Novel Coronavirus (2019-nCoV)
• Coronaviruses (CoV) are a large family of viruses
• Can cause illness ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV).
• **A novel coronavirus (nCoV)** is a new strain that has not been previously identified in humans.
• Coronaviruses are zoonotic, meaning they are transmitted between animals and people.
• Several known coronaviruses are circulating in animals that have not yet infected humans.
SARS-CoV
MERS-CoV
Virology

- The most prominent feature of coronaviruses is the club-shape spike projections emanating from the surface of the virion. These spikes are a defining feature of the virion and give them the appearance of a solar corona, prompting the name, coronaviruses.
Pathogenesis

- Animals coronavirus
- Can cause severe disease in livestock and companion animals such as pigs, cows, chickens, dogs and cats.
Human Coronaviruses

- Prior to the SARS-CoV outbreak, coronaviruses were only thought to cause mild, self-limiting respiratory infections in humans.
- These viruses are endemic in the human populations, causing 15–30% of respiratory tract infections each year.
- They cause more severe disease in neonates, the elderly, and in individuals with underlying illnesses, with a greater incidence of lower respiratory tract infection in these populations.
• Severe Acute Respiratory Syndrome (SARS) outbreak that occurred in 2002–2003 in the Guangdong Province of China.
• During the 2002–2003 outbreak approximately 8098 cases occurred with 774 deaths, resulting in a mortality rate of 9%.
• The outbreak resulted in the loss of nearly $40 billion dollars in economic activity, as the virus nearly shut down many activities in Southeast Asia and Toronto, Canada for several months.
• Transmission was spread through direct contact with infected individuals after the onset of illness & was largely contained within households and healthcare settings
• A novel human CoV emerged in the Middle East in 2012.
• This virus, named Middle East Respiratory Syndrome-CoV (MERS-CoV), was found to be the causative agent in a series of highly pathogenic respiratory tract infections in Saudi Arabia and other countries in the Middle East.
• Based on the high mortality rate of ~ 50% in the early stages of the outbreak, it was feared the virus would lead to a very serious outbreak.
• April 2014, a spike of over 200 cases and almost 40 deaths occurred.
• Case fatality rate of nearly 40%, according to the European Center for Disease Prevention and Control.
SITUATION IN NUMBERS

Globally
4593 confirmed

China
4537 confirmed
6973 suspected
976 severe
106 deaths

Outside of China
56 confirmed
14 countries

WHO RISK ASSESSMENT

<table>
<thead>
<tr>
<th>China</th>
<th>Very High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Level</td>
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</tr>
<tr>
<td>Global Level</td>
<td>High</td>
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</tbody>
</table>
Situation update

- most cases are mild
- 20 % are severe......pneumonia.....respiratory faililre or death.

- Three ( at Jan 27th) were detected without the onset of symptoms,
- travel history to China, Wuhan city, or had an epidemiological link to a confirmed case with travel history to Wuhan.
<table>
<thead>
<tr>
<th>WHO Regional Office</th>
<th>Country/Territory/Area</th>
<th>Confirmed Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Pacific</td>
<td>China*</td>
<td>4537</td>
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<tr>
<td></td>
<td>Japan</td>
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<tr>
<td></td>
<td>Republic of Korea</td>
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<td>Sri Lanka</td>
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<td>Region of the Americas</td>
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<tr>
<td></td>
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<td>Germany</td>
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<tr>
<td>Total Confirmed cases</td>
<td>Total</td>
<td>4593</td>
</tr>
</tbody>
</table>
Figure 1. Countries, territories or areas with reported confirmed cases of 2019-nCoV, 28 January 2020
Surveillance

- Key questions that global surveillance must answer include the following:
- How fast is 2019-nCoV spreading from China to other countries?
- Where are cases exported from and to?
- What types of exposures are reported by travellers originating in Wuhan or in other provinces in China reporting cases and human to human transmission?
- Are individuals symptomatic before travel and potentially detectable through exit or entry screening?
- Is there person-to-person transmission occurring in countries reporting imported cases?
- What is the clinical presentation of illness among travellers?
• Current estimates of the incubation period range from 2-10 days
• The strategic objectives of the response are to interrupt the transmission of the virus from one person to another in China
• Prevent exportation of cases from China to other countries and territories
• Prevent further transmission from exported case if they were to happen
• May be human to human transmission through droplets, contact and fomites,
Prevention

• Avoiding close contact with people suffering from acute respiratory infections.
• Frequent hand-washing, especially after direct contact with ill people or their environment.
• Avoiding unprotected contact with farm or wild animals.
• People with symptoms of acute respiratory infection should practice cough etiquette (maintain distance, cover coughs and sneezes with disposable tissues or clothing, and wash hands).
• Within healthcare facilities, enhance standard infection prevention and control practices in hospitals, especially in emergency departments.
• WHO does not recommend any specific health measures for travellers. In case of symptoms suggestive of respiratory illness either during or after travel, the travellers are encouraged to seek medical attention and share their travel history with their health care provider.
Treatment

- To date, there are no anti-viral therapeutics that specifically target human coronaviruses, so treatments are only supportive.
References


- **Coronaviruses: An Overview of Their Replication and Pathogenesis**