onset, AND resolution of fever -Without the use of any antipyretics- for at least 3 days and clinical improvement of other symptoms.**
 - **For asymptomatic cases: 10 days after positive test for SARS-CoV-2.**
 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, age, and severity of illness) 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?**
 - **Age, pre-existing comorbidities and illness severity.**

*keep smiling 2 slides to
go*

Rhinosinusitis

Rhinosinusitis:

- **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?**
 - By rapid test and the severity, It can be difficult to tell the difference between them based on symptoms alone. In general, the flu is worse than the common cold.
 - Flu can have very serious associated complications:
 - Such as pneumonia, bacterial infections, or hospitalizations.
- **How many types of Influenza viruses are there?**
 - 4 types, 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.
- **Compare between the 3 influenza viruses' types that affects humans in terms of the following: causing epidemics, & antigenic stability.**
 - Influenza type **A** (H1N1/H3N2) is antigenically highly variable and is responsible for most cases of epidemic influenza.
 - Influenza type **B** may exhibit antigenic changes and sometimes causes epidemics.
 - Influenza type **C** is antigenically stable and causes only mild illness in immunocompetent individuals.
- **What is the incubation period of influenza?**
 - 1-7 days.
- **What are the diagnostic tests for influenza?**

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.		

Rhinosinusitis

Rhinosinusitis:

- **How to prevent influenza & common cold?**
 - Same as COVID-19.
 - 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 after at least four weeks. (Bronchiolitis common in children ≤ 2 Y/O caused by RSV)
- **What does the influenza vaccine contain?**
 - 3 or 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. (Usually 3 strains 2A & 1B OR 4 Strain 2A & 2B)
- **When should the influenza vaccine be offered?**
 - During fall season. (Sep, Oct, Nov & Dec)
- **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.
 - And meningococcal & COVID-19.
- **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. (egg allergy is not contraindication anymore).
- **What are the Precautions to the influenza vaccine?**
 - Moderate or severe acute illness with or without fever.
 - Guillain–Barré syndrome within 6 weeks following a previous dose of influenza vaccine.
- **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, ears, and the respiratory system.

The combination of the strains per 0.5 ml for the 2018 season is:
A and B-strains equivalent to,
- an A/Michigan/45/2015 (H1N1)pdm09-like virus; 15 micrograms HA
- an A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus; and 15 micrograms HA
- a B/Phuket/3073/2013-like virus. 15 micrograms HA
per 0.5 ml dose.

Please, see the insert leaflet.

Excipients: potassium chloride, potassium dihydrogen phosphate, disodium phosphate dihydrate, sodium chloride, calcium chloride dihydrate, magnesium chloride hexahydrate and water for injections.

وزارة الصحة
Ministry of Health

Influenza vaccine contain



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

Lecture Quiz

Q1: You are seeing a 24-year-old nonsmoker man for an acute cough. The cough has been present for 3 days. He had a low grade fever for the first 2 days and resolved. He reports that cough is worse at night. No haemoptysis or shortness of breath.

What is the most likely cause of his symptoms?

- A. Allergic rhinitis
- B. Pneumonia
- C. Sinusitis with post nasal drip
- D. Viral URTI

Q2: Patient has urticaria allergy from egg. How are you going to give him the influenza vaccine?

- A. Like any other patients
- B. Recombinant
- C. Contraindicated
- D. Give it every 2 years

Q3: 2 year old child presented to the PHC with right ear pain. Her mother said that her child has recovered from the upper respiratory tract infection. On examination the ear drum was bulging. What is the most likely diagnosis?

- A. Acute Otitis Media
- B. Recurrent Otitis Media
- C. Pharyngitis
- D. Otitis media with effusion

Q4: When can stop the quarantine period after a contact with a COVID-19 case?

- A. After Day 7 if diagnostic tests done on day 5 or later is negative
- B. After Day 6 if diagnostic tests done on day 5 or later is negative
- C. After Day 10 if one diagnostic tests done on day 5 or later is negative
- D. After Day 4 if diagnostic tests done on day 3 or later is negative.

Q5: The incubation period of most cases with SARS-CoV-2 is?

- A. Approximately 2 to 3 days after exposure.
- B. Approximately 4 to 5 days after exposure.
- C. Approximately 6 to 7 days after exposure.
- D. Approximately 7 to 10 days after exposure.

THANKS!!

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*Send us your feedback:
We are all ears!*