The epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19) in China

The Novel Coronavirus Pneumonia Emergency Response Epidemiology Team

Abstract: Objective An outbreak of 2019 novel coronavirus diseases (COVID-19) in Wuhan, China has spread quickly nationwide. Here, we report results of a descriptive, exploratory analysis of all cases diagnosed as of February 11, 2020. Methods All COVID-19 cases reported through February 11, 2020 were extracted from China's Infectious Disease Information System. Analyses included: 1) summary of patient characteristics; 2) examination of age distributions and sex ratios; 3) calculation of case fatality and mortality rates; 4) geo-temporal analysis of viral spread; 5) epidemiological curve construction; and 6) subgroup analysis. Results A total of 72
314 patient records-44 672 (61.8%) confirmed cases, 16 186 (22.4%) suspected cases, 10567 (14.6%) clinical diagnosed cases (Hubei only), and 889 asymptomatic cases (1.2%)-contributed data for the analysis. Among confirmed cases, most were aged 30-79 years (86.6%), diagnosed in Hubei (74.7%), and considered mild/mild pneumonia (80.9%). A total of 1 023 deaths occurred among confirmed cases for an overall case-fatality rate of 2.3%. The COVID-19 spread outward from Hubei sometime after December 2019 and by February 11, 2020, 1 386 counties across all 31 provinces were affected. The epidemic curve of onset of symptoms peaked in January 23-26, then began to decline leading up to February 11. A total of 1 716 health workers have become infected and 5 have died (0.3%).  

**Conclusions** The COVID-19 epidemic has spread very quickly. It only took 30 days to expand from Hubei to the rest of Mainland China. With many people returning from a long holiday, China needs to prepare for the possible rebound of the epidemic.

**Topics: case series, clinical, epi, virology (18/02/2020)**

Year: 2020  
Author: Andersen, Petter I.; Ianevski, Aleksandr; Lysvand, Hilde; Vitkauskiene, Astra; Oksenych, Valentyn; Bjä, rÅ¥s, Magnar; Telling, Kaidi; Lutsar, Irja; Dampis, Uga; Irie, Yasuhiko; Tenson, Tanel; Kantele, Anu; Kainov, Denis E.  
Title: Discovery and development of safe-in-man broad-spectrum antiviral agents  
Journal: International Journal of Infectious Diseases  
DOI: https://doi.org/10.1016/j.ijid.2020.02.018  
Abstract: Viral diseases are one of the leading causes of morbidity and mortality in the world. Virus-specific vaccines and antiviral drugs are the most powerful tools to combat viral diseases. However, broad-spectrum antiviral agents (BSAAs, i.e. compounds targeting viruses belonging to two or more viral families) could provide additional protection of general population from emerging and re-emerging viral diseases reinforcing the arsenal of available antiviral options. Here, we
reviewed discovery and development of BSAAs and summarized the information on 119 safe-in-man agents in freely accessible database (https://drugvirus.info/). Future and ongoing pre-clinical and clinical studies will increase the number of BSAAs, expand spectrum of their indications, and identify drug combinations for treatment of emerging and re-emerging viral infections as well as co-infections.

URL: https://doi.org/10.1016/j.ijid.2020.02.018
Categories: Clinical care and treatment; Narrative review

Year: 2020
Author: Bai, S. L.; Wang, J. Y.; Zhou, Y. Q.; Yu, D. S.; Gao, X. M.; Li, L. L.; Yang, F.
Title: Analysis of the first cluster of cases in a family of novel coronavirus pneumonia in Gansu Province
Journal: Zhonghua Yu Fang Yi Xue Za Zhi
DOI: 10.3760/cma.j.issn.0253-9624.2020.0005
Abstract: The epidemiological history and clinical characteristics of 7 cases of COVID-19 and 1 case of close contact in the first family aggregation epidemic of COVID-19 in Gansu Province were analyzed. The first patient A developed on January 22, 2020, with a history of residence in Wuhan, and confirmed severe cases of NCP on January 24, 2020; patient B, on January 23, 2020, diagnosed on January 31, severe cases; patient C, asymptomatic, diagnosed on January 27; patient D, asymptomatic, diagnosed on January 27; patient E, on January 24, diagnosed on January 28; patient F, asymptomatic, diagnosed on January 31; Patient G was asymptomatic and was diagnosed on January 31. In close contact, H was asymptomatic, PCR test was negative and asymptomatic, and he was discharged early. Among the 7 patients, 1 case died of (B) aggravation, and the other patients' condition was effectively controlled after active treatment. Except for the discharged cases, 5 cases were positive for COVID-19 specific IgM antibody and 1 case was negative. In this clustering outbreak, 4 patients remained asymptomatic, but PCR and IgM antibodies were positive, indicating that asymptomatic patients may be the key point to control the epidemic. Specific IgM antibody screening for patients whose pharyngeal swab nucleic acid test is negative but with ground glass-like lung lesions is very important for early detection and early isolation.

