

# PSYCHOLOGY MISCELLANY

No.237 - May 2026

COVID-19: LEARNING FROM THE  
PAST FOR FUTURE PREPAREDNESS  
(1ST MAY 2025 - 30TH APRIL  
2026)

Kevin Brewer

ISSN: 1754-2200

[orsettpsychologicalservices@phonecoop.coop](mailto:orsettpsychologicalservices@phonecoop.coop)

This document is produced under two principles:

1. All work is sourced to the original authors. The images are all available in the public domain (most from [http://commons.wikimedia.org/wiki/Main\\_Page](http://commons.wikimedia.org/wiki/Main_Page)). You are free to use this document, but, please, quote the source (Kevin Brewer 2026) and do not claim it as you own work.

This work is licensed under the Creative Commons Attribution (by) 3.0 License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-nd/3.0/> or send a letter to Creative Commons, 171 2nd Street, Suite 300, San Francisco, California, 94105, USA.

2. Details of the author are included so that the level of expertise of the writer can be assessed. This compares to documents which are not named and it is not possible to tell if the writer has any knowledge about their subject.

**This document is presented for human readers.**

Kevin Brewer BSocSc, MSc

An independent academic psychologist, based in England, who has written extensively on different areas of psychology with an emphasis on the critical stance towards traditional ideas.

A complete listing of his writings at <http://psychologywritings.synthasite.com/>. See also material at <https://archive.org/details/orsett-psych>.

## **CONTENTS**

	Page Number
1. Future Preparedness	4
2. Health Issues	21
3. Treatment Miscellany	25
4. Miscellany	28

# **1. FUTURE PREPAREDNESS**

- 1.1. Overview
- 1.2. Privacy
- 1.3. Trust
- 1.4. National self-interest
- 1.5. Evolution of SARS-CoV-2
- 1.6. Abortion care-seeking
- 1.7. Impact on health systems
- 1.8. Other viruses and pandemics
  - 1.8.1. H1N5 Bird flu
  - 1.8.2. Future threats
  - 1.8.3. Anti-bodies
  - 1.8.4. Epidemiological transitions
- 1.9. References

## **1.1. OVERVIEW**

Introducing a series of articles at the five-year anniversary of covid-19's first reports, The leader (2025) argued that looking back helps with future preparedness, and "with the benefit of hindsight, examine what we should have done differently and learn from that for next time" (p5).

Sridhar (2022) noted the strategies of Japan, South Korea, Denmark, Norway, and New Zealand as "contain until you get a scientific breakthrough, and then you mass vaccinate and open up. If you look at the death rates, that really paid off" (quoted in Sarchet 2025).

Mark Woodhouse of the University of Edinburgh was sanguine in this observation: "On the scale of pandemics, covid-19 was moderate. There will be others, and they very easily could be an awful lot worse than the one we had. This is an eventuality we should be prepared for" (quoted in Le Page 2025a).

"For many people, the covid-19 pandemic feels like a thing of the past. But for those with long covid, it is far from over, Five years on from when covid-19 turned up, those with lingering symptoms still can't live their lives as they did before" (Marshall 2025 p11).

Concern for the future is focused on what is called "disease X", an infectious condition that appears suddenly. Thus, the global surveillance of different infections like H1N5 bird flu to see if they show the characteristics that will produce a pandemic.

But should we concentrate our efforts on "as-yet-unknown viruses" already infecting people or viruses in

other mammals but not humans yet (Le Page 2025a)?

Lawton (2025) outlined four questions that still need answering:

i) Is the virus lurking within wildlife? The spillover from non-humans to humans (zoonosis; one highly possible origin of the virus), then back again (reverse zoonosis), and the risk of a return in a new form to humans.

ii) How many people have persistent infections? The persistence of infection in certain individuals which could be a potential source of new, dangerous variants.

iii) Where did the virus come from?

iv) Could we go back to square one? Covid-19 has become endemic, but "the virus isn't harmless, and could still spark a fresh pandemic" (Lawton 2025 p18). In other words, the post-covid world is different to the pre-covid one.

## **1.2. PRIVACY**

The implementation of robust global disease surveillance systems for emerging pathogens and potential future pandemics could conflict with individual's privacy. Sergeant (2025) considered the ethical issues here.

Global disease surveillance targets the high risk area, which, for zoonoses, is "wet markets" ("fresh-food markets where animals are sold and slaughtered"; Sergeant 2025 p2). But these markets are the "final node in a much broader network of zoonotic transmission within the global wildlife supply chain" (Sergeant 2025 p2). The highest risk is in low- and middle-income countries (LMICs) with close contact between humans and wildlife (eg: remote rural areas of Africa, Asia, and South America). "Passive case detection" is the surveillance method in such areas, where local physicians report cases to health officials. "However, this system is inadequate as it overlooks large portions of the population, while also being slow and failing to provide real-time information about emerging diseases... Thus, to adequately recognise emerging pandemic threats, more active surveillance techniques are necessary" (Sergeant 2025 p2).

