

# MERS-CoV & other viruses

Dr. Abdulkarim Alhethel

Assistant Professor

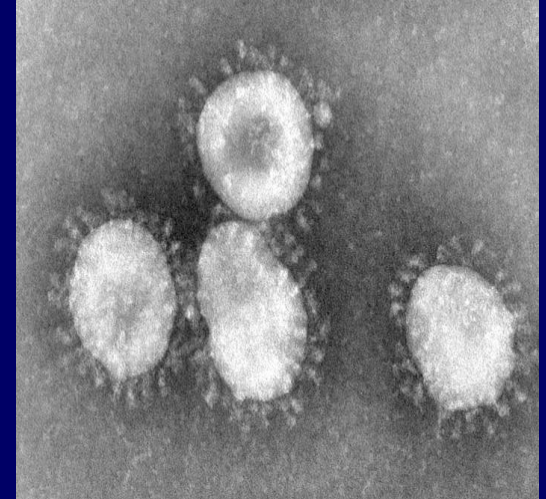
College of Medicine & KKHU

# Objectives

- Characteristics of MERS-CoV, Rhinovirus, Coxsackieviruses & other Picornaviruses, Adenovirus, Epstein – Barr virus.
- Mode of transmission
- Clinical features
- Lab diagnosis
- Treatment & prevention

# Coronavirus

- **Family:** *Coronaviridae*.
- **Structural features:** Enveloped virus with + polarity ss-RNA genome.
- **Transmission:** Inhalation of infectious aerosol droplets.
- **Clinical symptoms:** The 2<sup>nd</sup> cause of common cold.
- Coronavirus also causes zoonotic disease (the virus is capable of infecting humans and animals including birds, camels, pigs and others).



# SARS-CoV

## *Severe Acute Respiratory Syndrome (SARS)*

- In winter of 2002, a new respiratory disease known as (SARS) emerged in China after a new mutation of coronavirus.
- The disease spread worldwide due to travelling.
- The animal reservoir may be rats or cats.
- SARS starts with high fever followed by cough with difficulty in breathing (atypical pneumonia).
- Associated with high mortality due to respiratory failure.

# MERS-CoV

Middle East Respiratory Syndrome (MERS) is viral respiratory illness first reported in Saudi Arabia in 2012. It is caused by a coronavirus.

➤ **Epidemiology:** So far, all the cases have been linked to countries in and near the Arabian Peninsula.

- Highly infectious.
- Incubation period 2-14 days.

➤ **Transmission:**

This virus spread from ill people to others through close contact. There is no evidence of sustained spreading in community settings. Evidence also suggested that the virus can be acquired from direct close contact with animals (e.g. Camels, Bats).

الإحصائيات والبيانات اليومية

عدد حالات الإصابة بفيروس كورونا

حسب الساعة 12 ظهراً بتاريخ 27 ربيع الآخر 1439 هـ

\* منذ عام 1433 هـ الموافق 2012م

توفي منهم 723 حالة

(تقدمهم الله بواسع رحمته)

إجمالي حالة 1622  
+64 حالات بدون أعراض

1044 حالة تماثلت للشفاء

8 حالة تحت العلاج

توضيح: يرجى ملاحظة أن العدد الإجمالي للحالات معرض للتغيير بسبب إجراءات إعادة التصنيف، والتحقق في عدد الحالات بأثر رجعي، وتجميع البيانات الخاصة بالحالات والنتائج المختبرية ونتائج المراقبة المعززة.

مركز القيادة والتحكم  
Command & Control Center



للمزيد من المعلومات حول المركز



إرشادات الكادر الصحي



معلومات القطاعات

فيروس كورونا

الإرشادات الصحية



آداب السعال والعطاس



فديو - معلومات تهمك عن كورونا

02 جدوى الأول 1439

01 جدوى الأول 1439

30 ربيع الثاني 1439

29 ربيع الثاني 1439

28 ربيع الثاني 1439

27 ربيع الثاني 1439

26 ربيع الثاني 1439

« (الصحة): تسجيل حالة إصابة واحدة بفيروس (كورونا)

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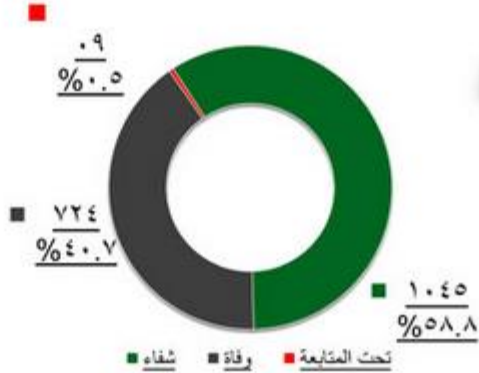
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## (الصحة): تسجيل حالة إصابة واحدة بفيروس (كورونا)

