

# **Outbreak of COVID-19 in China and the Country's Responses**

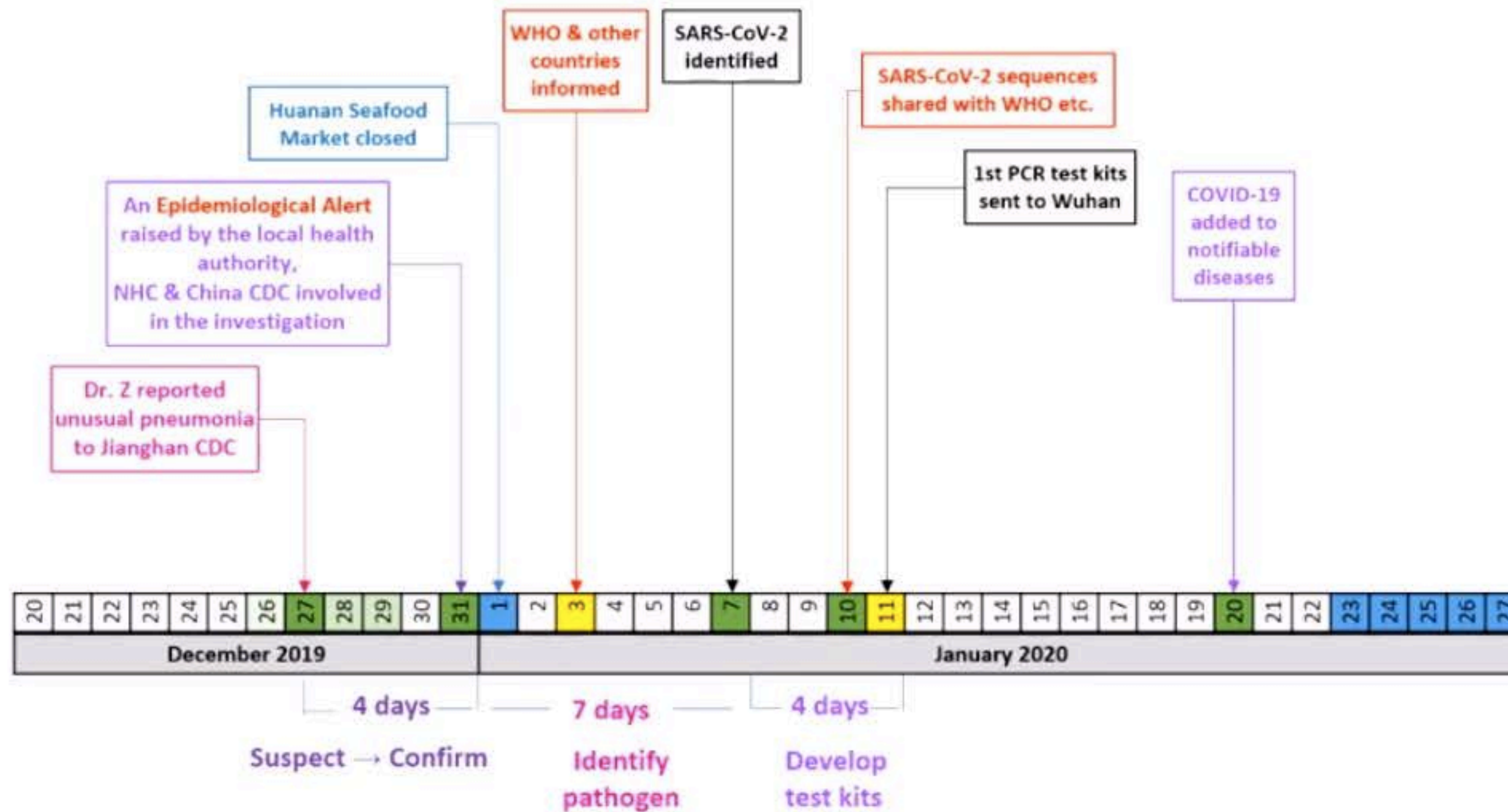
**Zunyou Wu**

**Chief Epidemiologist China CDC**

**CROI, Special