Active surveillance techniques include the use of mobile phones to track symptoms, electronic health records, social media posts, Internet searches for symptoms, drones to map movements, and rapid genetic sequencing. But such surveillance infringes individuals' privacy.

"While it is debated whether privacy holds intrinsic value, it is widely agreed that much of the value that privacy contains is instrumental; privacy is valuable as a means to protect us against harm... This might include protection against discriminatory or malicious use of personal data, the adverse consequences of private information becoming public or the embarrassment of publicly known information" (Sergeant 2025 p3). Active disease surveillance involves the collection and analysis of personal data as well as the sharing with public health and government organisations. There is the potential for data misuse, particularly for marginalised and vulnerable groups. "Many marginalised communities, especially Indigenous populations, have had their data used by governments in an effort to exert colonial control... Data collected from surveilled Indigenous communities have been used to justify land dispossession, increased policing and harmful policy changes towards Indigenous peoples, often under the guise of increased safety and security... It is very possible that marginalised communities being surveilled for infectious disease risk would be the target of such policies, as data portraying these communities as public health risks would provide a powerful political justification for governmental incursion into their lands and other forms of remedial discipline" (Sergeant 2025 pp3-4).

Are there benefits for privacy trade-offs? Yes, in that both the surveilled group and the rest of the world will benefit from early identification of new pathogens. The scale of suffering prevented outweighs privacy infringement (Parker et al 2020).

But Sergeant (2025) noted that the distribution of burdens and benefits will not necessarily be equal. Richer countries and communities, already with more advantages, will benefit much more than poorer countries and communities. "This distribution is unfair. Under our current distributive system, marginalised individuals from remote LMIC communities would be asked to bear the majority of the privacy-related burdens of disease surveillance. However, these individuals would experience an extremely inequitable proportion of the benefits. This is exploitative: it amounts to taking unfair advantage of the vulnerability of the most politically and socially

marginalised individuals in order to benefit the more privileged" (Sergeant 2025 p5).

One solution is the ethical collection and use of data. "With respect to low-resource settings, this includes incorporating the concerns of local communities in the implementation of surveillance systems, avoiding the placement of unnecessary burdens on already vulnerable populations and ensuring adequate protection of collected data sets" (Sergeant 2025 p6).

Sergeant (2025) went further and argued for a "prioritarian approach" - ie: "the imposition of privacy-related harms could be justifiable in distributional systems in which the communities bearing privacy-related burdens would be adequately prioritised for the benefits produced by these systems" (p6). This type of approach generally proposes that the worse-off should receive more of the benefits than the better-off.

Sergeant (2025) accepted a number of issues with this approach, including how to identify the worse-off, what is prioritised (eg: the new vaccine), and how much priority to receive.

### **1.3. TRUST**

Trust in authorities is crucial in terms of complying with public health policies to reduce the transmission of infections, but also in terms of preparedness for future outbreaks. Baerøe et al (2025) explored trustworthiness in relation to the latter, and proposed a number of relevant factors:

i) Power - Coercive policies involve "power-over", but "including citizens in deliberative processes, decision-makers are promoting citizens' 'power-to' engage as well as their opportunity for gathering and exercising 'power-with' together with other individuals" (Baerøe et al 2025 p4).

ii) Accountability - "Accounting for decisions and their outcomes enables citizens to understand the reasons behind them and launch targeted, justifying appeals when relevant. This requires, in the words of Simone Chambers [2003], 'publicly articulating, explaining, and most importantly justifying public policy'" (Baerøe et al 2025 p4).

Accountability can be divided into different types (Baerøe et al 2025):

a) Social justice - "exercising beneficial power implies that the decision-maker actively takes responsibility for treating all members of society with equal respect and creates the possibility for decision-makers to be held to account" (Baerøe et al 2025 p5).

b) Fair institutions and legitimate processes - decision-making processes organised on principles accepted as fair.

c) Expertise - authorities must demonstrate that they have considered expert opinion.

d) In practice - accountability needs to exist before a crisis occurs.

Overall, "trust in governing authorities is shaped by the complex interplay between personal experiences, social interaction, available information, and the design of social and cultural institutions" (Baerøe et al 2025 p10). But policies from authorities perceived to be accountable have a greater chance of being trusted, in very obvious simple terms.

#### **1.4. NATIONAL SELF-INTEREST**

Anderson and Crump (2025) observed that the covid-19 pandemic "revealed the complex interplay between national self-interest and global co-operation... Phrases like 'coronationalism'... and the 'pandemic of nationalism'... highlighted the extent to which many governments adopted a domestic rather than global focus in response to the pandemic... This tendency creates both moral and practical barriers to achieving an equitable global health response" (p1).