URL: https://doi.org/10.3760/cma.j.issn.0253-9624.2020.0005
Categories: Case study/case series; Epidemiology

Year: 2020
Author: Burki, Talha
Title: Outbreak of coronavirus disease 2019
Journal: The Lancet Infectious Diseases
DOI: 10.1016/S1473-3099(20)30076-1
Abstract: URL: https://doi.org/10.1016/S1473-3099(20)30076-1
Categories: Narrative review; Opinion piece
Early containment strategies and core measures for prevention and control of novel coronavirus pneumonia in China

In December 2019, novel coronavirus pneumonia epidemic occurred in Wuhan, Hubei Province, and spread rapidly across the country. In the early stages of the epidemic, China adopted the containment strategy and implemented a series of core measures around this strategic point, including social mobilization, strengthening case isolation and close contacts tracking management, blocking epidemic areas and traffic control to reduce personnel movements and increase social distance, environmental measures and personal protection, with a view to controlling the epidemic as soon as possible in limited areas such as Wuhan. This article summarizes the background, key points and core measures in the country and provinces. It sent prospects for future prevention and control strategies.

Structure analysis of the receptor binding of 2019-nCoV

2019-nCoV is a newly identified coronavirus with high similarity to SARS-CoV. We performed a structural analysis of the receptor binding domain (RBD) of spike glycoprotein responsible for entry of coronaviruses into host cells. The RBDs from the two viruses share 72% identity in amino acid sequences, and molecular simulation reveals highly similar ternary structures. However, 2019-nCoV has a distinct loop with flexible glycyl residues replacing rigid prolyl residues in SARS-CoV. Molecular modeling revealed that 2019-nCoV RBD has a stronger interaction with angiotensin converting enzyme 2 (ACE2). A unique phenylalanine F486 in the flexible loop likely plays a major role because its penetration into a deep hydrophobic pocket in ACE2. ACE2 is widely expressed with conserved primary structures throughout the animal kingdom from fish, amphibians, reptiles, birds, to mammals. Structural analysis suggests that ACE2 from these animals can potentially bind RBD of 2019-nCoV, making them all possible natural hosts for the virus. 2019-nCoV is thought to be transmitted through respiratory droplets. However, since ACE2 is predominantly expressed in intestines, testis, and kidney, fecal-oral and other routes of transmission are also possible. Finally, antibodies and small molecular inhibitors that can block the interaction of ACE2 with RBD should be developed to combat the virus.
The network investigation on knowledge, attitude and practice about Novel coronavirus pneumonia of the residents in Anhui Province

Abstract: Objective: To analyze the current situation of the knowledge, attitudes and practice about Novel coronavirus pneumonia (NCP) of the residents in Anhui Province. Methods: Anonymous network sampling survey was carried out with an electronic questionnaire that designed by the questionnaire star, and a total of 4016 subjects from Anhui province were investigated. The content of the survey includes that the basic information of subjects, the residents' knowledge, attitudes and practice about NCP, as well as their satisfaction with the prevention and control measures adopted by the government and health authorities and the suggestions on future prevention. The questionnaire doesn't involve any privacy information, and all questions were mandatory to ensure the response rate. Results: The M (P(25), P(75)) age the 4016 subjects was 21 (19, 24), and the ranging from 7 to 80 years old. The number of males was 1431 (35.6%). Social networking tools such as WeChat and QQ were the main sources of epidemic information for residents (97.8%, 3 929 respondents). Residents have a high awareness rate of the main symptoms, transmission routes, using of masks, hand washing and treatment information of NCP, while a low awareness rate of the atypical symptoms. 92.6% of the subjects (n=3 720) think that the outbreak was scary. In terms of psychological behavior scores, the results showed that female (9.38±4.81), the urban (9.37±5.02) and the medical workers (10.79±5.19) had a poorer mental health than the male (8.45±5.00), the rural (8.71±4.75) and the non-medical workers (the students: 8.85±4.83; public institute workers: 9.02±5.08; others: 8.97±5.39) (P < 0.05). 71.9% of the residents (n=2 887) were satisfied with the local epidemic control measures. The residents took various of the measures to prevent and control the epidemic. The ratio of residents that could achieve "no gathering and less going out", "wear masks when going out" and "do not go to crowded and closed places" was up to 97.4% (n=3 913), 93.6% (n=3758) and 91.5% (n=3 673) respectively. Conclusion: The residents in Anhui province have a good KAP about NCP, yet it is necessary to strengthen the community publicity, the mental health maintenance of residents and students' health education.