Session, Boston**

**March 10, 2020**

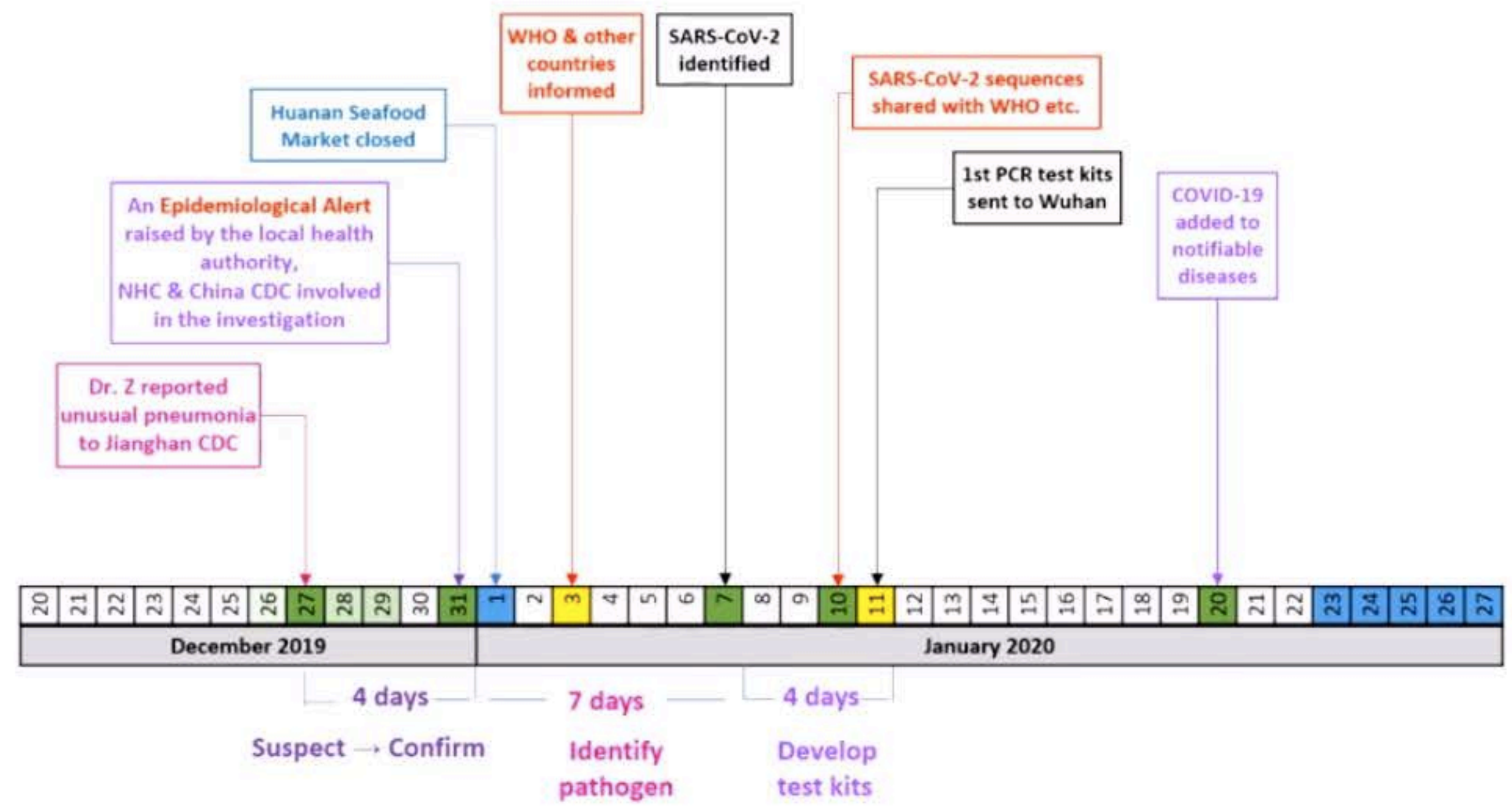
## Early Events







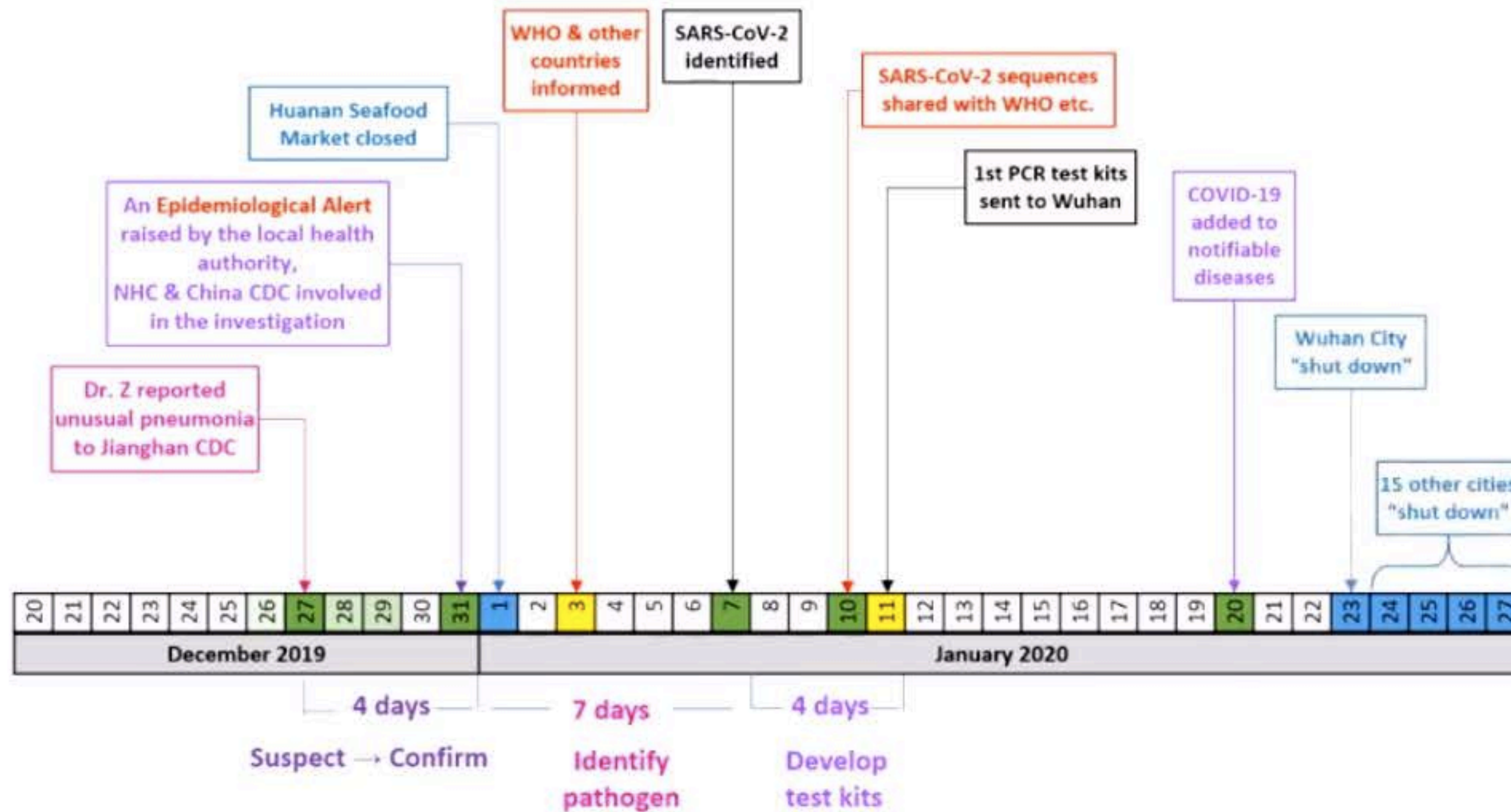
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