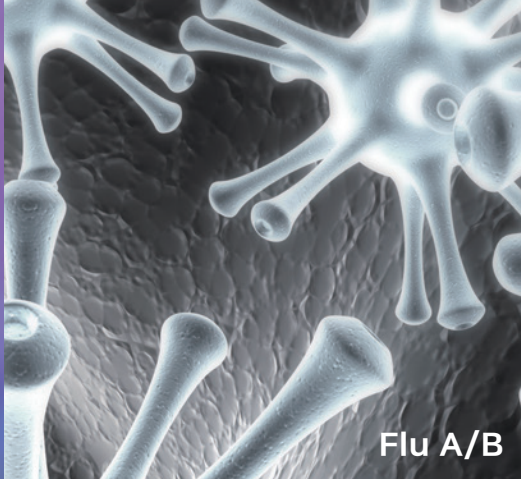
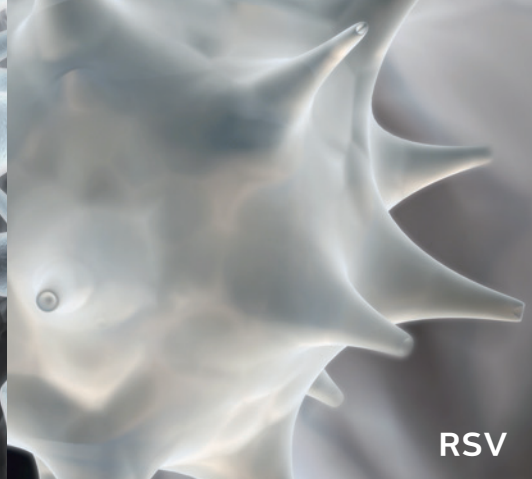


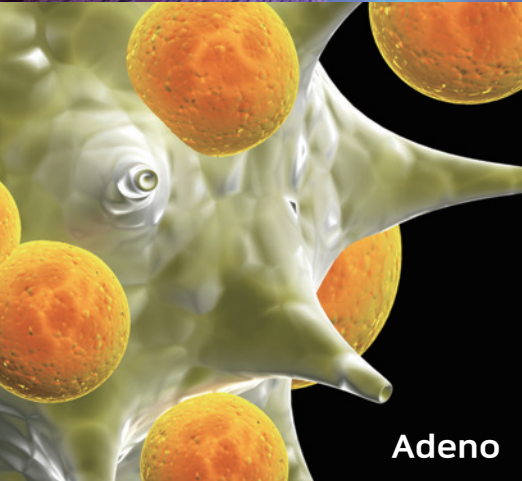
SARS-CoV-2



Flu A/B



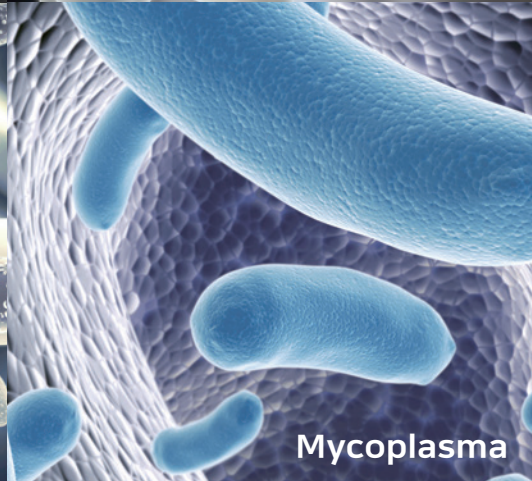
RSV



Adeno



Strep A



Mycoplasma

# ichroma™

## Broad-spectrum Respiratory Solutions

### Virus

SARS-CoV-2, Influenza A+B, RSV, Adenovirus

### Bacteria

Strep A, Mycoplasma



### Trustworthy test

The trustworthy test is provided with performance similar to the golden standard.



### On-site testing

Test results are provided within minutes through a simple method after collecting a sample with a swab.



### Broad-spectrum

Single test – COVID-19 Ag, Influenza A+B, RSV, Strep A, Adeno, Mycoplasma

Combo test – COVID-19/Flu Ag, Influenza A+B/RSV

# Similar but different

Symptoms for most pathogens of respiratory infections overlap with each other.