03/05/1439

متلازمة الشرق الاوسط - كورونا:  
التحديث اليومي

مآل الحالات المؤكدة منذ عام ١٤٣٣ هـ



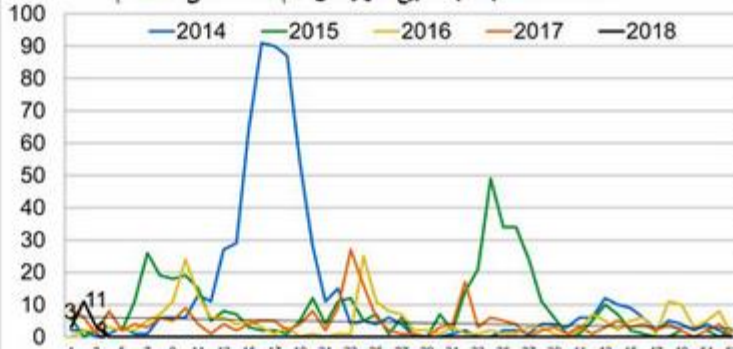
التاريخ ٠٣ جمادى الأولى ١٤٣٩ هـ				
المجموع	🚫	🐪	?	
١	٠	٠	١	حالات باعراض مرضية
٠	٠	٠	٠	بدون أعراض مرضية
٠				الوفيات خلال ٢٤ ساعة
٠				الشفاء خلال ٢٤ ساعة

🐪 = توجد مخالطة مباشرة أو غير مباشرة مع الإبل

🚫 = لا توجد مخالطة مع الإبل

? = تحت التقصي

عدد الحالات المبلغ عنها بالاسابيع الدولية من عام ٢٠١٤ حتى ٢٠١٨ م



تصنيف العدوى (تركيماً) من بداية يناير ٢٠١٥

مركز القيادة والتحكم  
Command & Control Center

للمزيد من المعلومات حول المركز



إرشادات الكادر الصحي



معلومات القطاعات

فيروس  
كورونا

الإرشادات الصحية



آداب السعال والعطاس

YouTube



فيديو - معلومات تهتمك عن كورونا



Türkçe



Indonesian



Urdu



Français



Tagalog



Malayâlam

### ➤ Risk group:

- Individuals with weakened immune systems
- People with pre-existing medical conditions (or comorbidities) such as diabetes, cancer, and chronic lung, heart, and kidney disease.

### ➤ Clinical Features:

- Symptoms may include fever, cough, and shortness of breath.
- Some people also had gastrointestinal symptoms including diarrhea and nausea/vomiting.
- Some infected people had mild symptoms (such as cold-like symptoms) or no symptoms at all and they recovered completely.
- Most people with comorbidities developed severe acute respiratory illness.

### ➤ Complications:

- Severe complications include pneumonia and kidney failure. About 30% of people infected with MERS died.



➤ **Lab diagnosis:** Detection of the viral nucleic acid (NA) by PCR.

**Other methods:** Isolation of the virus from NPA by cell culture.

➤ **Treatment:** No specific antiviral treatment. For severe cases, current treatment includes care to support vital organ functions.

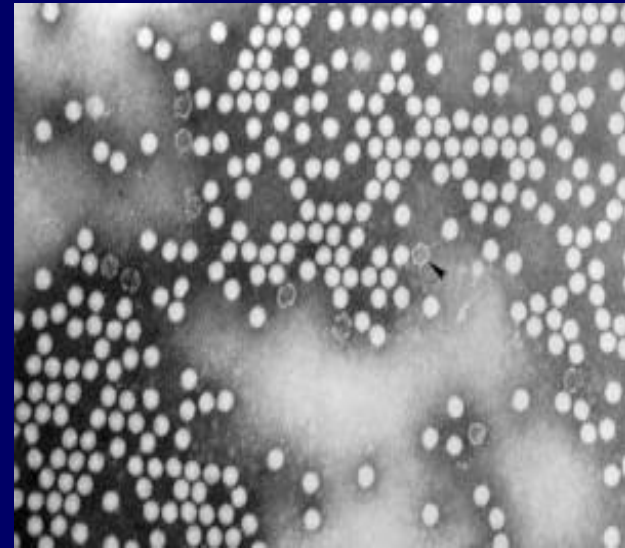
➤ **Prevention:**

People are advised to protect themselves from respiratory illnesses by taking everyday preventive actions:

- Wash hands often with water and soap or use an alcohol-based hand sanitizer.
- Cover nose and mouth with a tissue when cough or sneeze.
- Avoid touching eyes, nose and mouth with unwashed hands.
- Avoid personal contact with sick people.
- Clean and disinfect frequently touched surfaces such as toys and doorknobs.