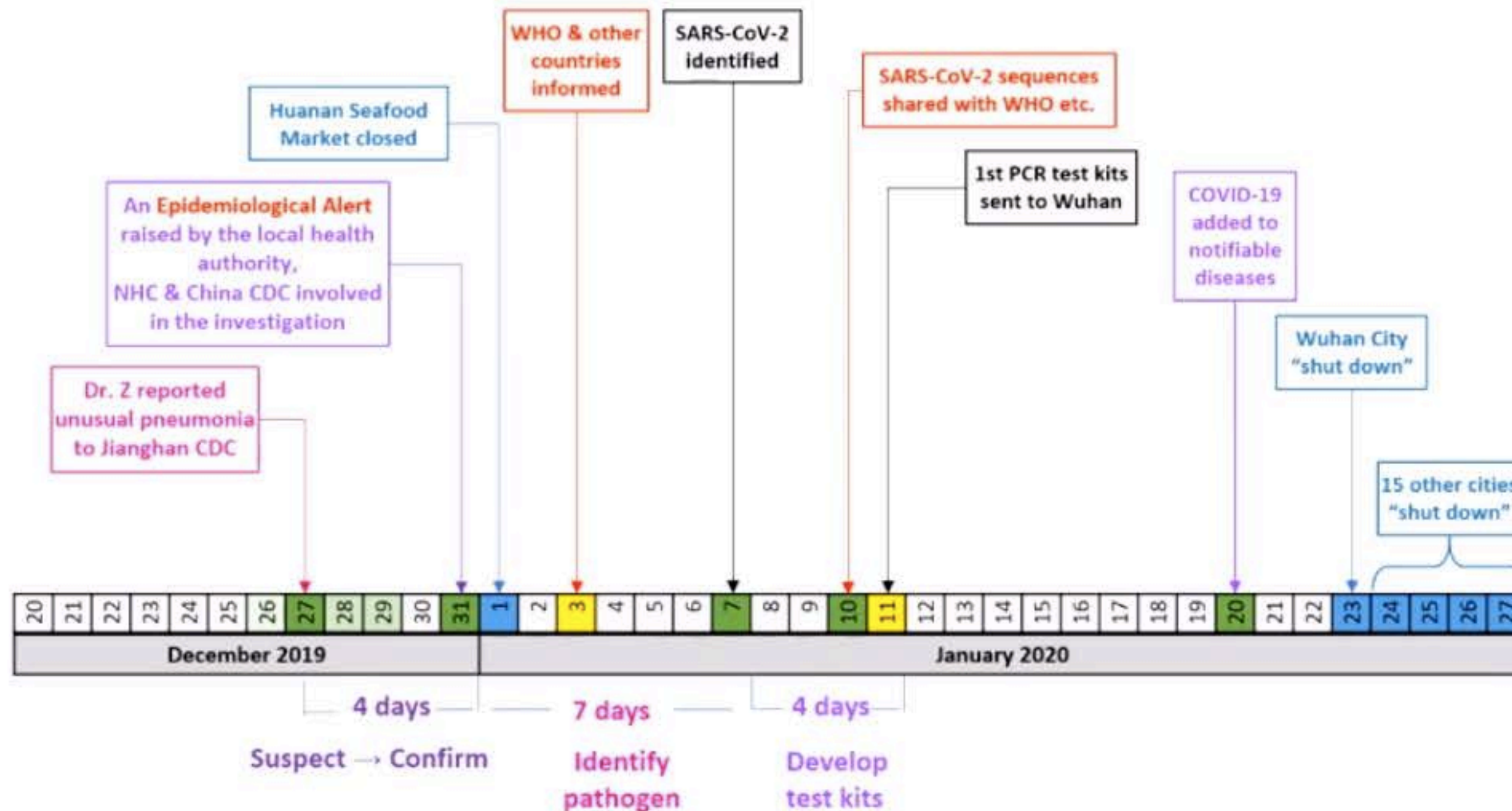
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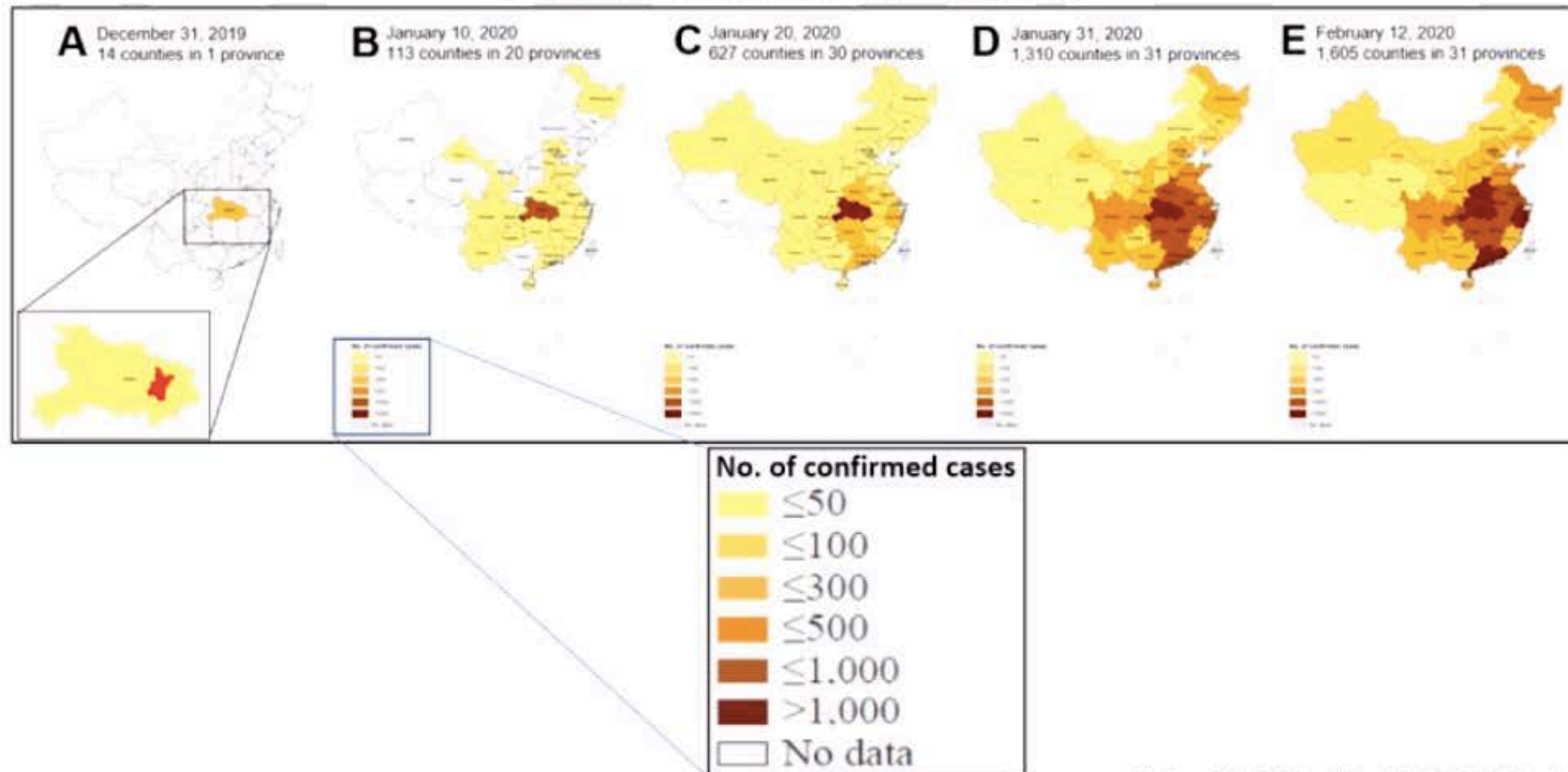
## Early Events





