



Viral interference

Viral interference

- ...is the **inhibition of viral reproduction caused by exposure of cells to another virus.** The exact mechanism for viral interference is unknown. Factors that have been implicated are the generation of interferons by infected cells and the occupation or down-modulation of cellular receptors.
(https://en.wikipedia.org/wiki/Viral_interference)
- **The new virus may either block reproduction of the existing virus or the existing virus may dominate the new virus.**
- Viral interference is how the cytokine interferon was given its name!
- ‘Multiple respiratory viruses can concurrently or sequentially infect the respiratory tract and lead to virus–virus interactions. Infection by a first virus could enhance or reduce infection and replication of a second virus, resulting in positive (additive or synergistic) or negative (antagonistic) interaction.’ (Piret J, Boivin G. Viral Interference between Respiratory Viruses. *Emerg Infect Dis.* 2022 Feb;28(2):273-281)
- **Viral interference is likely to be the mechanism whereby later variants gain dominance over earlier strains.**



Examples of respiratory viral interference

- Rhinoviruses can block influenza A (the most prevalent flu virus), RSV can block rhinoviruses and human metapneumoviruses, while influenza A can block influenza B.
- During the swine flu 'pandemic' in 2009, groups from Sweden and France, showed that spikes of rhinovirus infections in late summer delayed the peaks of H1N1 influenza until late autumn.
- Similarly, a Glasgow study found that rhinovirus and influenza A peaked at different times, demonstrating a 'negative interaction' between the two viruses. A US study showed that of those testing positive for either rhinovirus or influenza A virus, <1% were positive for both.
- RSV has been found to protect neighbouring cells against the influenza A virus.

(<https://www.science.org/content/article/competition-between-respiratory-viruses-may-hold-tripledemic-winter>; Linde A, et al. Does viral interference affect spread of influenza? *Euro Surveill.* 2009 Oct 8;14(40):19354; Casalegno JS, et al. Rhinoviruses delayed the circulation of the pandemic influenza A (H1N1) 2009 virus in France. *Clin Microbiol Infect.* 2010 Apr;16(4):326-9; Nickbakhsh S, et al. Virus-virus interactions impact the population dynamics of influenza and the common cold. *Proc Natl Acad Sci U S A.* 2019 Dec 26;116(52):27142-27150; Wu A, et al. Interference between rhinovirus and influenza A virus: a clinical data analysis and experimental infection study. *Lancet Microbe.* 2020 Oct;1(6):e254-e262; Piret J, Boivin G. Viral Interference between Respiratory Viruses. *Emerg Infect Dis.* 2022 Feb;28(2):273-281; Czerkies M, et al. Respiratory Syncytial Virus Protects Bystander Cells against Influenza A Virus Infection by Triggering Secretion of Type I and Type III Interferons. *J Virol.* 2022 Nov 23;96(22):e0134122)

SARS-CoV-2 suppresses cold and flu?

- It was generally accepted that SARS-CoV-2 was a dominant virus. This was why we saw **very few cases of colds and flu while SARS-CoV-2 was highly active but as it receded there was a significant increase** in colds and flu.
- This may be through SARS-CoV-2 triggering interferon-stimulated gene (ISG) responses, which also confer immunity to cold and flu viruses.
- Similarly, SARS-CoV-2 interferes with RSV-A2 replication but its replication is decreased by a prior infection with H1N1, mediated by the production of interferon.

Viral interference: could another virus stop SARS-CoV-2?

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Health

Coronavirus: How the common cold can boot out Covid

23 March 2021 • Comments

Coronavirus



By James Gallagher
Health and science correspondent

<https://www.bbc.co.uk/news/health-56483445>

- ‘Scientists have discovered that simple common cold rhinoviruses are so strong they can literally boot COVID to the curb.’ ‘The team at the Centre for Virus Research in Glasgow used a replica which duplicates the lining of human airways. They then infected it with rhinovirus and Sars-CoV-2.’
- ‘When rhinovirus and Sars-CoV-2 were released at the same time, only rhinovirus was successful, and even when the Sars-CoV-2 was given a 24-hour start, rhinovirus halted its invasion of the airways.’
- The rhinovirus triggered production of interferons, which conferred non-specific temporary immunity against SARS-CoV-2 by blocking viral replication within the human respiratory epithelium.

