

# 2019-nCoV Wuhan



- cluster longontstekingen in Wuhan
- isolatie nieuw coronavirus
- verloop uitbraak in en buiten China
  - case definitie
  - gebied
- essentiële parameter
- vergelijking met MERS

Update Update Update

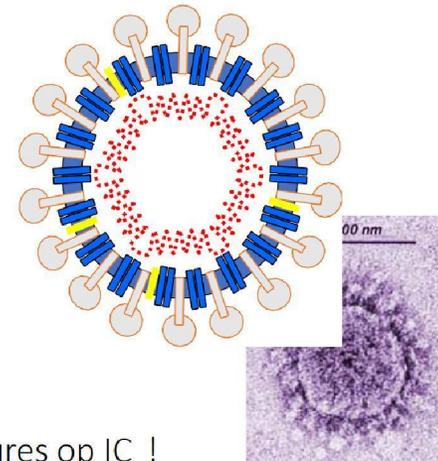
- casus definitie
- percentage
- regeling maatschappij
- besmettelijkheid en overdracht
  - mogelijkheid bestrijden

- organisatie publieke gezondheid
- organisatie crisis structuur
  - responseteam
  - outbreak management team
  - bestuurlijk afstemmingsoverleg
- meldingsplicht

# nCoV Wuhan en COVID-19 | overzicht

- Wat is het:
  - Novel Coronavirus-Infected Pneumonia (COVID-19)
- De symptomen:
  - incubatietijd: 6 dagen (range 2-12 dagen)
  - hoesten en griepachtig ziektebeeld | lagere luchtwegen
  - shocklong ('ARDS') in 5-20% opgenomen patienten
- De oorzaak:
  - nieuw Coronavirus (2019-nCoV)
- Hoe verspreidt het virus:
  - druppel en contact (?fecaliën); aërosol-genererende procedures op IC !
  - onzekerheid over verspreiding vanuit asymptomatische contacten
  - $R_0 \sim 2.68 > 1.60$ ; verdubbelingstijd  $\sim 5-6$  dagen; generatietijd  $\sim 4-5$  dagen
- Preventie en behandeling:
  - handen wassen!
  - hygiënische maatregelen gericht tegen druppel- en contactinfectie
  - handalcohol | ziekenhuis: onderdruk isolatie kamer, oogbescherming

*Backer et al, Eurosurveillance 2020*



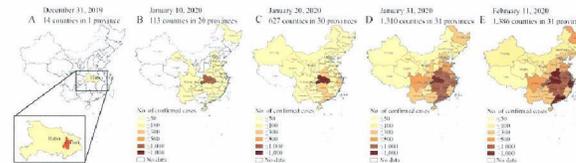
# nCoV – Wuhan december 2019/januari 2020

epidemiologische gegevens over alle patienten tot 11 februari jl.



## The Epidemiological Characteristics of an Outbreak of 2019 Novel Coronavirus Diseases (COVID-19) – China, 2020

The Novel Coronavirus Pneumonia Emergency Response Epidemiology Team

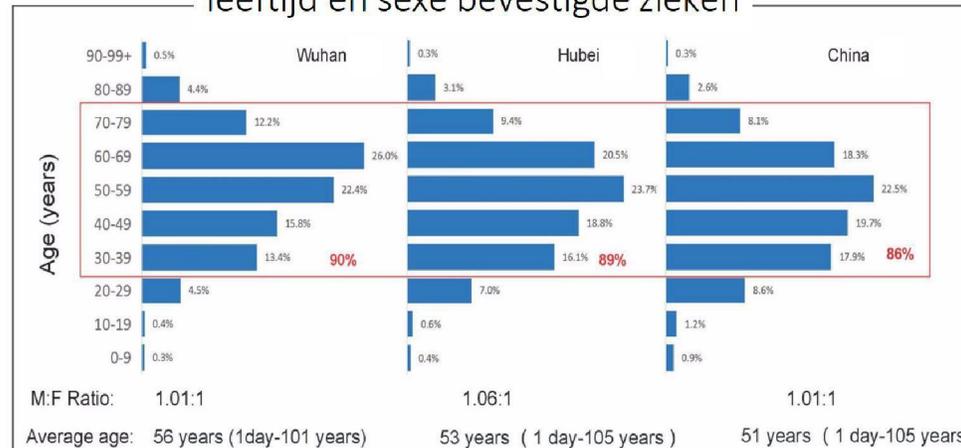


### leeftijd en sexe bevestigde zieken

314. patienten

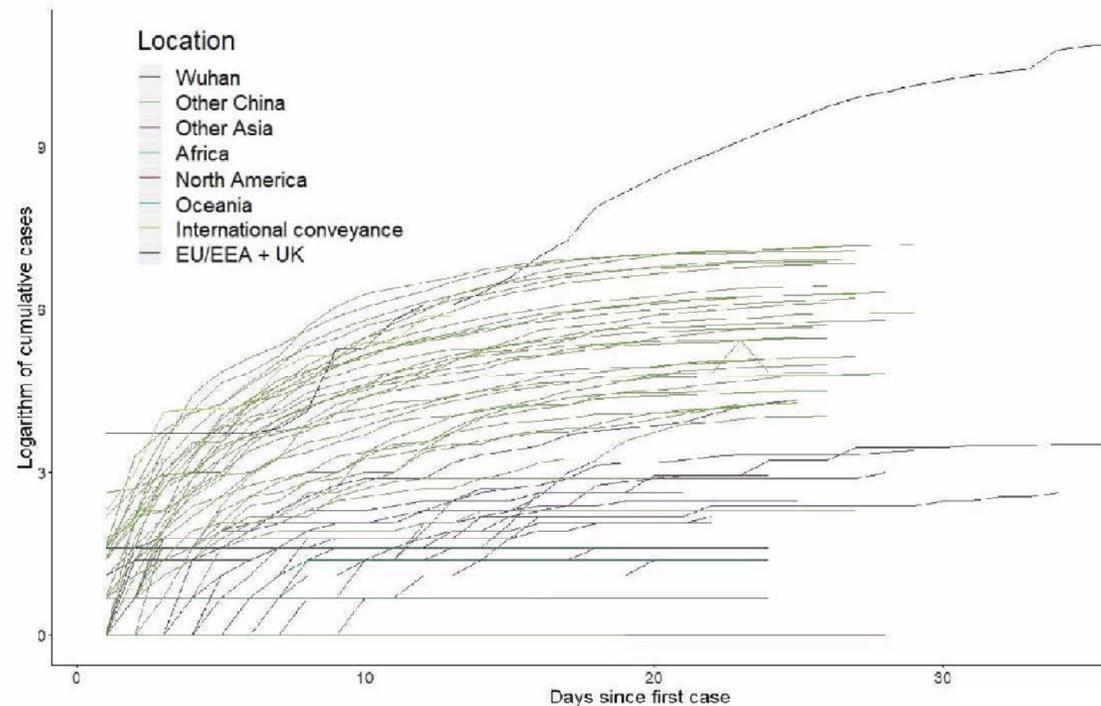
- 44.672 RT-PCR bevestigd
- 16.186 vermoedelijke gevallen
- 10.567 klinisch-vastgesteld
- 889 asymptomatische gevallen

overleden(bevestigd): 1,023 (2.3%)