A nationalist perspective sees that "justice is most effectively realised within the confines of the nation-state, where governments have direct accountability to their citizens. On this view, obligations to non-nationals are often framed more as acts of charity than as duties of justice, thereby permitting states to prioritise their own populations in times of crisis" (Anderson and Crump 2025 p1). But this view can lead to "an exclusionary approach to resource allocation and policymaking. For example, in the context of global and public health emergencies, the inward-looking orientation of nationalism risks entrenching global health disparities as it permits policies such as vaccine

hoarding, export restrictions, and border closures that, while beneficial for domestic populations in the short-term, ultimately undermine global co-operation and exacerbate inequities" (Anderson and Crump 2025 p2).

The alternative is the cosmopolitan perspective, which focuses on global co-operation and justice for all (Anderson and Crump 2025).

New Zealand's "success" during the pandemic can be seen from a nationalist perspective. Anderson and Crump (2025) analysed New Zealand's media during January 2020 to June 2022 in relation to this. In total, 1300 articles related to covid-19 were randomly selected from nineteen newspapers. Four themes of "nationalistic sentiment" were found:

i) Domestication - This was "the representation of covid-19 through a predominately New Zealand lens" (Anderson and Crump 2025 p4). For example, little on the global impact of the pandemic compared to the domestic impact.

"Domestication of New Zealand news enabled the formation of a comparison and competition-based identity. While it is not surprising that local newspapers would report on local news, covid-19 was global phenomenon rather than a local or national one... Domestication gives news coverage a distinctly New Zealand voice, aiding the advancement of a New Zealand self-image and concepts of conformity" (Anderson and Crump 2025 p8).

ii) Unification - The use of pronouns like "we" and "us" to emphasise the common national cause.

iii) Securitisation - For example, the establishment of strict border entry requirements.

iv) Separation - The use of language like "they" and "them" to show who was not part of the "us" (eg: those who openly flouted the lockdown rules; other countries).

Anderson and Crump (2025) summed up: "Nationalism can provide safety and security to readers of news media during a crisis like covid-19, as readers can identify themselves in a perpetuated collective narrative. However, through domestication, unification, securitisation, and separation, nationalism simultaneously promotes in-group solidarity while creating boundaries against 'others', in turn risking that nations separate and compete with non-national groupings" (p10).

## 1.5. EVOLUTION OF SARS-COV-2

Al-Tawfiq et al (2025) observed: “The global landscape of SARS-CoV-2 is evolving rapidly, with new variants challenging public health systems and vaccine strategies worldwide. As of mid-2025, several key lineages – LP.8.1, NB.1.8.1 (also called Nimbus), XDV.1.5.1, and JN.1 – continue to emerge and spread with remarkable adaptability and ongoing need for vigilance, continued surveillance, and vaccine updates” (p1) (table 1.1).

Evolutionary changes of the SARS-CoV-2 virus that increase transmissibility tend to focus on the spike protein mutations, and the ability to reduce anti-body neutralisations (ie: immune system evasion). However, current vaccines “continue to offer strong protection against severe outcomes, even as neutralising anti-body levels wane against infection” (Al-Tawfiq et al 2025 p1).

VARIANT	INFORMATION
Wuhan-Hu-1	Original “version” of the virus that appeared in Wuhan, China in 2019-2020
Omicron	Dominant form in 2022
XBB	Important in 2023
JN.1	Descendent of Omicron, identified in 2023
XDV.1.5.1	Descendant of JN.1, evident in early 2025
Nimbus	Descendant of XDV.1.5.1 in early 2025
LP.8.1	Descendant of Omicron, reported in mid-2025

(Source: Al-Tawfiq et al 2025 tables 1 and 2 p2).

Table 1.1 - Key SARS-CoV-2 variants.

Al-Tawfiq et al (2025) ended with a warning: “While updated vaccines remain effective in preventing severe disease and death, a robust global response is essential. Key priorities for moving forward include strengthening genomic surveillance to detect and track new variants, ensuring timely updates to vaccine formulations, and promoting equity by expanding access to vaccines worldwide. Clear, science-based public communication and tailored protection strategies for high-risk populations remain vital. Additionally, long-term investment in pandemic preparedness infrastructure—including surveillance systems, vaccine platforms, and health

system resilience—is critical to respond quickly and effectively to future threats. Coordinated global action will be key to mitigating the impact of emerging variants and safeguarding public health” (p2).

## **1.6. ABORTION CARE-SEEKING**

Covid-19 and the associated lockdowns impacted other health behaviours, specifically in terms of care-seeking. One such example is abortion care-seeking, which Nandagiri et al (2025) studied in Poland in 2020.