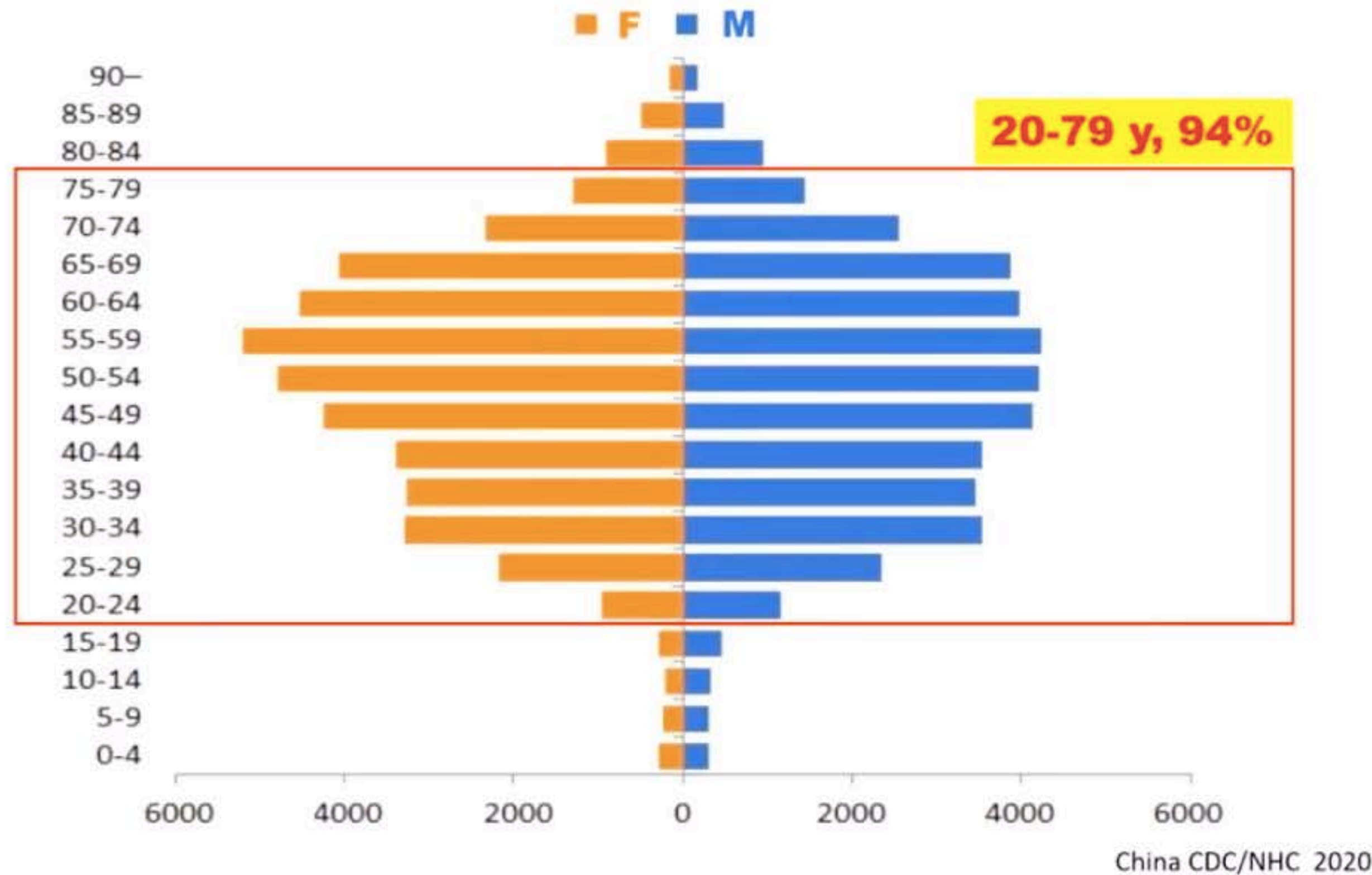
# Geo-temporal spread of COVID-19 in China (Retrospectively)