# nCoV –december 2019/februari 2020

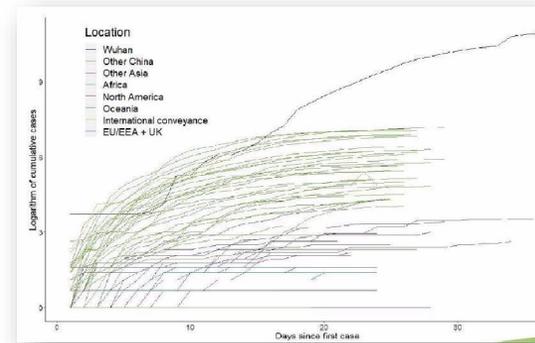
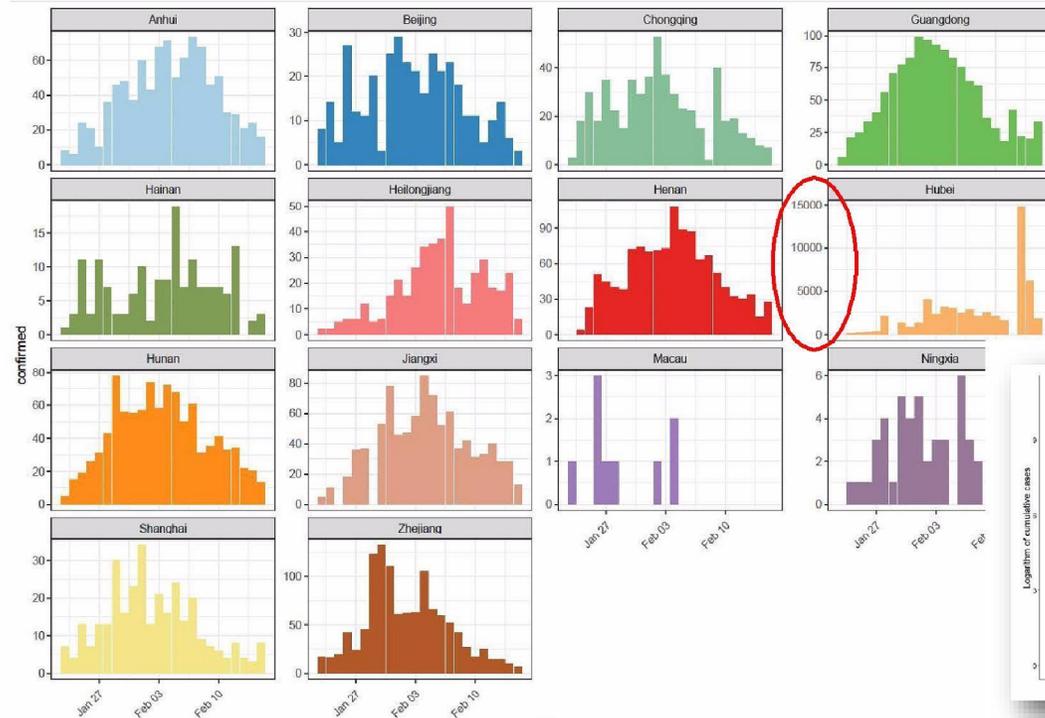
## cluster groei rate (logaritmisch) naar locatie



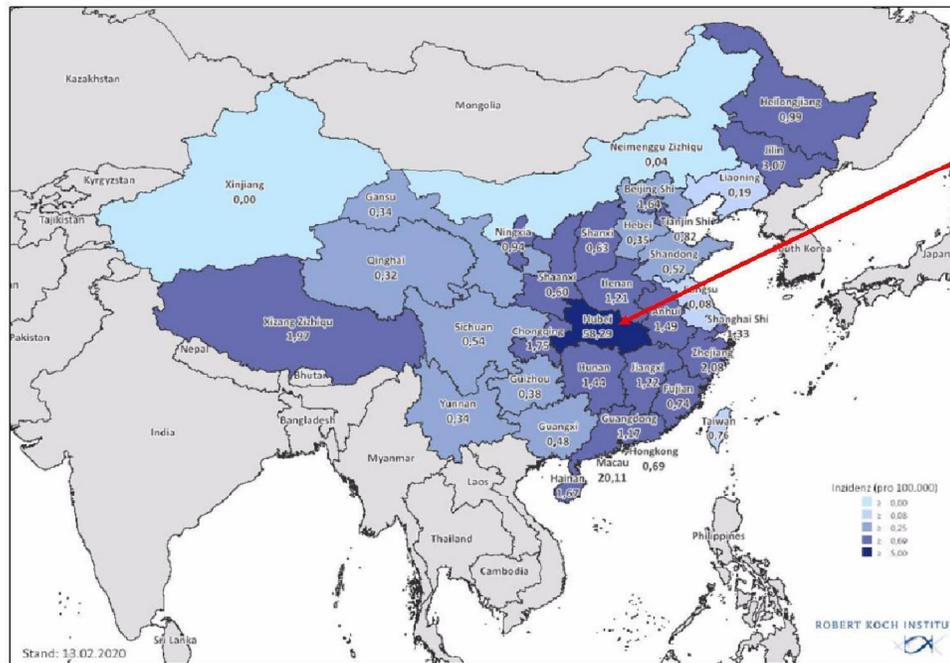
- uitbraak groeisnelheid is langzamer buiten dan binnen China
- herkenning, isolatie geïmporteerde gevallen en contactonderzoek
- naarmate globale prevalentie toeneemt kunnen niet herkende importgevallen de groei snelheid sterk gaan beïnvloeden!

# nCoV – Wuhan december 2019/januari 2020

## cumulatieve incidentie in provincies in China



nCoV – Wuhan december 2019/januari 2020  
 incidentie per 100.000 in provincies in China – NB per 13 febr jl.



incidentie/100.000

Hubei 58.3  
 Macau 20.1  
 Beijing 1.6  
 Hong Kong 0.69  
 Rest China <1.0

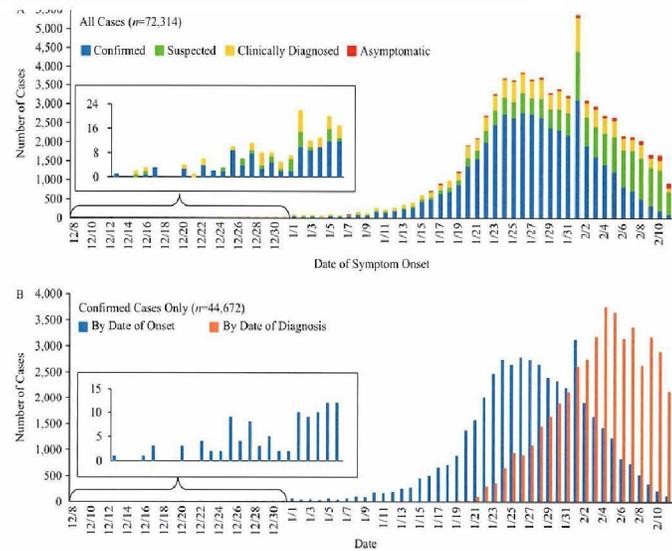
vergelijk Nederland  
 epidemische  
 drempel griep >58

NB. dynamiek,  
 hoe betrouwbaar getallen!