The researchers explained: “Covid-19 amplified job and financial insecurity and precarity, influencing abortion decision-making. Covid- 19 measures like lockdowns limited privacy, exacerbating the need for secrecy as a key element in abortion care-seeking, particularly when at risk of interpersonal violence. Personal support systems, often essential in pregnancy, birthing, and parenting, were altered by covid-19. The loss of key family members (eg: wage earners or carers) heightened financial and social vulnerability. This collapsing of support systems and networks during the pandemic, shaped abortion decision-making. Pregnancy during covid-19 potentially exposed people and their families to greater precarity and forms of structural violence, making it a ‘cliff edge’” (Nandagiri et al 2025 p1).

Data were collected by “Women Help Women” (WHW) (an abortion telehealth provider). Over 8500 consultations (and subsequent email exchanges) for the period 1st April to 31st December 2020 were analysed for themes.

“Some pandemic measures like lockdown and quarantine requirements were barriers to abortion care-seeking. This, along with fears about the virus and its potential impact on foetal health, prompted care-seeking through WHW. Concerns about delays in care – not just due to identifying doctors willing to provide care or referrals, but the additional costs of covid-19 tests, and queueing for care; potentially exposing yourself to the virus were all present. For abortion, where time is particularly important due to legal gestational limits, it can increase anxiety and fear around access to care” (Nandagiri et al 2025 p6). For example, “T” said in December 2020: “It’s a very difficult time in terms of access to medical care. I’m scared of being infected with coronavirus when I’m far into the pregnancy, of labour without any contact with my close ones, of the newborn getting the virus” (p7).

Abortion was legal in Poland at the time of the study, but there were restrictions, which meant stigma was an issue. "I" in December 2020 summed up the concerns: "Currently, the situation in my country doesn't promise help, even if my child was diagnosed with prenatal defects. The functioning of the hospitals right now is also far from perfect [...]. Women in Poland are now fighting for the right to decide about their own body" (p7).

"V" (writing in April 2020) expressed the fears and precarity: "I'm also scared that the child that I carry might be sick because I work at a gas station. I can get infected any time - every day there are around 200 people coming in and out" (p8). "W" (in October 2020) outlined other and related fears: "I am 20 years old, it's my first pregnancy and I am in quite a difficult life situation. I am studying two degrees, I lost my job due to covid, I live with my parents. My family is very conservative, I cannot tell them about my situation, I'm too scared that they will force me to keep the pregnancy" (p8).

The 40 year-old "Q" (in December 2020) had her concerns: "40 years old, one child, one mortgage for an old house, no savings, living from day to day, alcoholic husband. I cannot count on him, and I cannot provide for a family on my own" (p8). She expressed the view that Nandagiri et al (2025) called "abortion as a protective act": "I'm already raising three children alone. I have to terminate this pregnancy for their good. [...]. I have to protect the children that are already with me" (p10).

"P" (in August 2020) voiced this issue: "I live with my mother. If she finds out about the pregnancy, she will kick me out of the house, and I will have no one to go to for help" (p9).

Nandagiri et al (2025) summed up the issue of precarity, structural violence, and interpersonal violence (IPV): "Requests for abortion support from WHW emphasised how abortion-seekers are exposed to significant precarity. This is particularly the case for people experiencing IPV. Macro level conditions (eg: employment) intersect with individual life circumstances (eg: housing insecurity) and existing responsibilities (eg: parenting). Cumulative gendered insecurity and violence increase exposure to precarity, shaping abortion decision-making. IPV, heightened under pandemic conditions, increased exposure to insecure housing, unemployment, and reliance on limited benefits to care for and sustain one's family. In these situations, a pregnancy heightens vulnerability and threatens the

limited stability they may have achieved by opening them up to further contact with their abusive partners, and risks exposing them and their families to further violence if the pregnancy continues. For respondents seeking support from WHW, this could manifest as being made homeless by parents or violent (emotionally, physically) reactions from family or partners to another pregnancy. Such violence was exacerbated by the pandemic conditions, particularly given the precarity of financial opportunity that was referenced by a large number of respondents and the inability to travel easily in the event of needing to move residence" (p11).

### **1.7. IMPACT ON HEALTH SYSTEMS**

The impact of covid-19 on healthcare systems disrupted normal functioning with long term health conditions. Russell et al (2026) used "OpenSAFELY" data to show this in England. The OpenSAFELY database includes primary care and hospital data covering 99% of England's population (Russell et al 2026).