What are we doing in the dermatology outpatient department amidst the raging of 2019-nCoV?

Abstract: "No gathering and less going out", "wear masks when going out" and "do not go to crowded and closed places" was up to 97.4% (n=3 913), 93.6% (n=3758) and 91.5% (n=3 673) respectively. Conclusion: The residents in Anhui province have a good KAP about NCP, yet it is necessary to strengthen the community publicity, the mental health maintenance of residents and students' health education.
**Abstract:** Officials want to know but predictions vary wildly, from now to after hundreds of millions of people are infected.

**URL:** https://doi.org/10.1038/d41586-020-00361-5

**Categories:** Epidemiology; Opinion piece
Over the past few decades, disease outbreaks have become increasingly frequent and widespread. The epicenters of these outbreaks have differed, and could be linked to different economic contexts. Arguably, the responses to these outbreaks have been “political” and inherently burdensome to marginalized populations. Key lessons can be learned from exploring the narratives about the different epidemics in varying income settings. Based on a review of the published medical, social, and political literature, which was accessed using four electronic databases—PubMed, Sociological Abstracts, Scholars Portal, and Web of Science, the overall objective of this paper discuss scholars’ narratives on the “politics” of Ebola in a low-income setting, Zika virus in a middle-income setting, and SARS in a high-income setting. Various themes of the politics of epidemics were prominent in the literature. The narratives demonstrated the influence of power in whose narratives and what narratives are presented in the literature. While marginalized populations were reported to have borne the brunt of all disease outbreaks in the different contexts, the prevalence of their narratives within the reviewed literature was limited. Regardless of income setting, there is a need to give voice to the most marginalized communities during an epidemic. The experiences and narratives of those most vulnerable to an epidemic—specifically poor communities—need to be represented in the literature. This could contribute to mitigating some of the negative impact of the politics in epidemics.
with pneumonia caused by the SARS-CoV-2 (novel coronavirus pneumonia or Wuhan pneumonia), fever was the most common symptom, followed by cough. Bilateral lung involvement with ground glass opacity was the most common finding from computerized tomography images of the chest. Although the one case of SARS-CoV-2 pneumonia in the United States responding well to remdesivir, which is now undergoing a clinical trial in China. Currently, controlling infection to prevent the spread of the SARS-CoV-2 is the primary intervention being used. However, public health authorities should keep monitoring the situation closely, as the more we can learn about this novel virus and its associated outbreak, the better we can respond.

URL: https://doi.org/10.1016/j.ijantimicag.2020.105924
Categories: Clinical care and treatment; Epidemiology; Narrative review; Other related diseases and viruses
Abstract: Objective: An outbreak of 2019 novel coronavirus diseases (COVID-19) in Wuhan, China has spread quickly nationwide. Here, we report results of a descriptive, exploratory analysis of all cases diagnosed as of February 11, 2020. Methods: All COVID-19 cases reported through February 11, 2020 were extracted from China's Infectious Disease Information System. Analyses included: 1) summary of patient characteristics; 2) examination of age distributions and sex ratios; 3) calculation of case fatality and mortality rates; 4) geo-temporal analysis of viral spread; 5) epidemiological curve construction; and 6) subgroup analysis. Results: A total of 72,314 patient records (44,672 (61.8%) confirmed cases, 16,186 (22.4%) suspected cases, 10,567 (14.6%) clinical diagnosed cases (Hubei only), and 889 asymptomatic cases (1.2%) contributed data for the analysis. Among confirmed cases, most were aged 30-79 years (86.6%), diagnosed in Hubei (74.7%), and considered mild (80.9%). A total of 1,023 deaths occurred among confirmed cases for an overall case-fatality rate of 2.3%. The COVID-19 spread outward from Hubei sometime after December 2019 and by February 11, 2020, 1,386 counties across all 31 provinces were affected. The epidemic curve of onset of symptoms peaked in January 23-26, then began to decline leading up to February 11. A total of 1,716 health workers have become infected and 5 have died (0.3%). Conclusions: The COVID-19 epidemic has spread very quickly. It only took 30 days to expand from Hubei to the rest of Mainland China. With many people returning from a long holiday, China needs to prepare for the possible rebound of the epidemic.