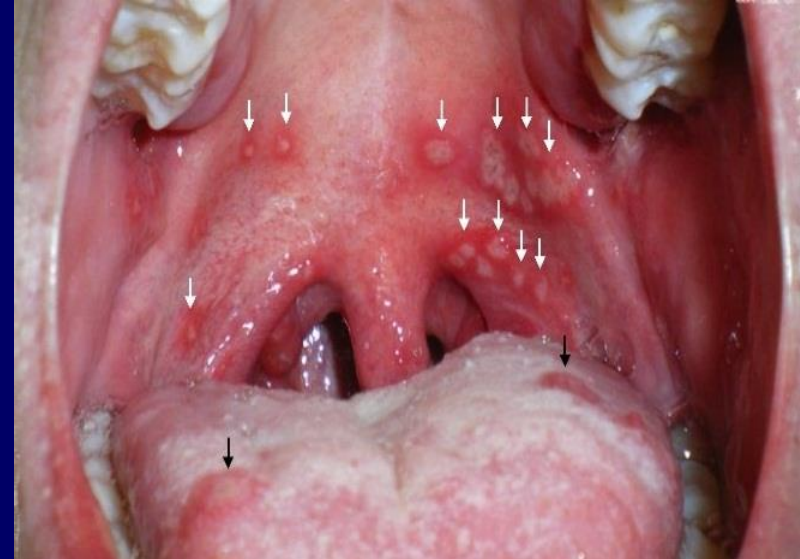
# Rhinovirus

- **Family:** *Picornaviridae*.
- **Structural features:** Non-enveloped virus with + polarity ssRNA genome, more than 100 serotypes available.
- **Transmission:** Inhalation of infectious aerosol droplets.
- **Clinical symptoms:** The 1<sup>st</sup> cause of common cold. The main symptoms of common cold are sneezing, clear watery nasal discharge with mild sore throat, and cough.
- **Lab diagnosis:** routine testing by detection of the viral NA from NPA using PCR.
- **Treatment and prevention:** Usually self-limiting disease, no specific treatment, and no vaccine available.



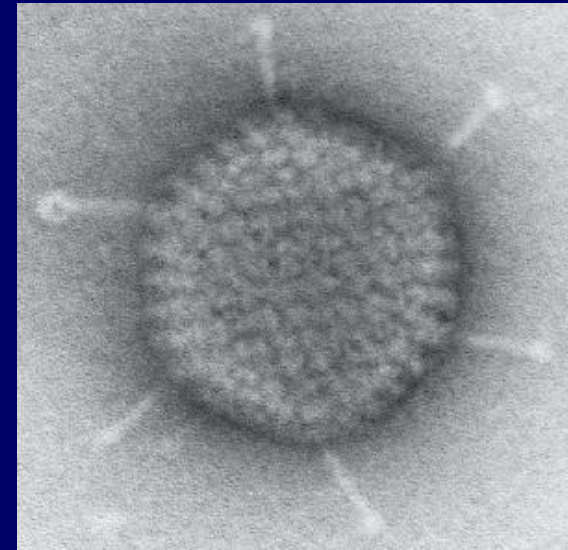
# Coxsackieviruses & other Picornaviruses

- **Family:** *Picornaviridae*.
- **Structural features:** Non-enveloped virus with + polarity ssRNA genome
- Coxsackieviruses group A & B,
- Echovirus, Enteroviruses.
- **Transmission:**  
Inhalation of infectious aerosol droplets.
- **Clinical symptoms:**  
Coxsackieviruses cause herpangina and pharyngitis  
Echovirus & other Enteroviruses cause respiratory symptoms
- **Lab diagnosis:** routine testing by detection of the viral NA from NPA using PCR.
- **Treatment and prevention:** Usually self-limiting disease, no specific treatment, and no vaccine available.



# Adenovirus

- Family: *Adenoviridae*.
- **Structural features:** Non-enveloped virus with ds-DNA genome.
- **Pathogenesis:** Adenovirus infects epithelial cell lining respiratory tract, conjunctiva, urinary tract, gastrointestinal tract and genital tract.
- **Clinical syndrome:**
  1. Pharyngitis and tonsillitis.
  2. Pharyngoconjunctivitis
  3. Conjunctivitis.
  4. Pneumonia: in preschool children.
  5. Gastroenteritis.
  6. Acute hemorrhagic cystitis.
  7. UTI (Cervicitis and urethritis).
- **Lab diagnosis: routine testing by** direct detection of the Ag from NPA by direct IFA. **Other detection methods:** tissue culture, PCR.
- **Treatment and prevention:** No specific treatment or vaccine.