This database had already been used (eg: Russell et al 2022) "to highlight noticeable decreases in newly recorded diagnoses of autoimmune inflammatory arthritis (eg: rheumatoid arthritis) and gout during the early phase of the pandemic. Although diagnosis rates for these conditions returned to pre-pandemic levels during the second year of the pandemic, no compensatory increase in diagnosis rates above pre-pandemic levels had been observed as of 2023, indicating that a substantial proportion of conditions remained undiagnosed at that point" (Russell et al 2026 p2).

Building on this research, Russell et al (2026) analysed diagnosis rates for nineteen long term conditions for the period 1st April 2016 to 30th November 2024. Data were available for thirty million people. The monthly incidence of newly recorded diagnoses were calculated by dividing the number of people with diagnoses in each calendar month by the number of people in the reference population.

"Relative to pre-pandemic trends, rates of new diagnoses for all 19 conditions decreased sharply after the onset of the covid-19 pandemic; however, the magnitude of these decreases varied substantially by condition" (Russell et al 2026 p3). There was also variable recovery in number of diagnoses after the pandemic. For example, depression, asthma, chronic obstructive pulmonary disease (COPD), psoriasis, and

osteoporosis had fewer diagnoses than expected by November 2024, but diagnoses of chronic kidney disease had increased above expected levels. "Unadjusted analyses stratified by ethnicity and socio-economic status suggest differential patterns of recovery, particularly for individuals with dementia. This study highlights the potential for near real time monitoring of disease epidemiology using routinely collected health data, informing strategies to enhance case detection and investigate inequities in healthcare" (Russell et al 2026 p1).

Russell et al (2026) explained the reduction in diagnoses during the pandemic thus: "Numerous factors are likely to contribute to these decreases, including fewer people presenting at a time when primary and secondary care services were under enormous pressure, stay-at-home guidance, and reduced access to routine testing and secondary care referrals. We observed a disproportionate impact during the early phase of the pandemic on diagnosis rates for conditions that are more reliant on elective diagnostic testing, such as COPD and asthma (spirometry and lung function testing), coeliac disease (endoscopy), and osteoporosis (bone densitometry), or less urgent secondary care referral (such as psoriasis). This finding contrasts with smaller decreases for conditions that are more likely to be diagnosed acutely, such as stroke/transient ischaemic attack, epilepsy, and multiple sclerosis" (p8). The factors influencing post-pandemic diagnoses would include large backlogs of patients waiting for tests, pressure to reduce backlogs limited consultation times (or involved remote rather than face-to-face consultations), patient self-medication and non-NHS treatment (eg: depression), and changes in practice (eg: chronic kidney disease) (Russell et al 2026).

The OpenSAFELY database provided a large nationally representative dataset for this study with routinely collected health data and "near real time monitoring", but dependent on the accurate recording of health codes and diagnoses by staff. there were some minor statistical points. While "the differences between observed and expected diagnosis rates should be viewed as projections based on stable pre-pandemic trends, rather than rates that account for all external factors in the absence of the pandemic" (Russell et al 2026 p10). Sub-group analysed was limited.

The researchers noted this caution: "Observed trends in diagnosis rates must be considered against the backdrop of abrupt changes in healthcare utilisation and

diagnostic testing during the pandemic. The number of general practice appointments in England decreased by one third between March and April 2020, before increasing above pre-pandemic levels. Pathology testing in primary care decreased by more than 70% during the first month of the pandemic for many common tests, including renal function and glycated haemoglobin, with modestly increased testing above pre-pandemic levels from 2022 onwards. Hospital admissions for non-covid-19 diseases decreased by 34% in 2020, with scheduled and unscheduled admissions decreasing by 47% and 14%, respectively" (Russell et al 2026 p10).

Russell and Galloway (2026) summed up: "Diagnosis rates did not fall and rebound uniformly across multiple diseases – some diseases recovered quickly, others lagged, and some may never return to pre-pandemic trajectories. Without access to timely data, these changes can remain hidden until it is too late to respond" (p1). They continued: "Importantly, the data infrastructure now exists to track changes in disease patterns as they emerge. Health data platforms such as OpenSAFELY make it possible to analyse routinely collected health data for tens of millions of people in near real time. Privacy safeguards mean that no individual patient data are visible to researchers, and all analysis code and platform activity are shared publicly. These capabilities are transformative. By enhancing our understanding of how common diseases are and how they vary by population and over time, we can better model workforce needs, target prevention efforts, and predict future demand. This enables policymakers and clinicians to act earlier, directing services and resources to where they are needed most" (Russell and Galloway 2026 p1).

## **1.8. OTHER VIRUSES AND PANDEMICS**

The 1918 influenza A (H1N1) pandemic is estimated to have killed between 50-100 million people globally. Medical reports of the time and subsequent historical studies show that it was first recognised in the summer of 1918, peaked in that autumn, and continued into the next year (Patrano et al 2022).