Respiratory Infections	Virus				Bacteria	
	COVID-19	Flu A/B	RSV	Adeno	Mycoplasma	Strep A
Upper Respiratory Tract Infection (URTI)						
Common cold	●	●	●	●	●	
Otitis media	●	●	●	●		●
Tonsillitis & Pharyngitis	●	●		●	●	●
Laryngitis	●	●		●		●
Croup cough	●	●	●	●		
Lower Respiratory Tract Infection (LRTI)						
Bronchitis	●	●	●	●	●	
Bronchiolitis	●	●	●	●	●	
Pneumonia	●	●	●	●	●	●

\* Infections of the Respiratory System CH. 93, Medical Microbiology. 4th edition

## Viral and bacterial infections must be treated differently.

- **Bacterial Infections:** Antibiotics are typically used for treatment. It's crucial to choose the right antibiotic for the specific bacterial type.
- **Viral Infections:** Antibiotics don't work on viruses. Prevention is best achieved through vaccines, antivirals can halt viral growth, and symptomatic treatment is used when no cure is available.



Globally, WHO estimates that **only 50%** of antibiotics are used correctly. <sup>[1]</sup>

## CDC – Antibiotic resistance Threat & data report, 2019



**1,270,000** deaths were the direct result of drug resistant bacterial infection

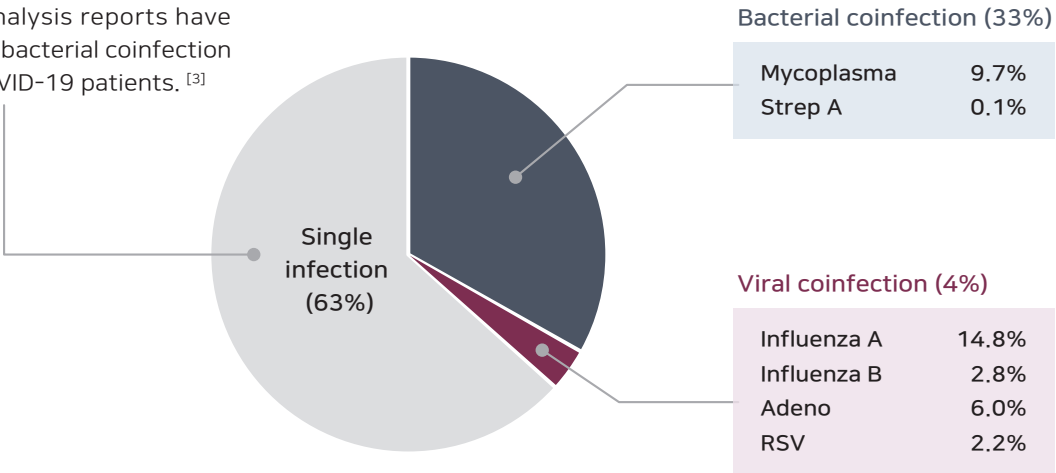
**4,950,000** deaths were associated bacterial resistance globally <sup>[2]</sup>



CDC estimates that U.S. doctor's offices and departments prescribe about 47 million antibiotic courses each year for infections that don't need antibiotics.

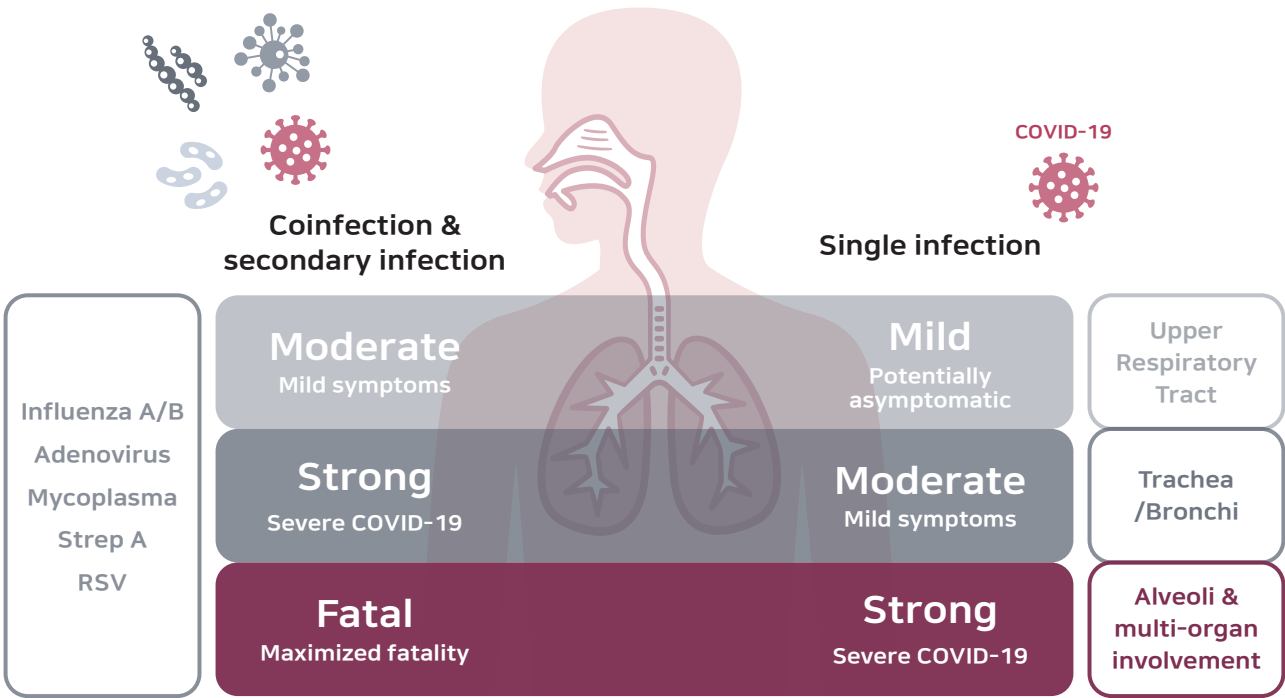
# Bacterial and viral coinfections in the SARS-CoV-2-positive populations