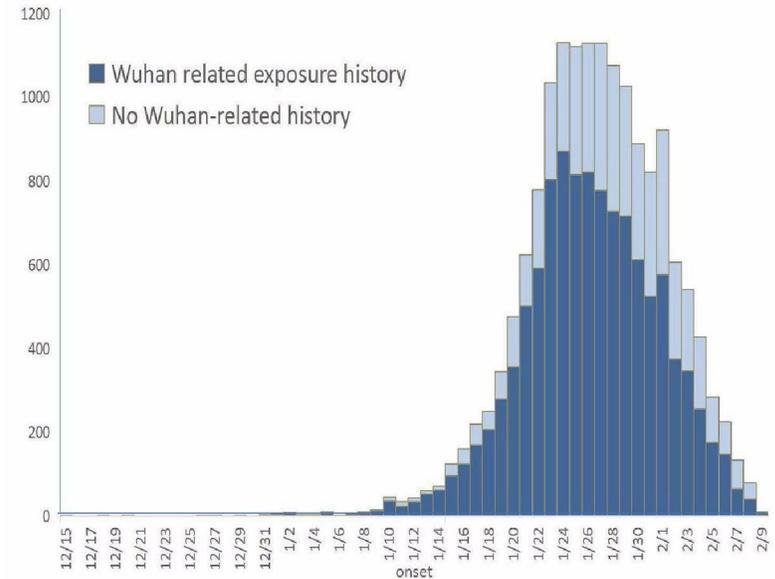
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**The Epidemiological Characteristics of an Outbreak of 2019 Novel Coronavirus Diseases (COVID-19) — China, 2020**  
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## COVID-19 buiten Hubei



# nCoV – Wuhan december 2019/januari 2020

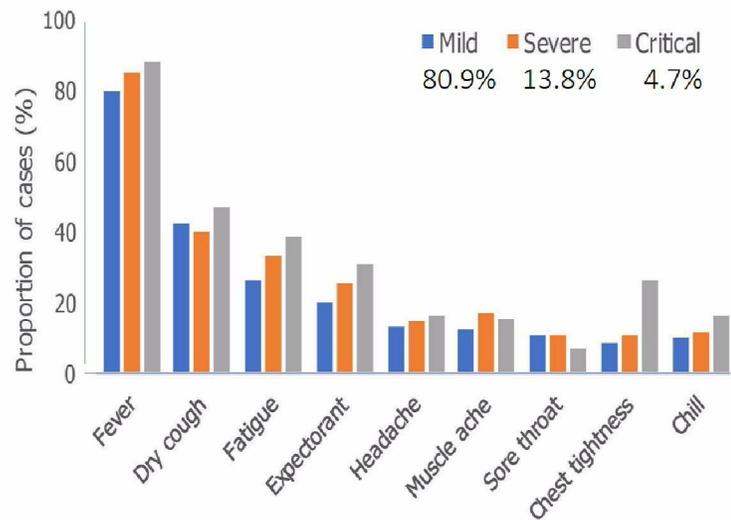
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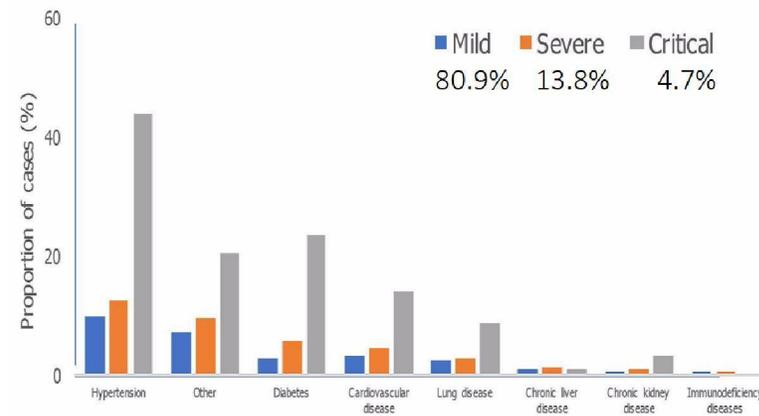
The Epidemiological Characteristics of an Outbreak of 2019 Novel Coronavirus Diseases (COVID-19) — China, 2020

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symptomen 2019-ncov gevallen



Onderliggende Medische condities



# nCoV – Wuhan december 2019/januari 2020

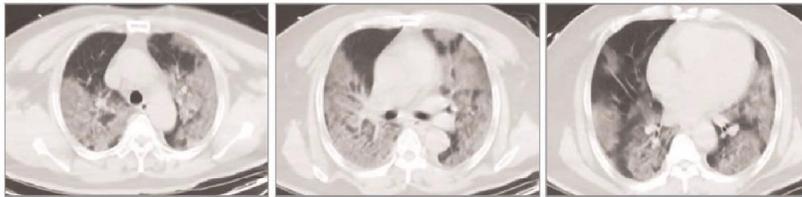
ziekenhuis: 57 van 138 (41.3%) patienten besmetting in ziekenhuis!



**JAMA | Original Investigation | CARING FOR THE CRITICALLY ILL PATIENT**  
**Clinical Characteristics of 138 Hospitalized Patients**  
**With 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China**

Dawei Wang, MD; Bo Hu, MD; Chang Hu, MD; Fangfang Zhu, MD; Xing Liu, MD; Jing Zhang, MD; Binbin Wang, MD; Hu Xiang, MD; Zhensun Cheng, MD; Yong Xiong, MD; Yan Zhao, MD; Yirong Li, MD; Xinghuan Wang, MD; Zhiyong Peng, MD

**A** Computed tomography images on day 5 after symptom onset



**B** Computed tomography images after treatment on day 19 after symptom onset



A. Chest computed tomographic images obtained on January 7, 2020, show ground glass opacity in both lungs on day 5 after symptom onset. B. Images taken on January 21, 2020, show the absorption of bilateral ground glass

opacity after the treatment of extracorporeal membrane oxygenation from January 7 to 12 in the intensive care unit.