Since the late 1990s genetic analysis has been applied to stored tissue samples, and these have confirmed influenza A virus of the H1N1 sub-type. Complete genomes of the virus have been made (eg: from victims at Camp Upton, New York in September 1918; Xiao

et al 2013).

### **1.8.1. H1N5 Bird Flu**

In 2024 H5N1 bird flu in the USA spread through dairy cows, and a small number of humans in close contact with them have been infected. Since 2023 over nine hundred human cases globally have been reported (infected from different animals) with approximately half of them dying (Wade 2024).

Fear of a mutation that would allow human-to-human transmission is always present. "If H5N1 does gain the ability to pass from person to person, we may be in for more lockdowns and vaccine rush to stave off a full-blown pandemic" (Wade 2024 p11).

### **1.8.2. Future Threats**

Usutu is a mosquito-borne virus, originating in South Africa in 1959, and first detected in the UK in 2020. It has the potential to be fatal to birds (Cuff 2025). "Although devastating for birds, Usutu poses a low risk to humans. Infections are rare and tend to only cause a mild fever, but its arrival in the UK marked the first time a mosquito-borne virus can pass from an animal to a human had emerged in animal hosts in the country. Virus experts are keeping a close eye on how far and fast it is spreading because it could be a template for other mosquito-borne diseases. For example, West Nile virus spreads in the same way as Usutu and requires the same environmental conditions" (Cuff 2025 p17). Climate change is the key variable, particularly more summer night temperatures that remain above 20 °C (Cuff 2025).

Reports of new infections in an alarming way has occurred at the same time as covid-19 is "forgotten". For example, in relation to China in late 2024, headlines warned of a mysterious new virus. Human metapneumovirus (hMPV) was the infection, which is not new or mysterious. It is a "cold virus", first discovered in 2001, but probably circulating for centuries (Le Page 2025b).

"A virus that ordinarily affects marine animals has caused glaucoma-like symptoms in a small but growing group of people in China. This is the first known time that a virus that originates from aquatic animals has infected people and caused ill health" (JW 2026 p5).

The condition is persistent ocular hypertension viral anterior uveitis (POH-VAU) (caused by covert mortality nodavirus) (JW 2026), and seventy sufferers were studied between January 2022 and April 2025 in China by Liu et al (2026).

### **1.8.3. Anti-Bodies**

Anti-bodies to viruses are created by contact with a virus, and so older individuals will have a greater range of anti-bodies due to greater contact than younger individuals. This is relevant to influenza viruses, and specifically the possibility that "immunity elicited by seasonal influenza viruses affect H5N1 susceptibility" (Garretson et al 2025).

Influenza A viruses circulating since 1918 can be divided into Group 1 (H1N1 and H2N2) and Group 2 (H3N2) (Garretson et al 2025). Individuals born before 1968, it was proposed, will be more likely to be "immunologically imprinted" with Group 1 viruses in childhood (Gostic et al 2016). H5N1, though distinct, shares characteristics with Group 1 viruses, and so older individuals may be protected to some degree from severe disease with H5N1 (Garretson et al 2025).

Garretson et al (2025) analysed anti-bodies to Groups 1 and 2 viruses in blood samples of 121 adults born between 1927 and 1998. Older individuals showed anti-bodies that could bind to H5 viruses. So, "it is possible that older individuals would be partly protected in the event of an H5N1 pandemic. Younger individuals who have fewer group 1 influenza virus exposures would likely benefit more from an H5N1 vaccine, even a mismatch stockpiled vaccine" (Garretson et al 2025).

### **1.8.4. Epidemiological Transitions**

Barrett et al (1998) developed the idea of three "epidemiologic transitions" to describe emerging and re-emerging infections:

First epidemiologic transition: The rise of infectious diseases in the Neolithic period (beginning 10 000 years ago) as human settled in communities and moved from being nomadic hunter gatherers, and the appearance of domesticated animals (potential zoonotic reservoirs).

Second: The shift from infectious to chronic

diseases with industrialisation (in mid-nineteenth century Europe and North America).

Third: Re-emerging infections (with anti-biotic resistance) and the emergence of new infections (since late 20th century). "The US Institute of Medicine has identified six principal factors contributing to the current problem of re/emerging infectious diseases: 1. ecological changes; 2. human demographics and behaviour; 3. international travel and commerce; 4. technology and industry; 5. microbial adaptation and change; and 6. breakdown in public health measures" (Barrett et al 1998 p264).

Omran (1971) first used the idea of "epidemiologic transitions" or "ages": (1) of pestilence and famine; (2) of receding pandemics; and (3) of degenerative and man-made diseases (Barrett et al 1998).