By symptom onset date and reporting province



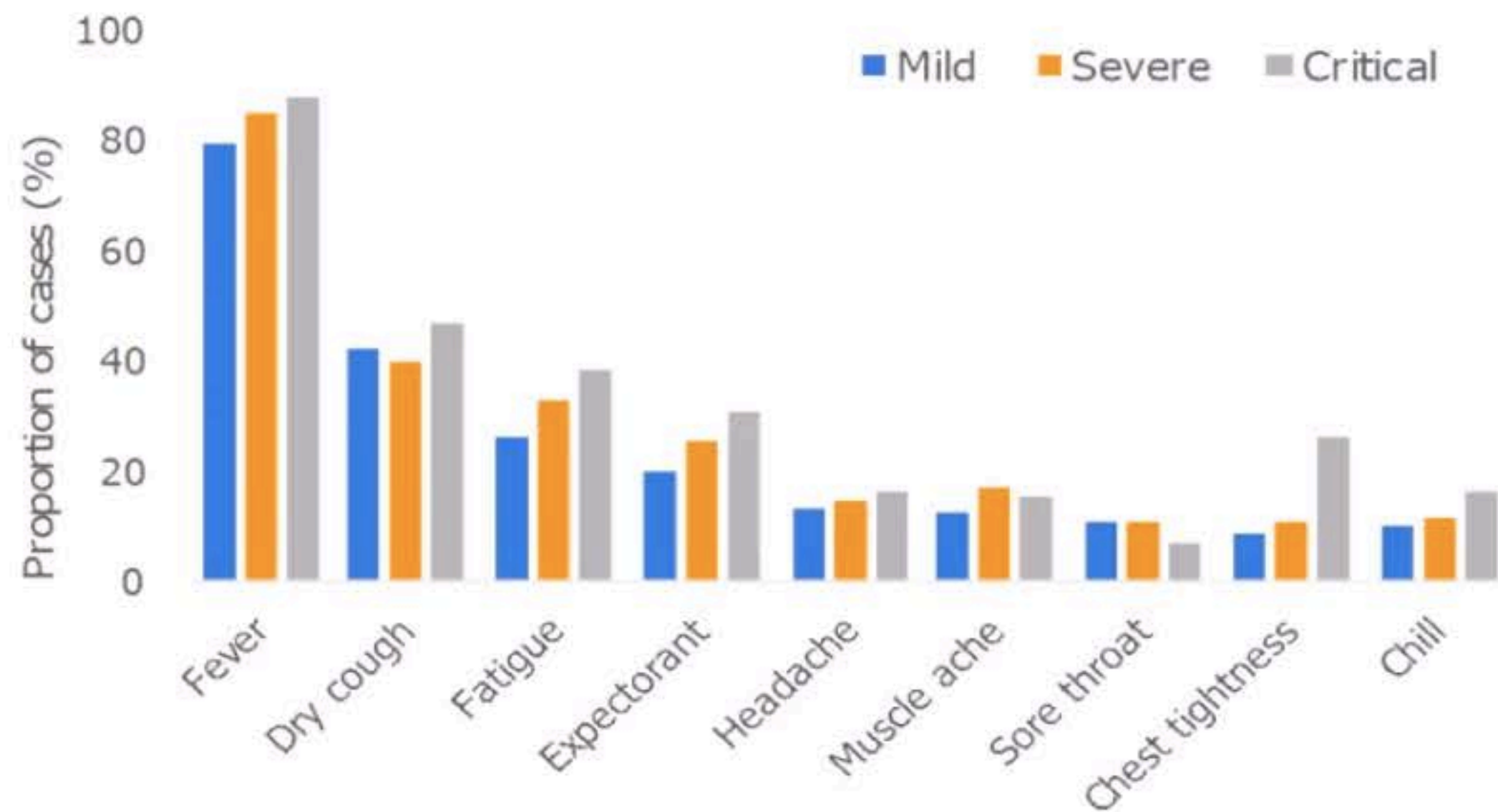
China CDC Weekly 2020; 2:113-122

## COVID-19 cases by Sex and Age





## Common Symptoms of COVID-19 in China

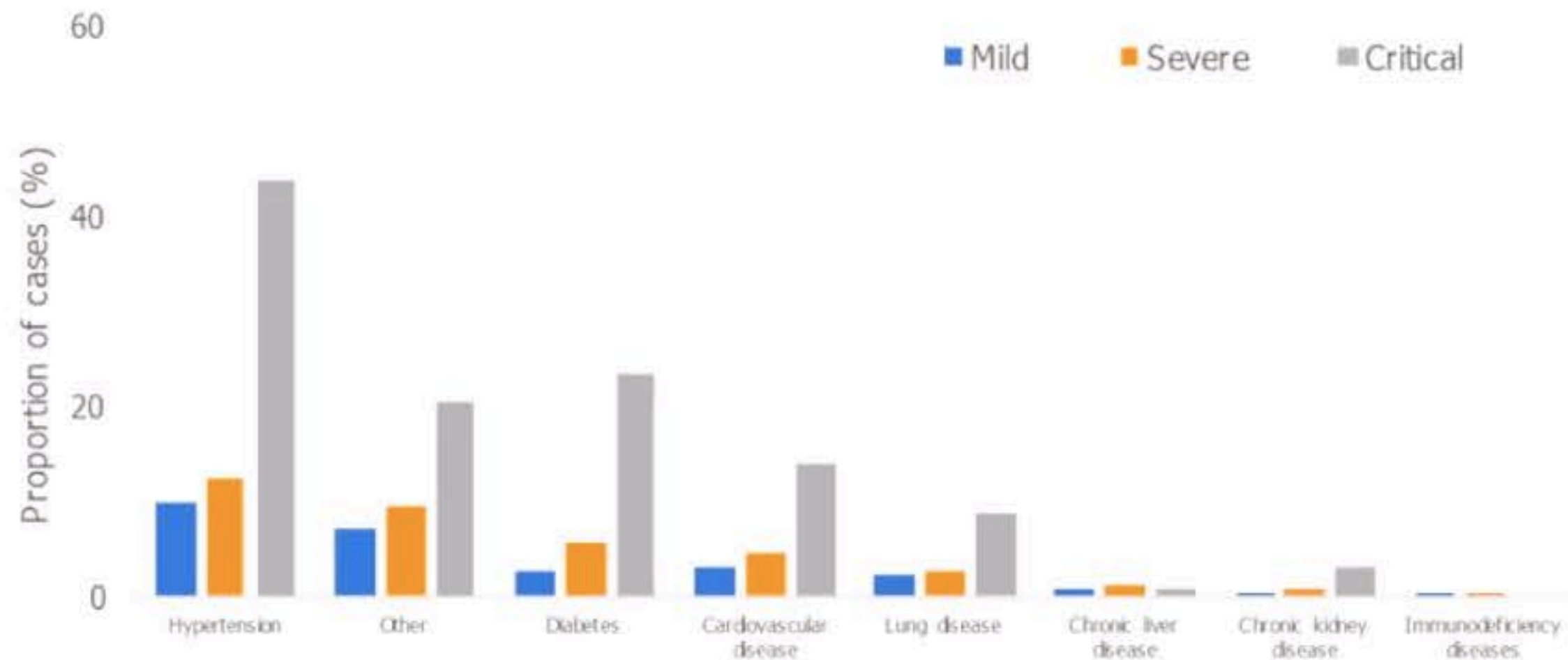


19230 Confirmed cases with detailed epidemiological investigation information

China CDC/NHC 2020



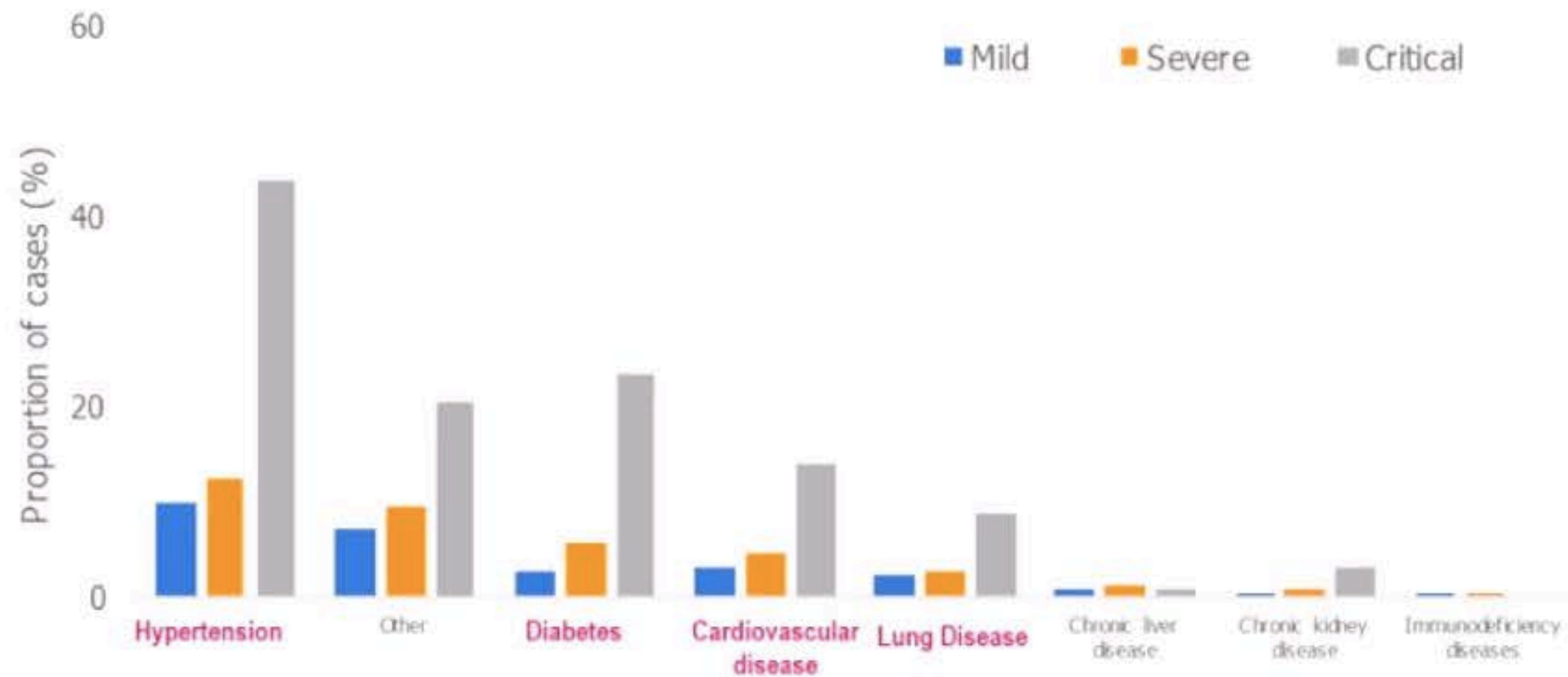
