



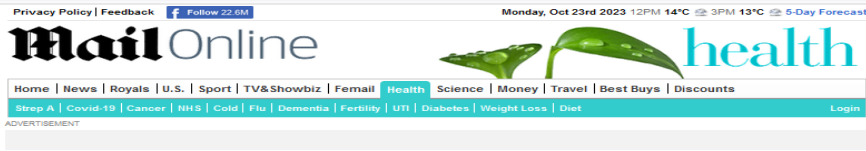
# Immune debt

# What is immune debt?

- Immune debt (or immunity gap) can be defined as the difference between:
  - the level of **immune protection that we might be expected to have from previous exposure to pathogens** (pre-existing immunity) and
  - **the protection we actually had through being denied exposure to pathogens and consequent immune challenge due to the pandemic measures:** lockdown, social distancing, school closures, masks, sanitising surfaces etc.



# COVID Enquiry hears that children are likely suffering 'life-long' immune debt



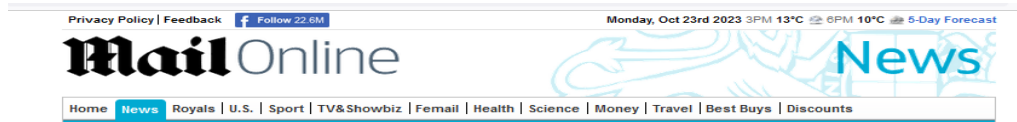
**As the long-awaited Covid inquiry begins, some scientific experts fear that lockdown could have left children with life-long immunity problems**

- Figures from the Office for National Statistics say 70k children have long Covid
- Experts fear there has been a huge rise in infections and respiratory illness

<https://www.dailymail.co.uk/health/article-11740341/Could-lockdown-left-children-life-long-immunity-problems.html>

- ‘When Covid hit the UK, **children avoided the gauntlet of common childhood illnesses. School closures, social-distancing and mask-wearing meant those infections didn’t have the usual chances to spread.**’
- ‘But as a result, **children’s immune systems haven’t developed to fight them.** In fact, the immunity of the entire population has waned.’
- ‘Now, with society largely back to normal, those illnesses have returned – and there is a much bigger pool of susceptible people they can infect. This is what scientists refer to as the ‘immunity gap’.
- **But we’ve all suffered from lack of immune challenge, not just children.**

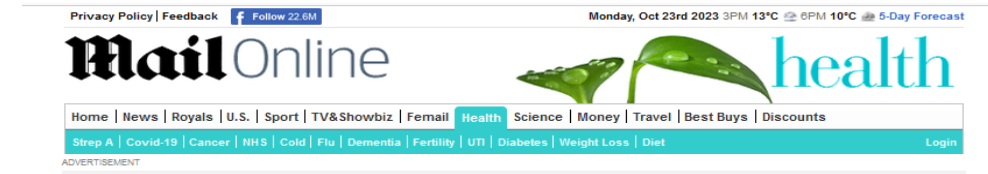
# And as a result....



## Cold and flu sickness days overtake Covid-19 as a cause for absence from work - swelling threefold in just THREE months, figures show

- Latest data shows more sick days are being lost to cold and flu than Covid-19
- 1,043,965 working days were lost to cold and flu in the last week of November
- The figure increased threefold from 269,224 in the first week of September
- By contrast, Covid sick days fell from 1,313,838 to 863,222 over the same period

<https://www.dailymail.co.uk/news/article-11552075/Cold-flu-sickness-days-overtake-Covid-19-cause-absence-work-figures-show.html>



## CDC admits lockdowns, mask mandates and school closures may be fueling Strep A outbreak in the US

- CDC said that increases in Strep A, flu and RSV cases are tied to lockdowns
- The agency said the orders led to a decline in cases over the past few years
- Some experts have said the lack of cases led to 'immune naivety' in the US

<https://www.dailymail.co.uk/health/article-11555027/CDC-confirms-investigating-Strep-outbreak.html>



# UK Health Security Agency says excess deaths associated with flu are the highest in 5 years

- UKHSA has published its annual flu report for the 2022 to 2023 flu season, the first time flu has been widespread since the COVID-19 pandemic began.
- New interim analysis from the UK Health Security Agency (UKHSA) indicates that excess deaths in England associated with flu infection were higher (14,500) than the average figure (13,500) for the 5 years before the pandemic.
- This is the highest figure since the 2017 to 2018 season, when there were 22,500 excess deaths associated with flu.
- ‘In addition, **there is evidence to suggest that lower population immunity due to reduced flu circulation from social distancing measures during the pandemic meant that, overall, the population was more susceptible to catching flu** than usual, contributing to the timing, shape and scale of the influenza season.’

(<https://www.gov.uk/government/news/excess-deaths-associated-with-flu-highest-in-5-years>)

# But there were early warnings...

- French paediatricians warned that **non-pharmaceutical interventions (lockdowns, masks, school closures, etc)** reduced the spread of other pathogens, inducing ‘immune debt’ due to lack of immune system challenge and stimulation.
- This increased the likelihood of future epidemics due to a growing proportion of susceptible people.