## 1.9. REFERENCES

Al-Tawfiq, J.A et al (2025) Editorial: Nimble Nimbus and emerging SARS-CoV-2 variants - implications for covid vaccines New Microbes and New Infections 67, 101618

Anderson, E.M.R & Crump, J.A (2025) Nationalism in New Zealand media during the covid-19 pandemic: A mixed methods study Public Health Ethics 18, 3, PHAF009

Baeroe, K et al (2025) Pandemic and crisis preparedness and response: Conceptualising cultural, social and political drivers of trustworthiness and collective action Public Health Ethics 18, 2, PHAF004

Barrett, R et al (1998) Emerging and re-emerging infectious diseases: The third epidemiologic transition Annual Review of Anthropology 27, 247-271

Chambers, S et al (2003) Deliberative democratic theory Annual Review of Political Science 6, 307-326

Cuff, M (2025) Blackbird deaths point to looming West Nile virus threat to the UK New Scientist 15th March, p17

Garretson, T.A et al (2025) Immune history shapes human antibody responses to H5N1 influenza viruses Nature Medicine 31, 1454-1458

Gostic, K.M et al (2016) Potent protection against H5N1 and H7N9 influenza via childhood haemagglutinin imprinting Science 354, 722-726

JW (2026) Eye disease jumps from marine life to people New Scientist 11th April, p5

- Lawton, G (2025) The unanswered questions New Scientist 4th January, 16-18
- Le Page, M (2025a) What could cause the next pandemic? New Scientist 4th January, 8-11
- Le Page, M (2025b) "Mystery" virus is anything but New Scientist 18th January, p10
- Liu, S et al (2026) An emerging human eye disease is associated with aquatic virus zoonotic infection Nature Microbiology 11, 892-906
- Marshall, M (2025) What we know about long covid New Scientist 4th January, 11-12
- Nandagiri, R et al (2025) Precarity and pills in a pandemic: Online abortion care-seeking in Poland during covid-19 SSM - Qualitative Research in Health 8, 100663
- Omran, A.R (1971) The epidemiologic transition: A theory of the epidemiology of population change Millbank Memorial Fund Quarterly 49, 4, 509-537
- Parker, M.J et al (2020) Ethics of instantaneous contact tracing using mobile phone apps in the control of the covid-19 pandemic Journal of Medical Ethics 46, 427-431
- Patrano, L.V et al (2022) Archival influenza virus genomes from Europe reveal genomic variability during the 1918 pandemic Nature Communications 13, article 2314
- Russell, M.D & Galloway, J.B (2026) We must no longer accept waiting years to understand disease burden BMJ 392, s133
- Russell, M.D et al (2022) Incidence and management of inflammatory arthritis in England before and during the covid-19 pandemic: A population-level cohort study using OpenSAFELY Lancet Rheumatology 4, 12, e853-e863
- Russell, M.D et al (2026) Time trends in newly recorded diagnoses of 19 long term conditions before, during, and after the covid-19 pandemic: Population based cohort study in England using OpenSAFELY BMJ 392, e086393
- Sarchet, P (2025) Have we learned the lessons of covid-19? New Scientist 4th January, 13-15
- Sergeant, A (2025) Privacy, exploitation and global disease surveillance: Can we justly prevent the next pandemic? Public Health Ethics 18, 3, PHAF014
- Sridhar, D (2022) Preventable: How a Pandemic Changed the World and How to Stop the Next London: Penguin
- The leader (2025) Why look back? New Scientist 4th January, p5
- Wade, G (2024) Bird flu may be adapting to become more infectious to humans New Scientist 7th December, p11

Wade, G (2025) A new era of vaccines New Scientist 4th  
January, p19

Xiao, Y.I et al (2013) High-throughput RNA sequencing of a  
formalin-fixed, paraffin-embedded autopsy lung tissue sample from the  
1918 influenza pandemic Journal of Pathology 229, 535-545

## **2. HEALTH ISSUES**

- 2.1. Depression after covid-19
- 2.2. Chronic pain
- 2.3. Severe symptoms
- 2.4. Some thoughts on long covid
- 2.5. References

### **2.1. DEPRESSION AFTER COVID-19**

Older adults (50 years and above) are disproportionately affected by covid-19 infection and the aftermath (eg: post-covid syndrome). Depression is a particular symptom of covid-19 survivors (eg: nearly half of patients; Deng et al 2021).

Bai et al (2025) investigated older adults and depression after covid-19 infection using data from the "Panel Study of Active Ageing and Society" (PAAS) in Hong Kong. Just over 5000 over 50s were interviewed by telephone in late 2022. The key measures included covid-19 infection (had or not), depressive symptoms (using the eight-item "Centre for Epidemiologic Studies Depression Scale" (CES-D 8) (Van de Velde et al 2009) (eg: "my appetite was poor"; "I felt sad" (scored as number of days in past fortnight)), resilience ("being able to cope with life or societal changes" and "being able to recover from illness, injury, or suffering" (each scored as "never" (0) to "almost every day" (4))), and family functioning (eg: "we can express feelings to each other").