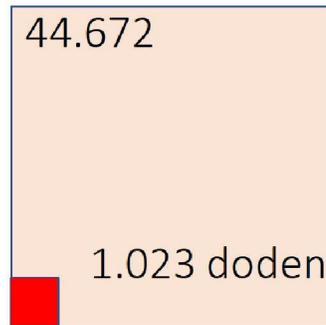
## Presumed Hospital-Related Transmission and Infection

Of the 138 patients, 57 (41.3%) were presumed to have been infected in hospital, including 17 patients (12.3%) who were already hospitalized for other reasons and 40 health care workers (29%). Of the hospitalized patients, 7 patients were from the surgical department, 5 were from internal medicine, and 5 were from the oncology department. Of the infected health care workers, 31 (77.5%) worked on general wards, 7 (17.5%) in the emergency department, and 2 (5%) in the ICU. One patient in the current study presented with abdominal symptoms and was admitted to the surgical department. More than 10 health care workers in this department were presumed to have been infected by this patient. Patient-to-patient transmission also was presumed to have occurred, and at least 4 hospitalized superspreader event infected, and all presented with atypical abdominal symptoms. One of the 4 patients had fever and was diagnosed as having nCoV infection during hospitalization. Then, the patient was isolated. Subsequently, the other 3 patients in the same ward had fever, presented with abdominal symptoms, and were diagnosed as having nCoV infection.

# nCoV – Wuhan coronavirus versus SARS zieken en sterftepercentage

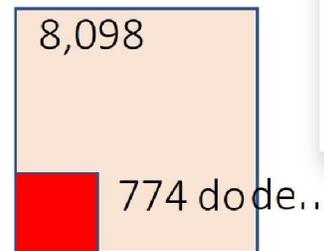


Wuhan coronavirus  
2019-2020

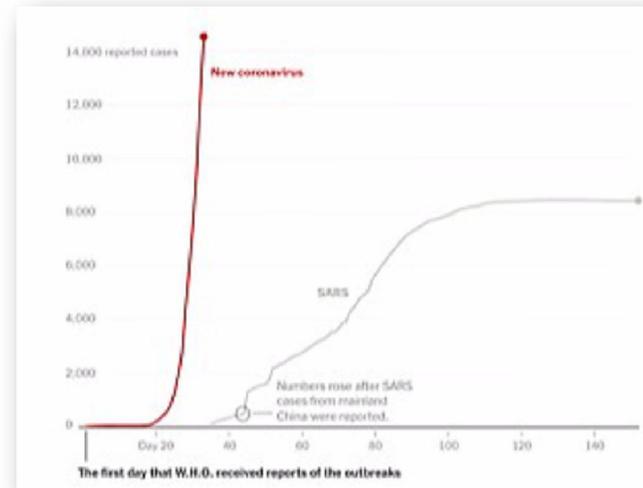


sterfte 2.3%  
opname ziekenhuis ?