Numerous meta-analysis reports have confirmed viral and bacterial coinfection in about 35% of COVID-19 patients. <sup>[3]</sup>



- **Single infection:** one pathogen, one host
- **Coinfection (mixed infection):** when two or more antigenically distinct pathogens infect one host

- Secondary bacterial infection is a notable complication associated with worse outcomes in COVID-19 than influenza co-infected patients. Careful surveillance and prompt antibiotic treatment may benefit patients. <sup>[4]</sup>
- Coinfection can rise the difficulties of diagnosis, treatment, progression of COVID-19 and even increase the disease symptom and mortality. <sup>[5]</sup>



Increased risk of coinfection of COVID-19 with other respiratory infections

# ichroma™ broad-spectrum Respiratory Solutions

## Effectively solve these challenges



### Misdiagnosis

If it is misdiagnosed due to lesions and symptoms similar to those of respiratory diseases, timely and appropriate treatment is not possible.



### Increased mortality

COVID-19 co-infected patients have a mortality rate of 5.92 times higher than those of negative people and 2.27 times higher than those with a single infection. <sup>[6]</sup>



### Contagion

Due to the delayed judgment for quarantine, the time to block the spread of the disease may be missed.

## Single test

Respiratory panels	COVID-19 Ag	Influenza A+B	RSV	Adeno	Mycoplasma	Strep A	
Principle	Time-resolved fluorescent lateral flow assay (TRF-LFIA)						
Reaction time	12 min	10 min				5 min	
Sample type	Nasopharyngeal swab				Throat swab		
Output data	Positive(+), Negative(-), or invalid						
Analyzer	ichroma™ II, ichroma™ III, ichroma™ M2						
Clinical Performance							
	COVID-19 Ag	Flu A	Flu B	RSV	Adeno	Mycoplasma	Strep A
Sensitivity (%)	91.1	98.6	96.0	91.3	93.0	81.9	93.4
Specificity (%)	98.8	100	100	100	98.0	98.8	97.9

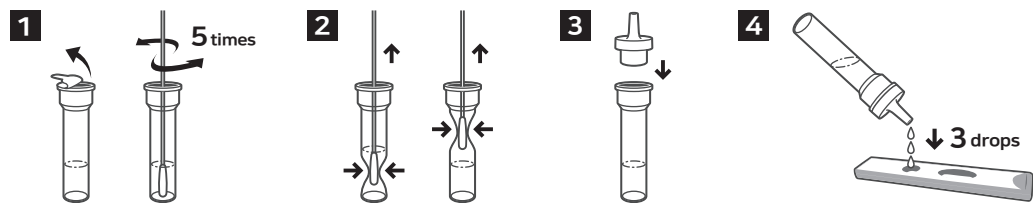
## Combo test

Respiratory panels	COVID-19/Flu Ag			Influenza A+B/RSV		
Principle	Time-resolved fluorescent lateral flow assay (TRF-LFIA)					
Reaction time	20 min			10 min		
Sample type	Nasopharyngeal swab					
Output data	Positive(+), Negative(-), or invalid					
Analyzer	ichroma™ II, ichroma™ III, ichroma™ M2					
Clinical Performance						
	COVID-19 Ag	Flu A	Flu B	Flu A	Flu B	RSV
Sensitivity (%)	100	93.8	93.8	96.0	98.7	96.0
Specificity (%)	98.3	100	100	100	100	99.1