(Cohen R, et al. Pediatric Infectious Disease Group (GPIP) position paper on the immune debt of the COVID-19 pandemic in childhood, how can we fill the immunity gap? Infect Dis Now. 2021 Aug;51(5):418-423)

Rachel Nicoll PhD, 2024



<https://www.telegraph.co.uk/news/2020/06/27/lockdown-social-distancing-could-make-immune-system-weaker-says/>

# The Guardian acknowledges immune debt



## Return of the common cold: infections surge in UK as autumn arrives

After 18 months of social distancing, scientists believe people's immune defences have weakened



- 'The return of schools and the arrival of autumn means common colds and other respiratory infections are firmly on the rise, spreading coughs and sneezes, more severe illnesses, and prompting some to report their worst colds ever.'
- **'...after 18 months of social distancing and mask wearing, many people are thought to have weaker immune defences to protect themselves against the onslaught of respiratory viruses.'**
- 'With reduced immunity across the board, people may fall ill with viruses they would normally have fended off with little trouble, or develop co-infections that make them feel more poorly.'
- 'Professor Ronald Eccles (Cardiff University) commented "the whole system has been knocked out of kilter by the fact that we've been socially distancing and wearing masks, and children have not had that immunity over the past year or so."

(<https://www.theguardian.com/society/2021/sep/24/return-of-the-common-cold-infections-surge-in-uk-as-autumn-arrives>)



# Our immune systems actually need the microbes

- Without exposure to pathogens, we cannot build a healthy immune system. Indeed, some common chronic conditions (asthma, allergies, autoimmune conditions) could result from an environment with insufficient microbes (**the hygiene hypothesis**).
- **The immune system is built and developed by exposure to viruses, bacteria etc.** When you're a little child crawling on the ground, putting stuff in your mouth, viruses and bacteria come in....This is how your immune system is built. You don't take a small child put them in bubble wrap in a room and say go have a healthy immune system.'
- Similarly, **relentless sanitising, lockdowns, mask wearing and social distancing will seriously deplete our bodies of necessary microbes which challenge and prime the immune system.**
- And it's not just our immune systems. **The brains of children and adolescents are beneficially shaped by microbial exposures** - normal brain development requires adequate and diverse microbial exposure.
- Young people deprived of social interactions for the COVID years have been dubbed '**Generation Quarantine**'.





# For the same reason, hand sanitisers reduce immune system effectiveness

- The WHO recommended using alcohol-based hand sanitisers for frequent hand hygiene. **Yet hand sanitisers are mainly made up of substances which are highly toxic to human health and the environment:** ethanol, isopropyl alcohols, hydrogen peroxides, triclosan and quaternary ammonium compounds. Triclosan is a potent endocrine disruptor.
- In the first five months of 2020, the American Association of Poison Control Center reported **9504 alcoholic hand sanitiser exposure cases in children** under the age of 12, with alcohol poisoning being responsible for confusion, vomiting and drowsiness, and in severe cases, respiratory arrest and death.
- Frequent usage of hand sanitisers can generate **antimicrobial resistance**, giving an increased chance of other microbial diseases; quaternary ammonium compounds suppress the immune system.
- Furthermore, as well as killing SARS-CoV-2, hand sanitisers will also **kill the beneficial bacteria that normally exist on our hands to protect us.**

(Mahmood A, et al. COVID-19 and frequent use of hand sanitizers; human health and environmental hazards by exposure pathways. Sci Total Environ. 2020 Nov 10;742:140561; Khaliq O, et al. Raising awareness about the Quaternary Ammonium Compounds: A Chemical Class of Emerging Concern. Environ Sci Technol. 2023 May 23;57(20):7645-7665; <https://microbiologysociety.org/blog/has-the-increased-use-of-hand-sanitizers-during-the-pandemic-impacted-antimicrobial-resistance.html>)

# Immune debt: summary

- NHS data showed that as COVID receded, hospital admissions for influenza were >8 times higher than expected for the time of year.
- 2023 excess deaths due to influenza were the highest in 5 years.
- Children were thought to be at risk of lifelong immune debt due to the pandemic measures of lockdown, school closures, social distancing etc. Not only are their immune systems not fully developed and need constant exposure to microbes but so do their brains.
- Early warnings of this had been ignored.
- Our immune systems thrive on continuous challenge, which the pandemic measures largely denied us for almost 3 years.

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- Seitz BM, et al. The pandemic exposes human nature: 10 evolutionary insights. *Proc Natl Acad Sci U S A*. 2020 Nov 10;117(45):27767-27776
- <https://www.independent.co.uk/news/world/australasia/nz-children-covid-immunity-debt-b1880753.html>)
- <https://intellectualtakeout.org/2020/04/covid-19-lockdowns-may-destroy-our-immune-systems/>;