(Dee K, et al. Human Rhinovirus Infection Blocks Severe Acute Respiratory Syndrome Coronavirus 2 Replication Within the Respiratory Epithelium: Implications for COVID-19 Epidemiology. J Infect Dis. 2021 Jul 2;224(1):31-38)



Corroborative evidence from lab studies that other viruses could suppress SARS-CoV- 2

- **Several studies show that other viruses, particularly human coronaviruses, suppress COVID.**
- A US study demonstrated a positive correlation between levels of common cold coronaviruses (CCCVs) and SARS-CoV-2 antibodies; CCCV antibodies were higher among COVID survivors vs non-survivors, suggesting a protective effect against COVID severity.
- It is likely that viral interference impacts SARS-CoV-2 where cross-reactive immunity to another similar virus exists.
- Professor Mondolfi, senior author of one of the studies investigating how SARS-CoV-2 suppresses colds and flu, commented that it was a **“very likely scenario” that rhinoviruses and other coronaviruses will help to stem the spread of COVID-19.**
- A modelling study (not by Imperial College!) showed that of all respiratory viruses, RSV caused the most suppression of SARS-CoV-2.
- **This would be another point against lockdown and social distancing. If we had allowed people to mix normally, they might have caught more colds and flu but been spared COVID.**



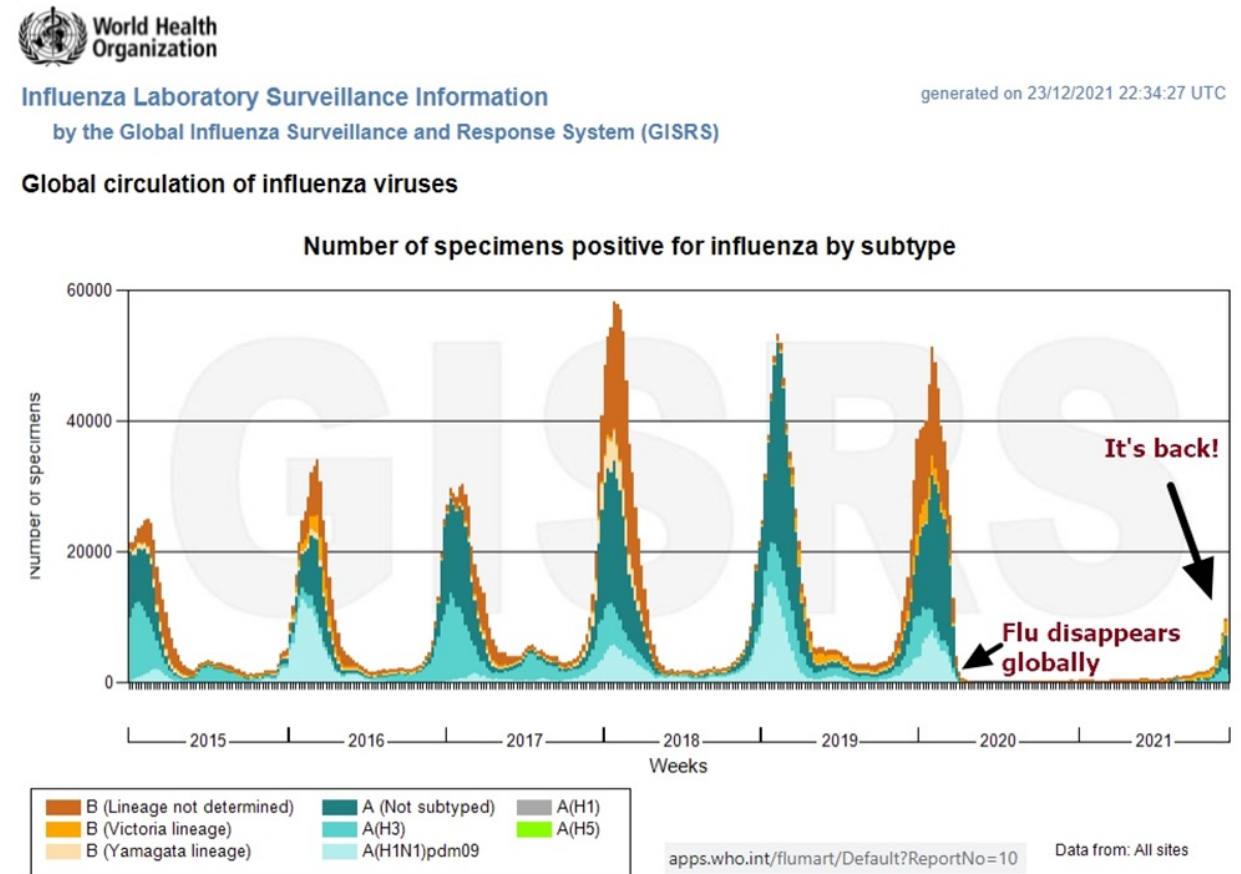
What actually happened in the real world?