SARS  
2002-2003

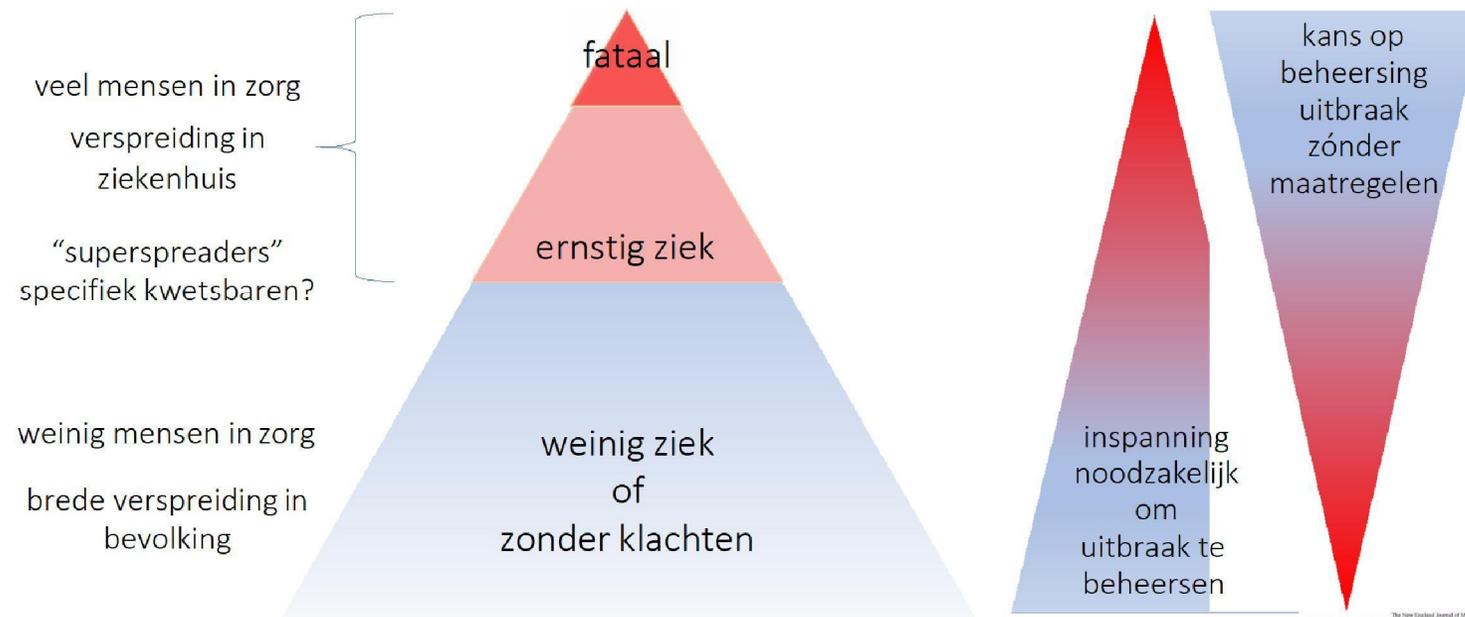


sterfte 9.6%  
opname ziekenhuis 100%



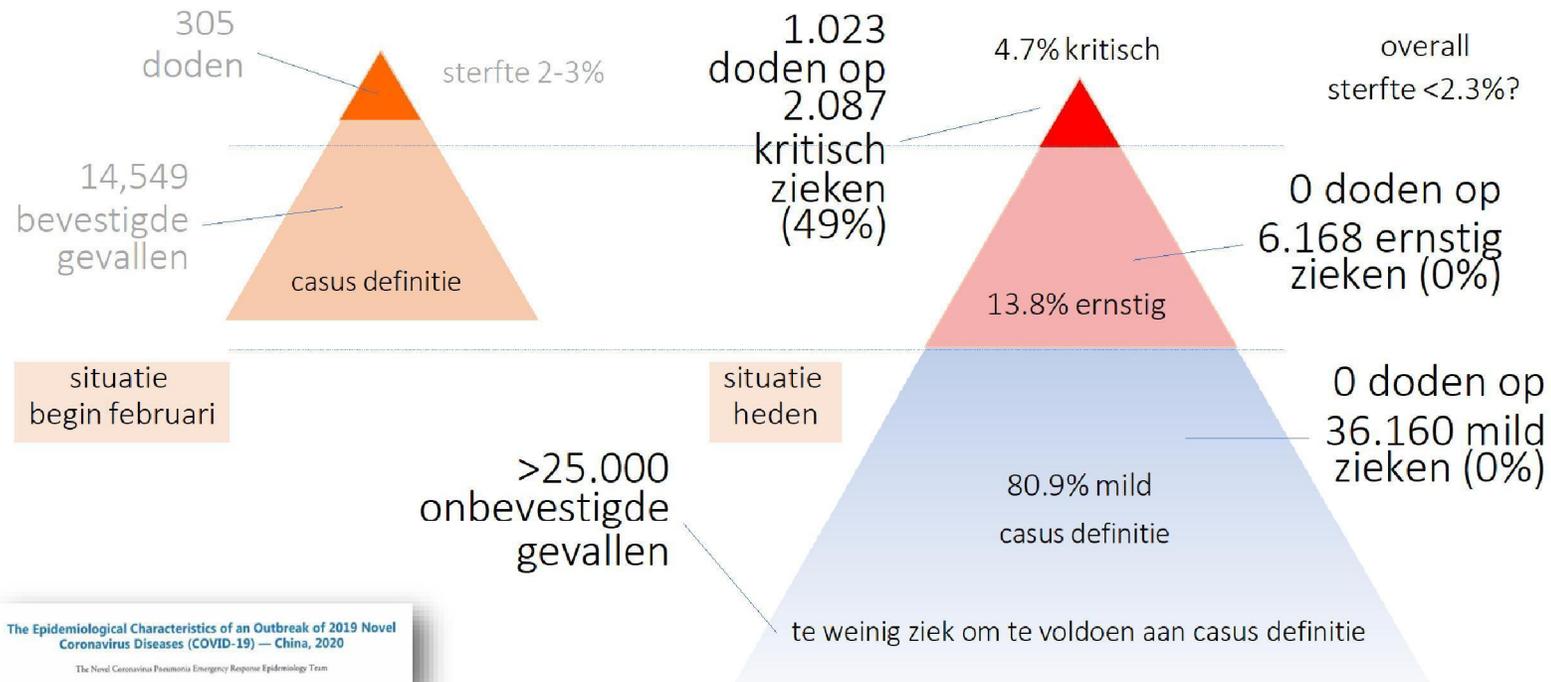
# nCoV – Wuhan coronavirus

onzekerheid nCoV ziektebeeld en mogelijkheid tot bestrijding



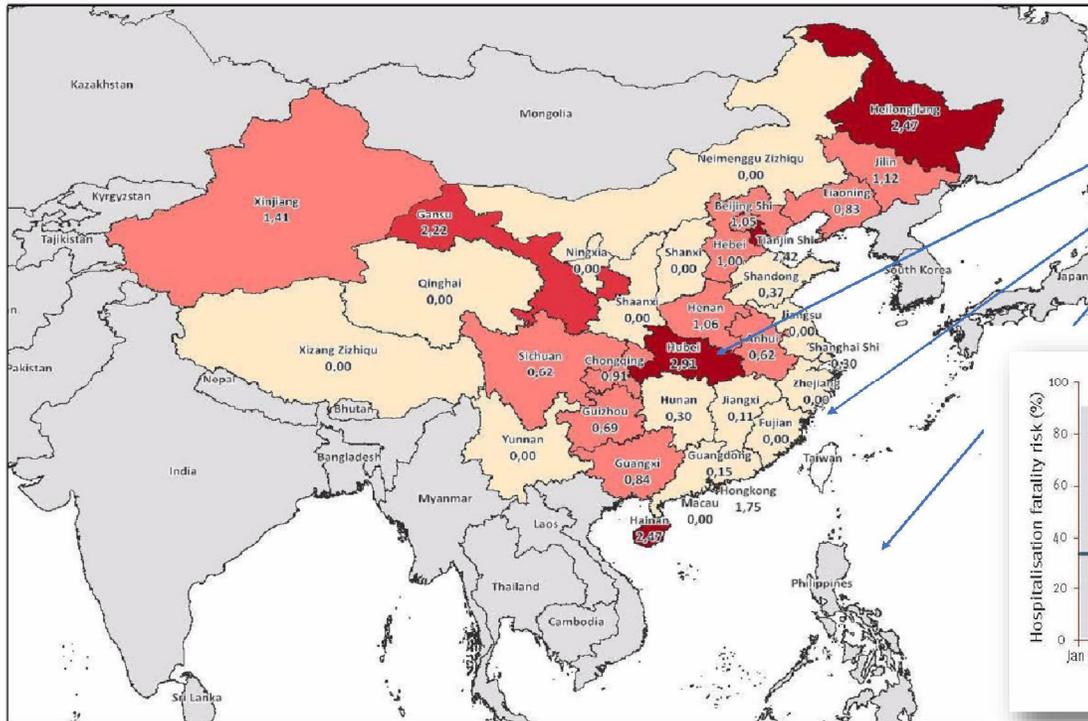
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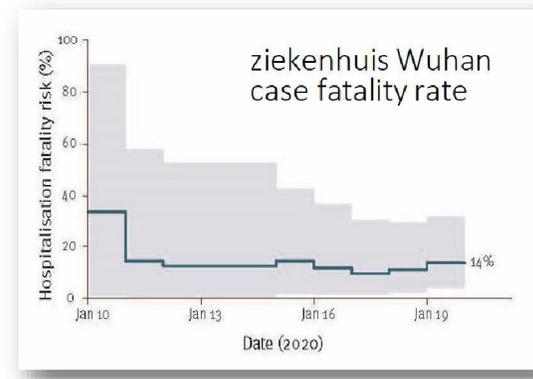