## Underlying Medical Conditions of COVID-19 in China



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## Underlying Medical Conditions of COVID-19 in China



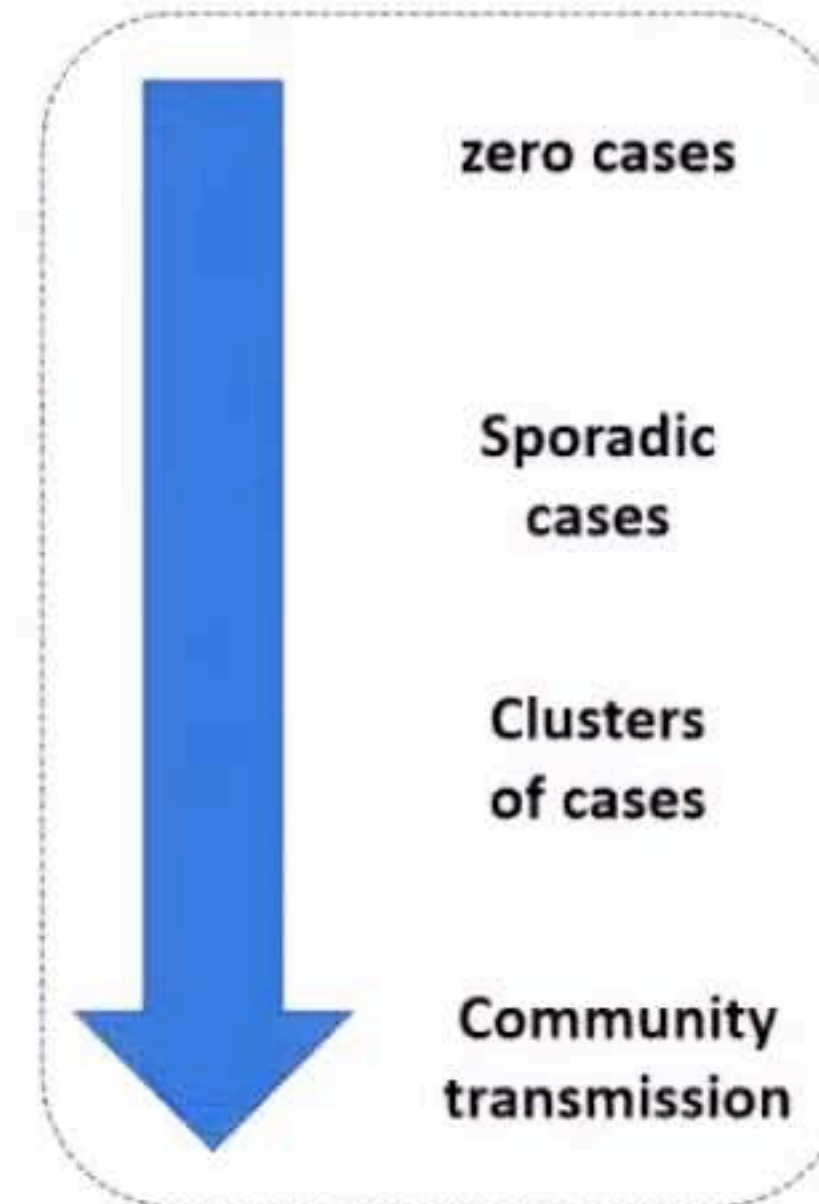
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## China is using fundamental public health measures...

- Universal population measures
- Case isolation & management
- Close contact quarantine
- Suspension of public gatherings
- Movement restrictions



