

**Table 4.16: Number and percentage of deaths selected as underlying or reported as immediate or contributing causes of death, 2017**

Causes of death (ICD-10)	Underlying rank	Number of deaths			Percentage of any mention		
		Underlying	Immediate or contributing	Total recorded	Underlying	Immediate or contributing	Total recorded
Tuberculosis (A15-A19)*	1	28 678	15 047	43 725	65,6	34,4	100,0
Diabetes mellitus (E10-E14)	2	25 336	3 120	28 456	89,0	11,0	100,0
Cerebrovascular diseases (I60-I69)	3	22 259	11 215	33 474	66,5	33,5	100,0
Other forms of heart disease (I30-I52)	4	22 098	39 504	61 602	35,9	64,1	100,0
Human immunodeficiency virus [HIV] disease (B20-B24)	5	21 439	1 628	23 067	92,9	7,1	100,0
Hypertensive diseases (I10-I15)	6	19 900	32 636	52 536	37,9	62,1	100,0
Influenza and pneumonia (J09-J18)	7	18 837	23 548	42 385	44,4	55,6	100,0
Chronic lower respiratory diseases (J40-J47)	8	13 167	5 649	18 816	70,0	30,0	100,0
Ischaemic heart diseases (I20-I25)	9	12 766	6 257	19 023	67,1	32,9	100,0
Other viral diseases (B25-B34)	10	12 622	13 644	26 266	48,1	51,9	100,0

\*including deaths due to MDR-TB and XDR-TB.

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Volume 26, Number 6—June 2020

*Research Letter*

## Co-infection with SARS-CoV-2 and Influenza A Virus in Patient with Pneumonia, China

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Research Letter

Suggested Citation

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## Abstract

We report co-infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and influenza A virus in a patient with pneumonia in China. The case highlights possible co-detection of known respiratory viruses. We noted low sensitivity of upper respiratory specimens for SARS-CoV-2, which could further complicate recognition of the full extent of disease.

In December 2019, a series of cases of pneumonia of unknown cause was reported in Wuhan, Hubei Province, China. On January 7, 2020, the causative pathogen was identified as a virus subsequently named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (1–3). We report a case of co-infection with SARS-CoV-2 and influenza A virus in China.



Figure. Radiographs of patient co-infected with 2019 novel coronavirus and influenza A virus, China, 2020. A) Chest computed tomography demonstrating a mass, ground-glass consolidation in the right inferior lobe. B) Chest radiograph...

A 69-year-old man was seen in the clinic of China-Japan Friendship Hospital on January 23, 2020, for fever and dry cough. The patient visited Wuhan from December 18, 2019–January 22, 2020, and began having symptoms January 23. He reported no underlying medical conditions. Routine blood tests revealed a leukocyte count of  $5.70 \times 10^9$  cells/L (reference range  $3.5\text{--}9.5 \times 10^9$  cells/L) and lymphocyte count of  $2.18 \times 10^9$  cells/L (reference range  $1.1\text{--}3.2 \times 10^9$  cells/L). Chest computed tomography revealed a mass, ground-glass consolidation in the right inferior lobe of the lungs (Figure, panel A). Because of the patient's travel history, he was isolated for suspected 2019 novel coronavirus disease (COVID-19).

We obtained a nasopharyngeal swab specimen and conducted real-time reverse transcription-PCR (rRT-PCR) for SARS-CoV-2 by using reagents provided by Shanghai BioGerm Medical Technology Co., Ltd. (<http://www.bio-germ.com>) and Da An Gene Co., Ltd. (Sun Yat-Sen University, <http://en.daangene.com>), on a LightCycler 480 (Roche, <https://lifescience.roche.com>). However, both tests returned negative results 8 hours later. We obtained another nasopharyngeal swab specimen for detection of SARS-CoV-2 and for differentiation of influenza A and B and respiratory syncytial viruses by using Xpert Flu/RSV

using mNGS and rRT-PCR of a BALF sample. Therefore, suitable sputum or BALF specimens are necessary to maximize detection in cases of high clinical suspicion; mNGS also might be a helpful tool for identifying SARS-CoV-2 (1,5).

Second, differentiating other causes of respiratory illness from COVID-19 is difficult, especially during influenza season, because common clinical manifestations of COVID-19, including fever, cough, and dyspnea, mimic those of influenza (6-8). In patients with COVID-19, blood tests typically show leucopenia and lymphopenia and most chest computed tomography scans show ground-glass opacity and consolidation with bilateral lung involvement (7-9). Unfortunately, influenza A and other respiratory viruses share these characteristics (10). Co-detection of SARS-CoV-2 and influenza A virus in this case demonstrates that additional challenges to detection remain, especially when patients test negative for SARS-CoV-2 but positive for another virus.