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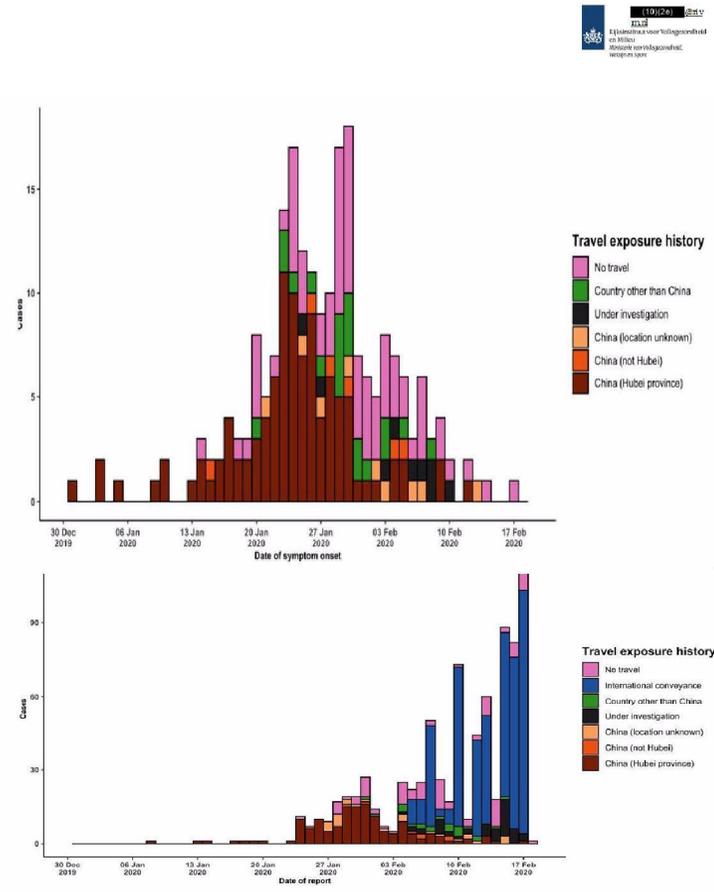
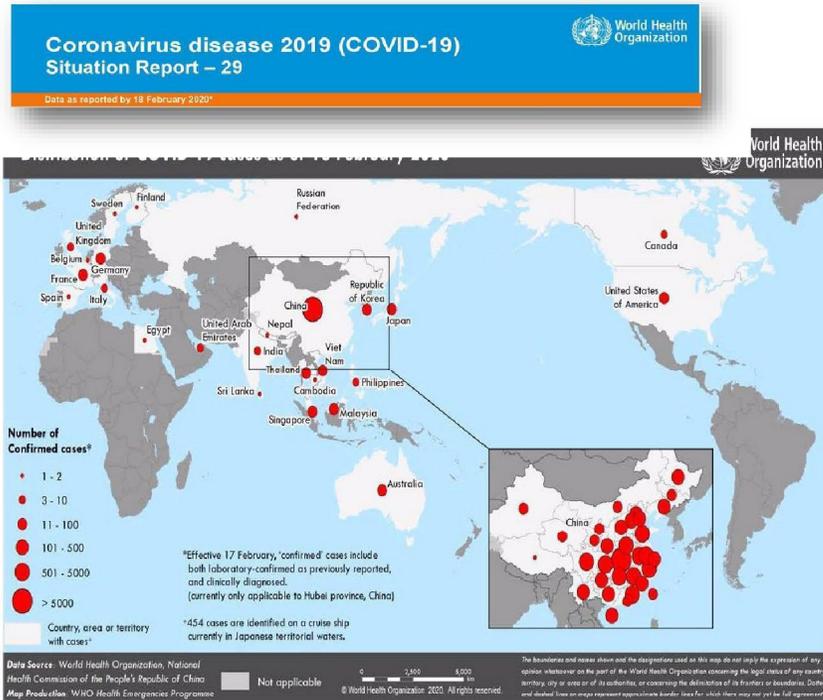
## case fatality rate in Hubei en daarbuiten



Case fatality rate:  
 Hubei 2.91%  
 Rest China 0.71%  
 Buiten China 0.40%



# nCoV – Wuhan coronavirus international

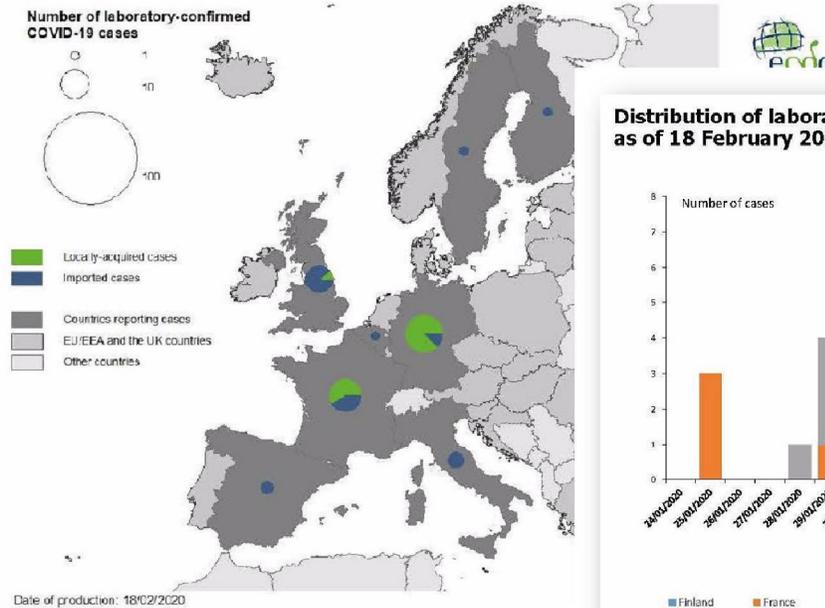


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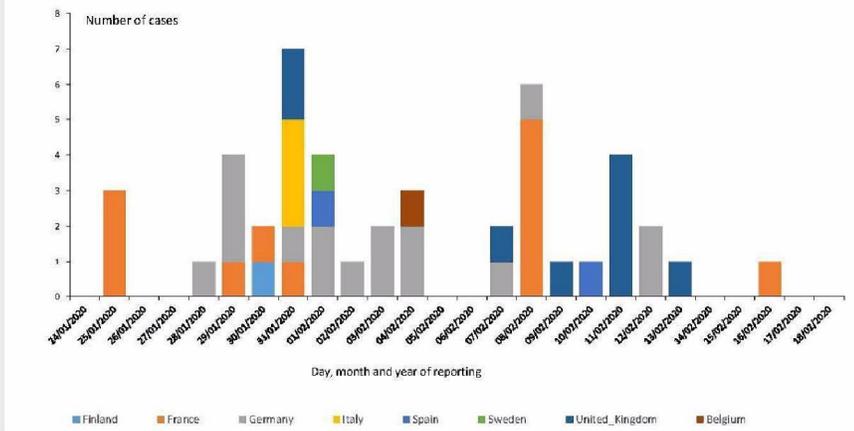
## epidemiologische gegevens Europa en VK



**Geographical distribution of laboratory-confirmed cases of COVID-19 in the EU/EEA and the UK, as of 18 February 2020**



**Distribution of laboratory-confirmed cases of COVID-19 in EU/EEA and the UK, as of 18 February 2020**



# nCoV – Wuhan december 2019/januari 2020

mogelijke interventies – allen weinig effectief in publieke domein!