- The WHO reported not a single incidence of flu from the end of April to December 2020 anywhere in the world.
- The US CDC reported flu hospitalizations in 2020 were too low to generate an estimate of the influenza burden. **A number of countries noted the disappearance of influenza during COVID, or an influenza wave being interrupted by a COVID wave.**
- The Robert Koch Institute also reported a 64% drop in whooping cough (pertussis), 86% drop in measles and 83% drop in rotavirus (gastrointestinal) infections. Others have reported a reduction in varicella and respiratory syncytial virus (RSV).
- But once children started mixing again New Zealand reported nearly 1,000 cases of RSV over five weeks; the usual number reported is 1,743 over 29 weeks (<https://www.theguardian.com/world/2021/jul/08/new-zealand-children-falling-ill-in-high-numbers-due-to-covid-immunity-debt>).
- Where this was mentioned by public health officials or in the media, **this was attributed to the masks, lockdowns and social distancing which was meant to also banish COVID.**
- **However, influenza also disappeared in Sweden**, which did not have lockdowns, mask mandates or social distancing rules.

But then as COVID-19 receded, flu took off (was this viral interference again?)

- ‘Analysis of NHS data by the Telegraph in December 2022 shows that **rates (of influenza) are more than eight times higher than expected at this time of year.**’
- ‘On the current trajectory, admissions next week could pass the peak of the 2017-18 outbreak – one of the worst of the last 20 years – which led to nearly 30,000 deaths.’
- ‘**Flu hospitalisations are so high that they have overtaken Covid admissions for the first time** since the start of the pandemic.’

<https://www.telegraph.co.uk/news/2022/12/15/flu-hospitalisations-england-soar-nhs-braces-severe-outbreak/>



And it wasn't just the flu...

- Adenovirus type 41, which may be triggering hepatitis in children.
- Respiratory syncytial virus (RSV), unusually inducing a summer outbreak.
- Monkeypox, normally confined to Africa, was seen in Europe, the US and Middle East.
- Strep A infections in the UK and US.
- Severe colds.
- Childhood pneumonia, particularly in China.

(Branswell H, <https://www.statnews.com/2022/05/25/viruses-that-were-on-hiatus-during-covid-are-back-and-behaving-in-unexpected-ways/>; <https://www.dailymail.co.uk/health/article-11555027/CDC-confirms-investigating-Strep-outbreak.html>; <https://www.spectator.co.uk/article/we-cant-ignore-group-a-strep/>; <https://www.independent.co.uk/news/health/cold-flu-sandpaper-throat-infection-b1925677.html>; Conroy G. What's behind China's mysterious wave of childhood pneumonia? Nature. 2023 Nov 27)

But....

(because the science is never settled!)

Have flu and COVID statistics been conflated?