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## Measures in Numbers

### Nationwide:

≈1.4 billion people underwent 10 days of at-home isolation

### Hubei:

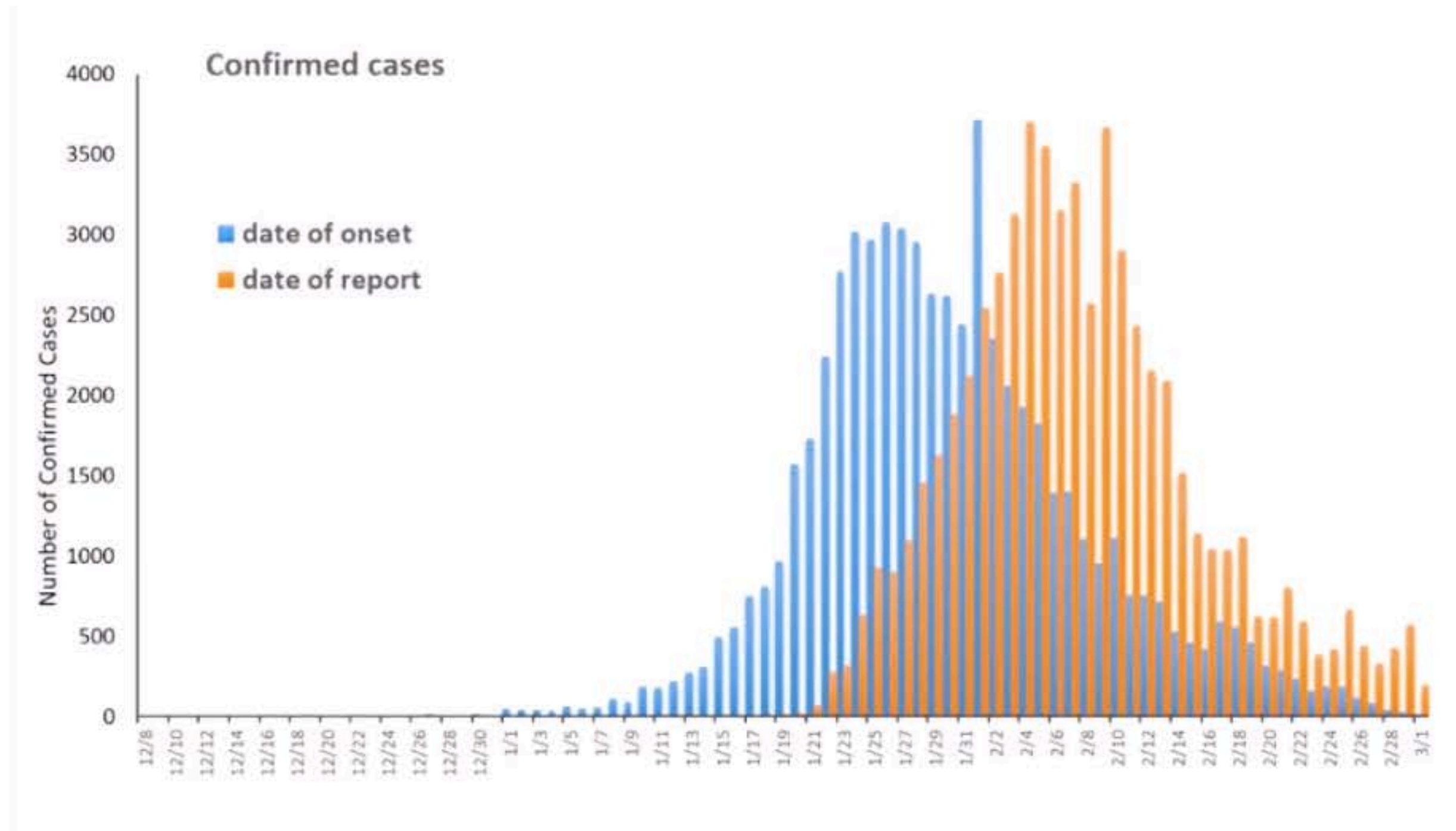
≈59.2 million people were subjected to cordon sanitaire

>50,000 hospital beds were opened for COVID-19 patients  
(including 3 new hospitals + 16 temporary module hospitals)