1. Personal protective measures	2. Social distancing measures	3. Environmental controls	4. Travel-related measures
Hand hygiene	Isolation of ill	Surface cleaning	Travel advice
Respiratory etiquette	Quarantine of exposed	Ventilation	Border closures
Facemasks	School closures		Entry and exit screening
Respirators	Workplace measures		Domestic travel restrictions
Other PPE	Mass gathering measures		

Individual → Population

*Information*

# Wuhan nCoV – wat bepaalt verdere verspreiding?



verspreiding  
via druppel en contact  
1.5-2.0 meter

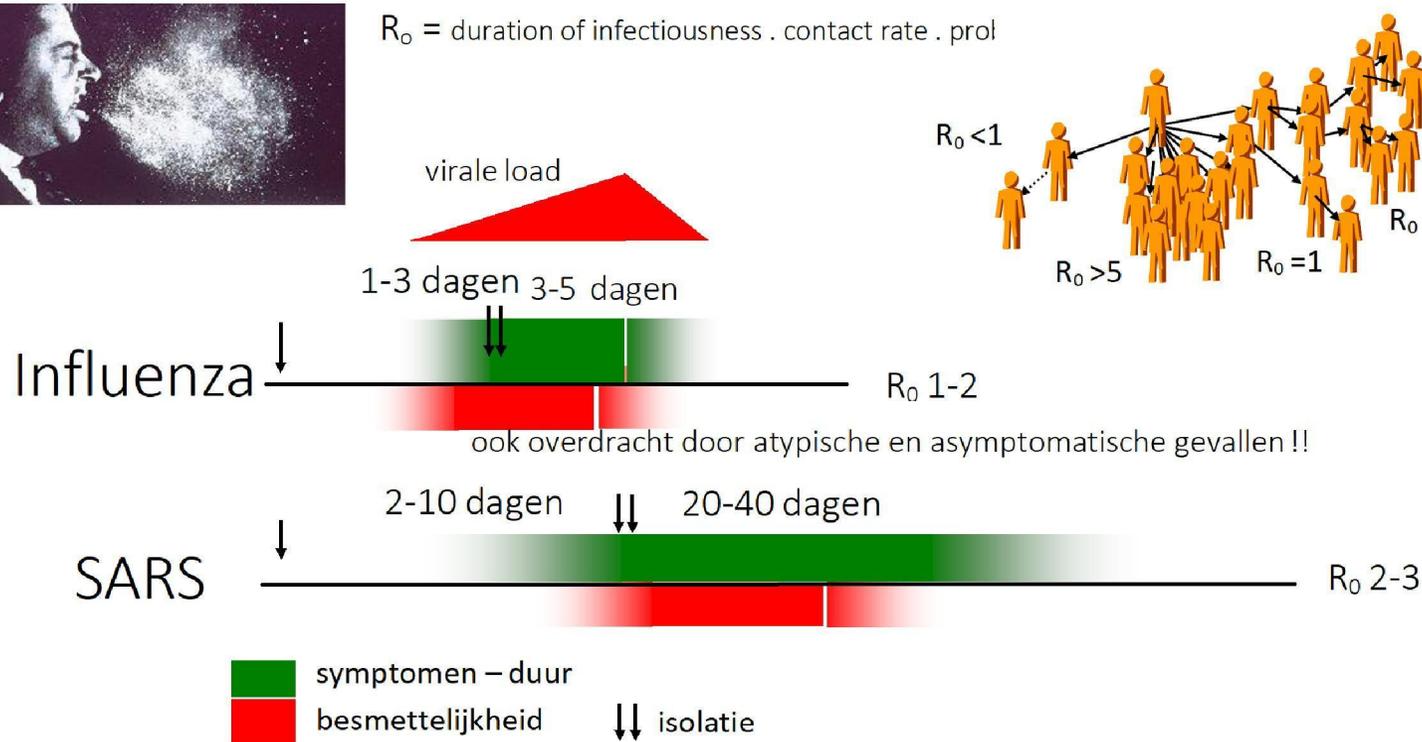
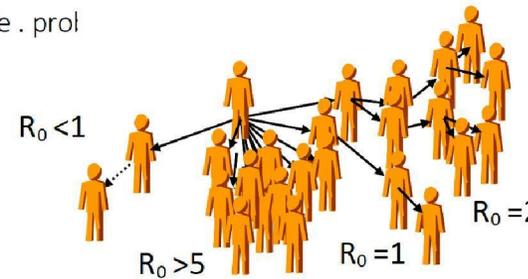
verspreiding  
via aerosol  
10-30 meter



# Infection chain | reproductive number $R_0$

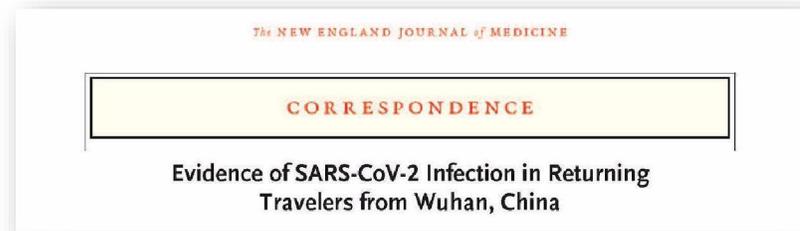


$R_0 = \text{duration of infectiousness} \cdot \text{contact rate} \cdot \text{prol}$



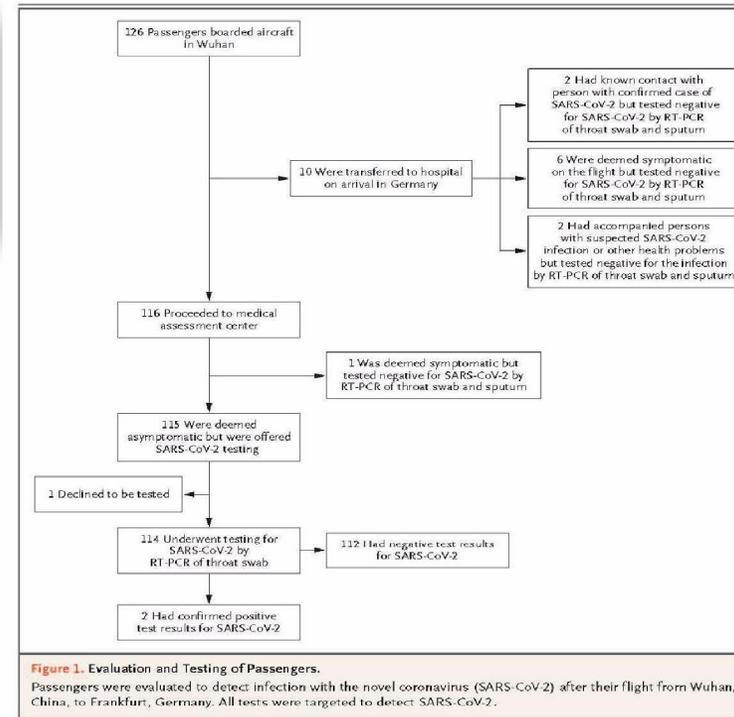
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## verspreiding, entry-screening en neus-keel swabs