In summary, our case suggests that COVID-19 might be underdiagnosed because of false-negative tests for upper respiratory specimens or co-infection with other respiratory viruses. Broader viral testing might be needed when an apparent etiology is identified, particularly if it would affect clinical management decisions.

Dr. Wu is a pulmonary and critical care physician specializing in respiratory infection at China-Japan Friendship Hospital, Beijing, China. Her research interests include severe lower respiratory infection and new respiratory infectious diseases.

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## Acknowledgment

This study was supported by the National Key Research and Development Program of China (grant no. 2016YFC1304300 to Q.Z. and grant nos. 2018YFC1200100 and 2018YFC1200102 to B.L.), National Natural Science Foundation of China (grant no. 81870072 to Q.Z.), and Chinese Academy of Medical Sciences Innovation Fund for Medical Sciences (grant no. 2018-12M-1-003 to Q.Z.).

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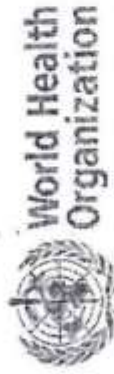
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# WHO launches new global influenza strategy

11 March 2019 | News release | Geneva

WHO today released a Global Influenza Strategy for 2019-2030 aimed at protecting people in all countries from the threat of influenza. The goal of the strategy is to prevent seasonal influenza, control the spread of influenza from animals to humans, and prepare for the next influenza pandemic.

"The threat of pandemic influenza is ever-present," said WHO Director-General Dr Tedros Adhanom Ghebreyesus. "The on-going risk of a new influenza virus transmitting from animals to humans and potentially causing a pandemic is real. The question is not if we will have another pandemic, but when. We must be vigilant and prepared – the cost of a major influenza outbreak will far outweigh the price of prevention."

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Influenza remains one of the world's greatest public health challenges. Every year across the globe, there are an estimated 1 billion cases, of which 3 to 5 million are severe cases, resulting in 290 000 to 650 000 influenza-related respiratory deaths. WHO recommends annual influenza vaccination as the most effective way to prevent influenza. Vaccination is especially important for people at higher risk of serious influenza complications and for health care workers.

The new strategy is the most comprehensive and far-reaching that WHO has ever developed for influenza. It outlines a path to protect populations every year and helps prepare for a pandemic through strengthening routine programmes. It has two overarching goals:

1. Build stronger country capacities for disease surveillance and response, prevention and control, and preparedness. To achieve this, it calls for every country to have a tailored influenza programme that contributes to national and global preparedness and health security.
2. Develop better tools to prevent, detect, control and treat influenza, such as more effective vaccines, antivirals and treatments, with the goal of making these accessible for all countries.

"With the partnerships and country-specific work we have been doing over the years, the world is better prepared than ever before for the next big outbreak, but we are still not prepared enough," said Dr Tedros. "This strategy aims to get us to that point. Fundamentally, it is about preparing health systems to manage shocks, and this only happens when health systems are strong and healthy themselves."

To successfully implement this strategy, effective partnerships are essential. WHO will



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expand partnerships to increase research, innovation and availability of new and improved global influenza tools to benefit all countries. At the same time WHO will work closely with countries to improve their capacities to prevent and control influenza.

The new influenza strategy builds on and benefits from successful WHO programmes. For more than 65 years, the Global Influenza Surveillance and Response System (GISRS), comprised of WHO Collaborating Centres and national influenza centres, have worked together to monitor seasonal trends and potentially pandemic viruses. This system serves as the backbone of the global alert system for influenza.

Important to the strategy is the on-going success of the Pandemic Influenza Preparedness Framework, a unique access and benefit sharing system that supports the sharing of potentially pandemic viruses, provides access to life saving vaccines and treatments in the event of a pandemic and supports the building of pandemic preparedness capacities in countries through partnership contributions from industry.

The strategy meets one of WHO's mandates to improve core capacities for public health, and increase global preparedness and was developed through a consultative process with input from Member States, academia, civil society, industry, and internal and external experts.

Supporting countries to strengthen their influenza capacity will have collateral benefits in detecting infection in general, since countries will be able to better identify other infectious diseases like Ebola or Middle East respiratory syndrome-related coronavirus (MERS-CoV).

Through the implementation of the new WHO global influenza strategy, the world will be closer to reducing the impact of influenza every year and be more prepared for an



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