URL: https://doi.org/10.3760/cma.j.issn.0254-6450.2020.02.003
Categories: Case study/case series; Epidemiology; Narrative review
emergency wards were the most important measures.

**Year:** 2020  
**Author:** Salata, Cristiano; Calistri, Arianna; Parolin, Cristina; Palù, Giorgio  
**Title:** Coronaviruses: a paradigm of new emerging zoonotic diseases  
**Journal:** Pathogens and Disease  
**DOI:** 10.1093/femspd/ftaa006  
**Abstract:** A novel type of coronavirus (2019-nCoV) infecting humans appeared in Wuhan, China, at the end of December 2019. Since the identification of the outbreak the infection quickly spread involving in one month more than 31,000 confirmed cases with 638 death. Molecular analysis suggest that 2019-nCoV could be originated from bats after passaging in intermediate hosts, highlighting the high zoonotic potential of coronaviruses.

**Year:** 2020  
**Author:** Service, Robert F.  
**Title:** “The disruption is enormous.” Coronavirus epidemic snarls science worldwide | Science | AAAS  
**Journal:**  
**DOI:**  
**Abstract:** Normal daily life has come to a virtual standstill in large parts of China as a result of the epidemic of COVID-19 and so has science. Universities across the country remain closed; access to labs is restricted, projects have been mothballed, field work interrupted, and travel severely curtailed. But scientists elsewhere in the world are noticing an impact as well, as collaborations with China are on pause and scientific meetings for the next five months have been canceled or postponed. The damage to science pales compared to the human suffering; the total number of cases has risen to 71,429, the World Health Organization (WHO) reported today, almost 99% of them in China, and there have been 1775 deaths. Still, for individual researchers the losses can be serious and stressful. Basically, everything has completely stopped, says John Speakman, who runs an animal behavior lab at the Chinese Academy of Sciences (CAS) in Beijing that has effectively been shut since the Lunar New Year on 25 January. The disruption is enormous. The stress on the staff is really high. But Speakman says he understands why the Chinese government took the measures. It’s annoying, but I completely support what they have done, he says.
Development of Genetic Diagnostic Methods for Novel Coronavirus 2019 (nCoV-2019) in Japan

Abstract:

URL: https://doi.org/10.7883/yoken.JJID.2020.061

Categories: Case study/case series; Clinical care and treatment; Infection prevention and control

Challenges of coronavirus disease 2019

Abstract:

URL: https://doi.org/10.1016/S1473-3099(20)30072-4

Categories: Ethics, social science, economics; Opinion piece

Potent binding of 2019 novel coronavirus spike protein by a SARS coronavirus-specific human monoclonal antibody

Abstract:

URL: https://doi.org/10.1080/22221751.2020.1729069

Categories: Case study/case series; Clinical care and treatment; Infection prevention and control
Year: 2020
Title: First case of neonate infected with novel coronavirus pneumonia in China
Journal: Zhonghua Er Ke Za Zhi
DOI: 10.3760/cma.j.issn.0578-1310.2020.0009
Abstract: An ongoing outbreak of pneumonia associated with 2019 novel coronavirus (2019-nCoV) was reported in China. It is unclear if the infectivity exists during the incubation period, although a person-to-person transmission has been reported in previous studies. We report the epidemiological features of a familial cluster of four patients in Shanghai, of which one was 88 years old man with moving difficulties and was only exposed to his asymptomatic family members who developed symptoms later. The epidemiological evidence has shown a potential transmission of the 2019-nCoV during the incubation period.
URL: https://doi.org/10.3760/cma.j.issn.0578-1310.2020.0009
Categories: Awaiting classification; Case study/case series; Epidemiology
Abstract: In December 2019, a novel coronavirus (2019-nCoV) caused an outbreak in Wuhan, China, and soon spread to other parts of the world. It was believed that 2019-nCoV was transmitted through respiratory tract and then induced pneumonia, thus molecular diagnosis based on oral swabs was used for confirmation of this disease. Likewise, patient will be released upon two times of negative detection from oral swabs. However, many coronaviruses can also be transmitted through oral-fecal route by infecting intestines. Whether 2019-nCoV infected patients also carry virus in other organs like intestine need to be tested. We conducted investigation on patients in a local hospital who were infected with this virus. We found the presence of 2019-nCoV in anal swabs and blood as well, and more anal swab positives than oral swab positives in a later stage of infection, suggesting shedding and thereby transmitted through oral-fecal route. We also showed serology test can improve detection positive rate thus should be used in future epidemiology. Our report provides a cautionary warning that 2019-nCoV may be shed through multiple routes.