# Epstein – Barr Virus (EBV)

- **Family:** *Herpesviridae*
- **Structure:** Enveloped , icosahedral dsDNA virus
- It is lymphotropic.
- It has oncogenic properties;
  - Burkitt's lymphoma
  - Nasopharyngeal carcinoma



# Epidemiology

- Distribution: worldwide (Mainly in teenagers & young adults)
- Transmission:
  - Saliva [kissing disease]
  - Blood [rarely]
- Age:
  - Socio-economic status: SE
  - Low SE class → early childhood
  - High SE class → adolescence

# Clinical Features:

## Immunocompetent host

- ❖ Asymptomatic
- ❖ Infectious mononucleosis  
[or glandular fever]
  - IP = 4-7 weeks
  - Fever, sore throat, tonsillitis, pharyngitis, malaise, hepatosplenomegaly, hepatitis.
  - Complications  
(acute airway obstruction, splenic rupture, CNS inf)





# Immunocompromised host

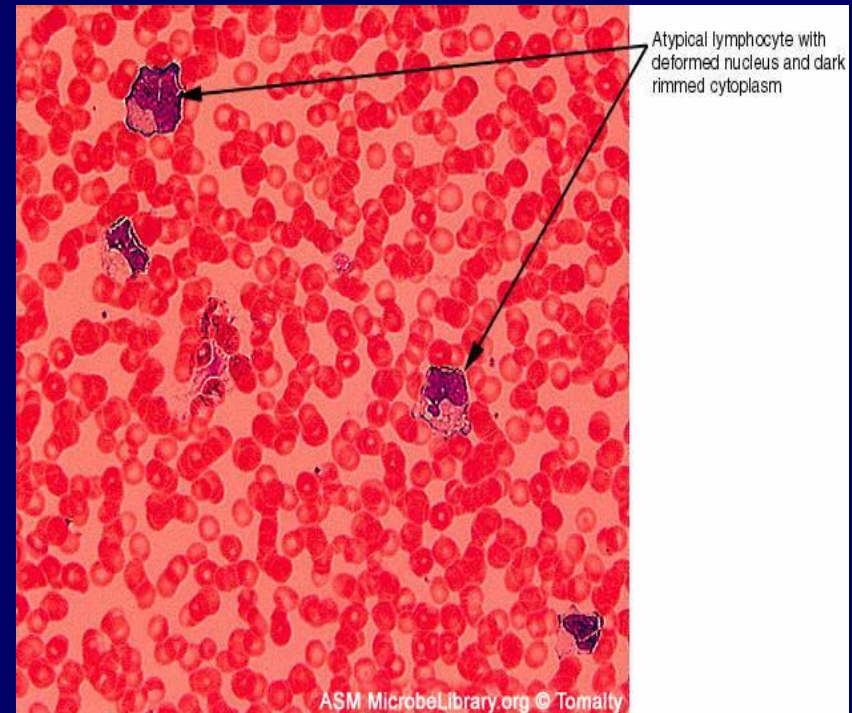
- Lymphoproliferative disease (LD)
- Oral hairy leukoplakia (OHL)



## Diagnosis:

### Hematology:

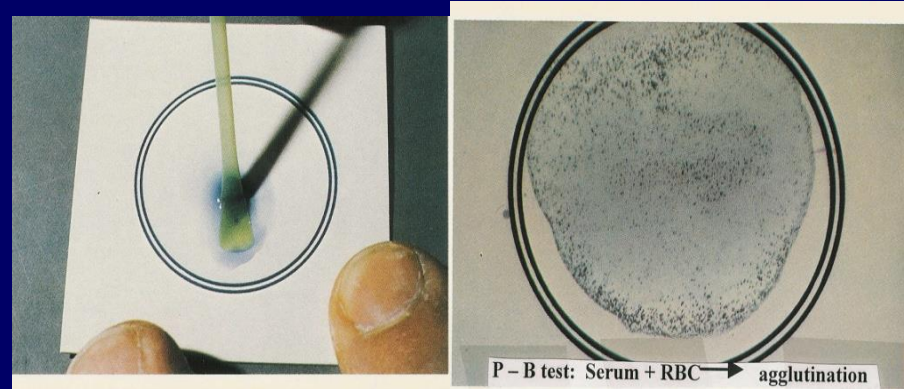
- ↑ WBC  
lymphocytosis  
(Atypical lymphocytes)





# Diagnosis:

- **Serology tests**
- Non-specific AB test ;
  - Heterophile Abs +ve
  - Paul-Bunnell or monospot test



- EBV-specific AB test: Detection of IgM Abs to EBV capsid antigen by ELISA

# Management:

- **Treatment:**
  - There is no treatment for Infectious mononucleosis
- **Prevention:**
  - No vaccine

# Reference books

## Notes on Medical Microbiology

By; Katherine N. Ward, A. Christine McCartney, and Bishan Thakker.  
(2009)

## Human Virology

By; Leslie Collier and John Oxford.  
(2006)