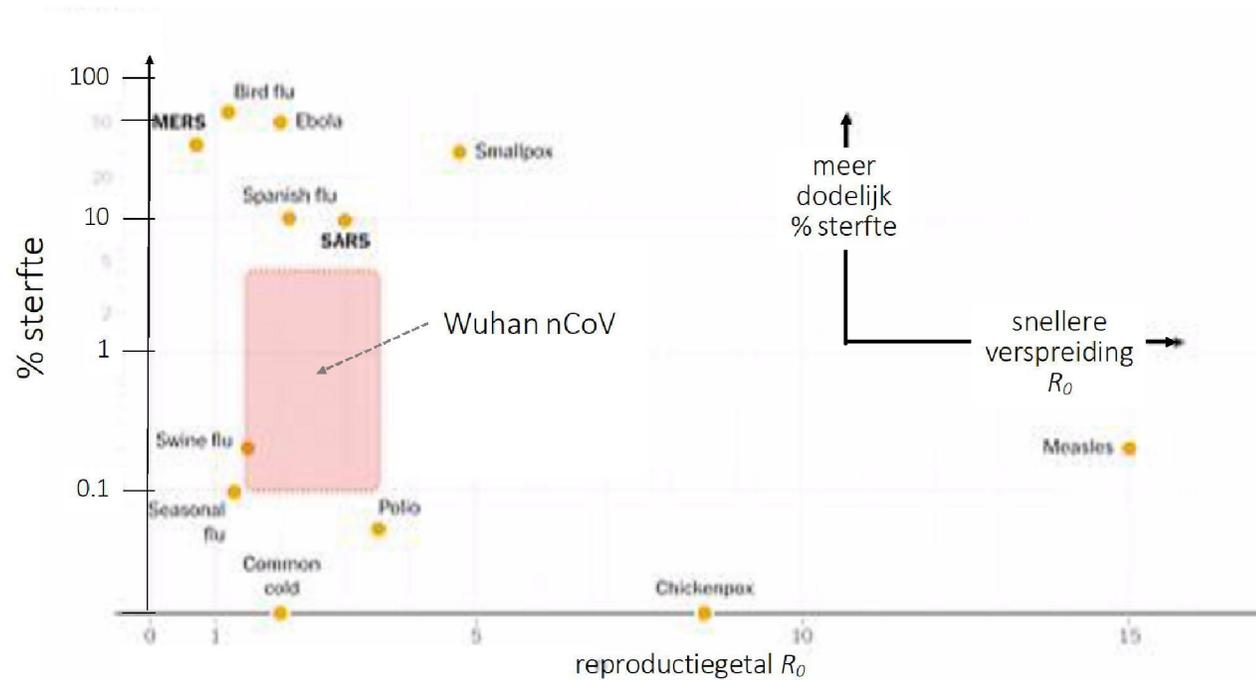


voorspellende waarde van uitslag keelwab?  
interpretatie onzeker – onderzoek gewenst

- (fout-)positieven
  - hoelang positief?
  - wordt iedereen ook ziek – neen!
  - besmettelijkheid?
- (fout-)negatieven
  - neus/keel ≠ diep in long
  - sample error



# Wuhan nCoV – wat bepaalt verdere verspreiding?

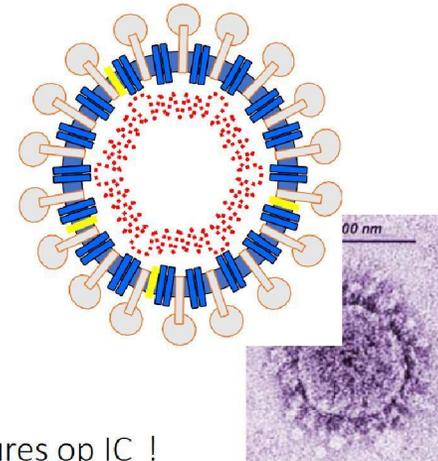


Note! Average case-fatality rates and transmission numbers are shown. Estimates of case-fatality rates can vary, and numbers for the new coronavirus are preliminary estimates.

# nCoV Wuhan en COVID-19 | overzicht

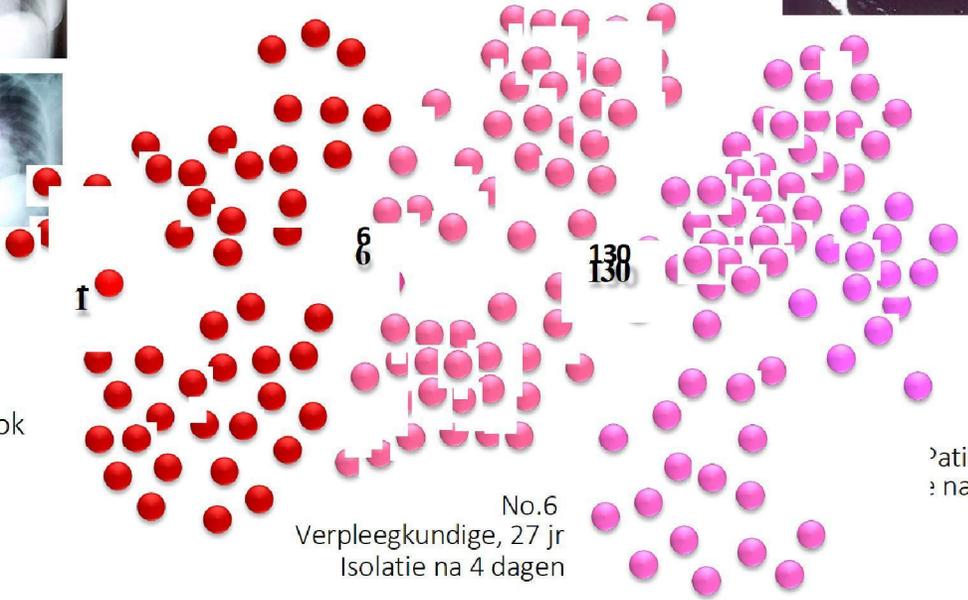
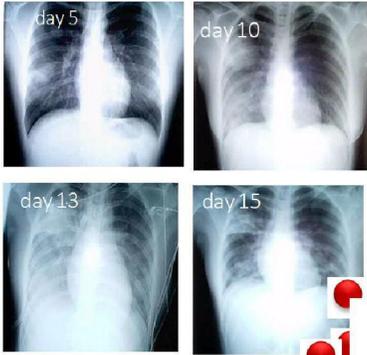
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  - handalcohol | ziekenhuis: onderdruk isolatie kamer, oogbescherming

*Backer et al, Eurosurveillance 2020*





# SARS 'superspreader' Sally hub in scale free network – wat is $R_0$ ?



No.1  
Esther 'SARS' Sally Mok  
Stewardess, 23 jr  
Isolatie na 7 dagen

No.6  
Verpleegkundige, 27 jr  
Isolatie na 4 dagen

No.130  
Patient, 60 jr  
na 8 dagen

MMWR, 2003