- Several scientists and doctors have suggested that **influenza has been renamed COVID-19**.
- In 2020, **before COVID testing had been brought in, it would have been impossible to distinguish between the two, as the symptoms are very similar.**
- Furthermore, early PCR tests that were positive for SARS-CoV-2 were presumed negative for influenza A and B. But were they really?
- It tended to be assumed by GPs that symptomatic patients had COVID, so they never tested for influenza.
- A UK study found that in children hospitalised with COVID, **16% had co-infections. Two-thirds of the co-infections were with another viral pathogen.**

(<https://justthenews.com/politics-policy/coronavirus/influenza-levels-continue-cratering-some-cite-covid-measures-even-covid>; <https://www.eugyppius.com/p/covid-suppressed-influenza-during>; https://www.picanet.org.uk/wp-content/uploads/sites/25/2023/01/PICANet-report-on-SARS-CoV-2-related-illness_v1.0-30Jan2023.pdf)



With thanks to Professors Martin Neil and Norman Fenton (<https://wherearethenumbers.substack.com/p/do-not-see-and-you-shall-not-find>)

- ‘There appears to have been a collective and systemic failure in flu surveillance and flu death reporting systems in the UK during 2020 and into 2021. Thus, it is possible that **the failure to detect and report flu (and deaths recorded as due to it) may better explain the mystery of vanishing flu rather than viral interference from SARS-Cov-2.**’
- A summer 2020 paper found that **co-infection with SARS-CoV-2 and an influenza virus was common during the COVID-19 outbreak.** Because patients coinfecting with SARS-CoV-2 and influenza B virus had a higher risk of developing poor outcomes, the authors recommended testing for both viruses. (Yue H, et al. The epidemiology and clinical characteristics of co-infection of SARS-CoV-2 and influenza viruses in patients during COVID-19 outbreak. J Med Virol. 2020 Nov;92(11):2870-2873).
- Studies showed that pre- or co-infection with another virus significantly promoted the infectivity of SARS-CoV-2, increased SARS-CoV-2 viral load and contributed to more severe lung damage.
- [We have already looked at the possibility of bacterial pneumonia causing the respiratory deaths.]



Similarity of COVID and influenza

- Professors Neil and Fenton reviewed papers on **Covid-19 CT scan findings and determined that they are indistinguishable from CT scans of patients with influenza or bacterial pneumonia.**
- They also suggest that signs and symptoms of vaping associated lung injury (VALI) match those attributed by some to Covid-19: CT scans showing consolidation with subpleural sparing seen in a significant proportion of cases, accompanied by dyspnoea, diarrhoea, a non-productive (dry) cough, haemorrhage, fever and severe hypoxic respiratory failure requiring mechanical ventilation.
- They point out that it appears to be very difficult (or impossible) to reliably differentiate between influenza and bacterial pneumonia and Covid-19 on CT scans.
- They believe that prior to the ‘pandemic’ many Covid-19 cases would have been diagnosed as ordinary influenza and bacterial pneumonia cases, as this is the most likely mechanism that explains the evidence reported in the medical literature.
- **Could some colds and flu simply have been renamed ‘COVID-19’? We may never know.**

(https://wherearethenumbers.substack.com/p/a-closer-look-at-spikeopathy-as-the?utm_source=post-email-title&publication_id=1229032&post_id=139955496&utm_campaign=email-post-title&isFreemail=true&r=1jte8r&token=eyJ1c2VyX2lkljo5Mzc1MDM2MywicG9zdF9pZCI6MTM5OTU1NDk2LCJpYXQiOiJlE3MMDMxNjEzODEsImV4cCI6MTcwNTc1MzM4MSwiaXNzIjoichViLTEyMjkwMzliLCJzdWliOiJwb3N0LXJlYWN0aW9uIn0.NZ2SV519oe-MFi7yYD7zw9nVqnxTR2DcDI5iEHIRa3s)

Viral interference: summary

- There were very few cases of colds and flu while SARS-CoV-2 was highly active but as it receded there was a significant increase in colds, flu and many other respiratory viruses. This may be due to viral interference.
- Studies show that SARS-CoV-2 can displace colds and flu but colds and flu may also displace SARS-CoV-2.
- But cold, flu and COVID symptoms are very similar, as are the CT findings in flu and COVID.
- Could colds and flu simply have been renamed 'COVID-19'? We may never know.



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