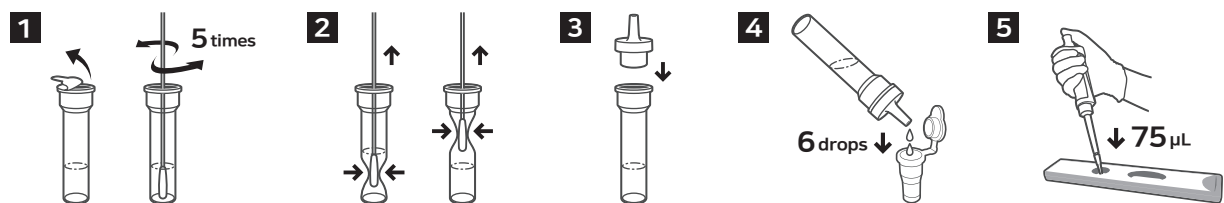
- **Reference tests**
  - RT-PCR: COVID-19 Ag, Influenza A+B, RSV, Adenovirus, Mycoplasma
  - Culture method: Strep A

Procedures (ichroma™ II, ichroma™ III, ichroma™ M2)

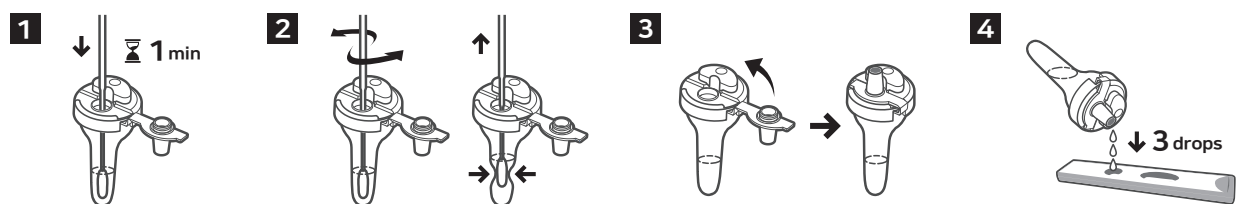
ichroma™ Influenza A+B, RSV, Mycoplasma, Adeno, influenza A+B/RSV



ichroma™ COVID-19 Ag, COVID-19 Ag/Flu Ag



ichroma™ Strep A



Measurement



Ordering information

Product	Cat.No	Contents	Shelf life
<b>Analyzer</b>			
ichroma™ II	FPRR021	Set	-
ichroma™ III	FPRR037	Set	-
ichroma™ M2	FPRR031	Set	-
<b>Single test</b>			
ichroma™ COVID-19 Ag	CFPC-115	25 T/box	20 months
ichroma™ Influenza A+B	CFPC-61	25 T/box	18 months
ichroma™ RSV	CFPC-88	25 T/box	18 months
ichroma™ Adeno	CFPC-80	25 T/box	18 months
ichroma™ Mycoplasma	CFPC-94	25 T/box	18 months
ichroma™ Strep A	CFPC-74	25 T/box	18 months
<b>Combo test</b>			
ichroma™ COVID-19/Flu Ag	CFPC-117	25 T/box	20 months
ichroma™ Influenza A+B/RSV	CFPC-80	25 T/box	18 months



## References

- 1) Jonas, Olga B, et al, Drug-Resistant Infection: a threat to our economic future, World Bank Group, 2017
- 2) Antimicrobial Resistance Collaborators, Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis, Lancet, 2022
- 3) Singh V et. al., SARS-CoV-2 respiratory co-infections: Incidence of viral and bacterial co-pathogens (2021). Int J Infect Dis. 105: 617. doi: 10.1016/j.ijid.2021.02.087. Epub 2021 Feb 25. PMID: 33640570
- 4) Shafran N et. al., Secondary bacterial infection in COVID-19 patients is a stronger predictor for death compared to influenza patients (2021). Sci Rep. 11(1): 12703. doi: 10.1038/s41598-021-92220-0. PMID: 34135459
- 5) Chen X et. al., The microbial coinfection in COVID-19 (2020). Appl Microbiol Biotechnol. 104(18): 7777. doi: 10.1007/s00253-020-10814-6. Epub 2020 Aug 11. PMID: 32780290
- 6) Iacobucci G. Covid-19: Risk of death more than doubled in people who also had flu, English data show. BMJ. 2020 Sep 23;370:m3720. doi: 10.1136/bmj.m3720. PMID: 32967850.