>40,000 healthcare workers were deployed to Hubei

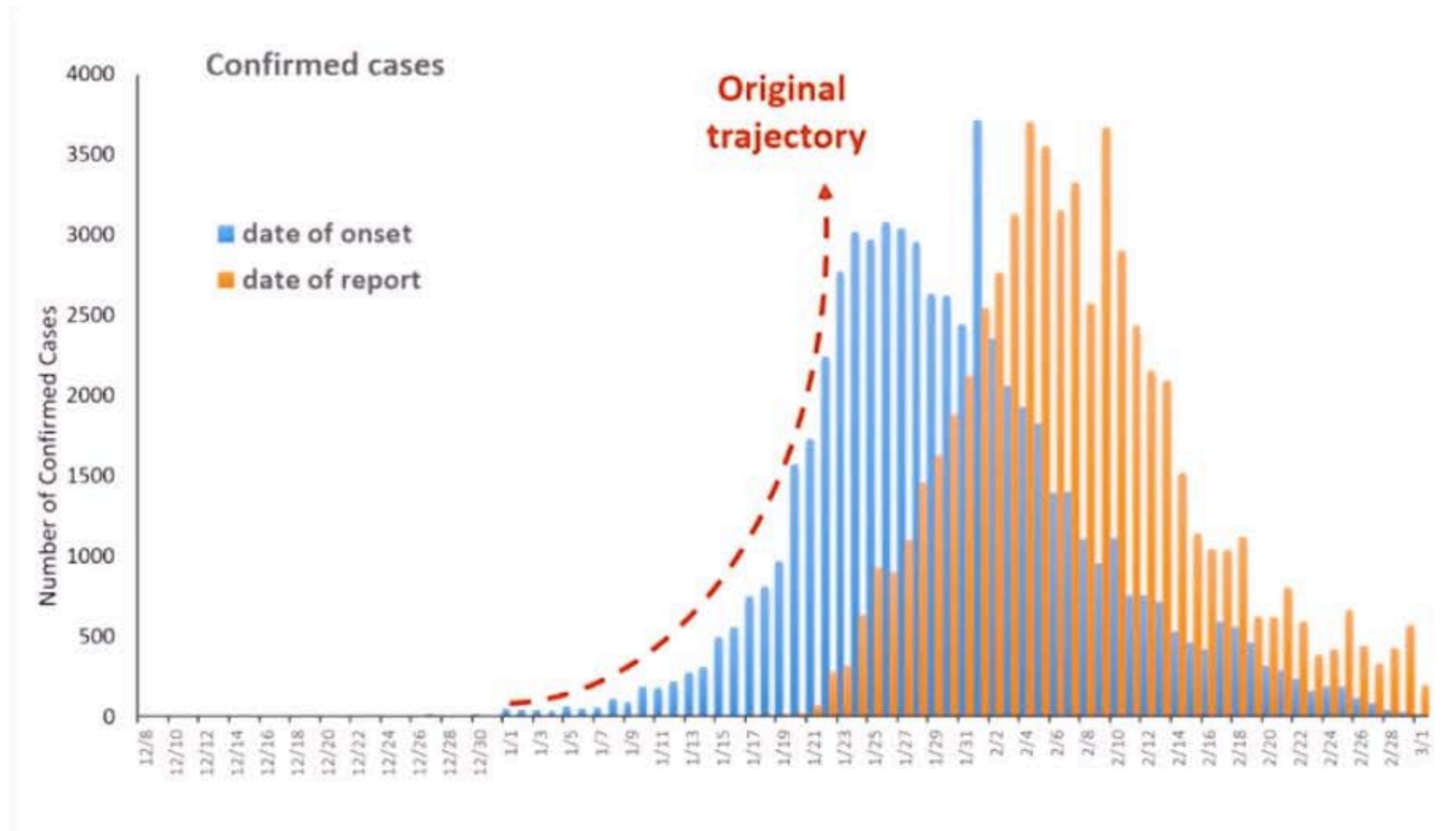


## COVID-19 in China (as of Mar 1, 2020)



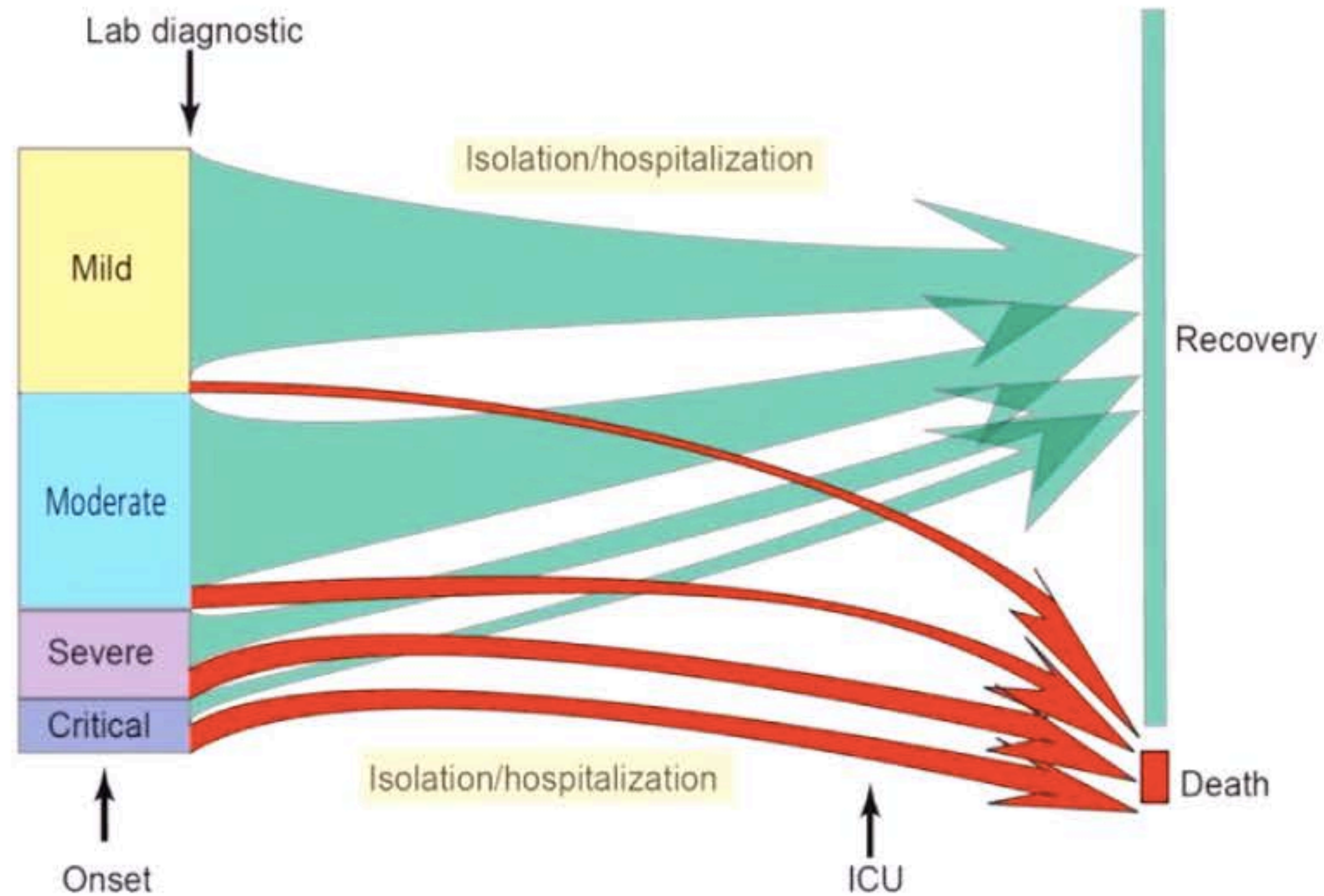
China CDC/NHC 2020

## COVID-19 in China (as of Mar 1, 2020)





## Clinical prognosis and recovery



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## Key epi/technical insights from China (1 of 3)

### *1-Transmission dynamics:*

- Majority of cases arise from **close contacts** of symptomatic cases; 1-5% of 38,000 close contacts developed COVID-19 (in 3 areas)
- Transmission is driven by **family-clusters** (i.e. 75-85% of clusters)
- **2<sup>o</sup> household attack rates** were ~10% early in the outbreak and fell to 3% with faster isolation
- Transmission in **closed settings** is happening but is not a major driver in China (e.g. health facilities, nursing homes, prisons)
- Transmission in **schools** has not been observed – this may simply be because of the closure of schools during most of this outbreak

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## Key epi/technical insights from China (2 of 3)

### *2-Natural history:*

- At **diagnosis**: approx. **80%** are mild/moderate; **15%** severe; **5%** critical
- **Progression**: approx. **10-15%** of mild/moderate cases become severe, and approximately **15-20%** of severe become critical
- **Average times**:
  - from exposure to symptom onset is **5-6** days;
  - from symptom onset to recovery for mild cases is **2 weeks** and for severe cases is **3-6 weeks**;
  - from symptom onset to death is **2-8 weeks**
- Truly **asymptomatic** infection is unknown without serology, but appears to be rare using molecular testing (**<1%**)
  - an estimated **75%** of 'asymptomatic' cases at time of diagnosis soon progress to disease
- **Children** tend to have milder disease than adults

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## Key epi/technical insights from China (3 of 3)

### 3-Virology:

- Virus **shedding** is highest early in the course of disease (vs. SARS shedding, which peaks at least 5 days after onset)
- Virus **shedding** can occur in the 24-48 hours prior to symptom onset
- Virus can be **isolated** from stool but there is no epidemiologic evidence of fecal-oral transmission
- Virus **shedding** usually continues for 7-12 days in mild/moderate cases, and for >2 weeks in severe cases
- Patients who recover can be PCR positive after symptoms resolve

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# Thank You

Anyone with questions is welcome to contact me by email at  
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