About one-third of respondents had been infected with covid-19. The likelihood of post-covid-19 depression for these individuals was reduced by higher resilience, and family functioning, with the latter being more important for women than men. "Individuals with stronger family functioning were more likely to develop resilience following infection. However, the resilience did not mitigate depressive symptoms to the same extent as it did for those with weaker family functioning" (Bai et al 2025 p62).

The data were self-reported, and in some cases based on limited questions (eg: two items for resilience).

Also, Bai et al (2025) admitted, "older adults with lower psychological resilience may have a higher mortality risk..., might have been less likely to participate in our survey. This could potentially introduce a selection bias" (p65).

Resilience can be defined as "the ability to recover

quickly from adversity, trauma, or other significant sources of stress" (Bai et al 2025 p60).

## **2.2. CHRONIC PAIN**

Chronic pain (CP) in US adults is reported as increasing in the first twenty years of the 21st century (Zajacova et al 2025). What about during and after the covid-19 pandemic?

Zajacova et al (2025) analysed data from the "National Health Interview Survey" (NHIS) (2019, 2021 and 2023) to answer this question. The NHIS is based on a national representative sample of nearly 90 000 adults aged eighteen years and above. CP was defined as pain on most or every day in the past three months, based on six body areas (eg: back; headache or migraine; hip, knee and feet), while high-impact CP (HICP) was limited activities due to pain.

The prevalence of pain was 21% in 2019 and 2021, but 24% in 2023, while HICP prevalence was 8%, 7%, and 9% respectively. Five body areas showed this pattern (only tooth/jaw pain did not increase), as did all population sub-groups (gender, ethnicity, age).

Overall, self-reported CP has increased since the covid-19 pandemic. One explanation proposed by the researchers was "long covid", while social isolation, loneliness, and heightened levels of stress and anxiety were also possibilities. Changes in (self)-reporting cannot be excluded.

## **2.3. SEVERE SYMPTOMS**

Severe covid-19 outcomes have been found to be linked to minority ethnic status, and to occupation in separate studies, but what about the interaction of the two? Kibuchi et al (2025) analysed Scottish data to see if the risk of severe covid-19 among ethnic groups was mediated by occupation. Data came from the "Early Pandemic Evaluation and Enhanced Surveillance of Covid-19" (EAVE-II) study began in March 2020 and lasting for two years. The primary outcome was severe hospitalisation for covid-19 or death, and occupations were categorised into four groups based on risk of covid-19 infection. In total, data were available on over two million 30-64 year-olds.

Minority ethnic group members had an increased risk of severe covid-19 compared to White individuals. Type of

occupation was found to increase severe covid-19 risk for South Asians, but the opposite for other ethnic minority groups.

The occupations were categorised based on perceived average risk of covid-19, but "different occupations experienced varying levels of risks across different waves during the pandemic. For example, healthcare workers experienced elevated risks at the start of the pandemic which reduced over time while education workers faced persistent risks throughout the pandemic. Moreover, occupational risk of severe covid-19 associated with each occupation varied across the pandemic due to different levels of exposure to SARS-CoV-2 infection based on lockdown measures at each time and PPE [personal protective equipment] provided" (Kibuchi et al 2025 p383).

General patterns were also assumed with ethnic groups. "For example, the 2011 Scottish Census data shows a larger proportion of African individuals were employed in caring, leisure and other service occupations; while Pakistani individuals (sub-set of South Asian group) were predominantly engaged in self-employed sales and customer service roles, each of which presents distinct exposures to covid-19 risks. Additionally, some minority ethnic groups in the UK, particularly Pakistani and Bangladeshi populations, are more prone to severe underlying health conditions and are more likely to live in multi-generational households, factors that may have compounded their risk of hospitalisation or death from covid-19" (Kibuchi et al 2025 p383).

#### **2.4. SOME THOUGHTS ON LONG COVID**

Studies have suggested recently that autoimmunity is the basis of "at least some cases" and symptoms (eg: pain) of long covid (Marshall 2026b). For example, Chen et al (2026) took immunoglobulin G (IgG) antibodies in blood from adults with long covid and injected them into mice. These mice became more sensitive to touch and pain (Marshall 2026b).

The link between Epstein-Barr virus (EBV), which is common in humans, and fatigue-related conditions may be due to genetic differences between those who are more fatigue-related condition prone than others. Nyeo et al (2026) found differences in the immune system genes, which simplistically means that individuals with fatigue-related conditions are less able to detect EBV infection.

"This virus does something to our immune system, and it does something persistent and permanent to our immune system in some people. When the viral DNA persists, it may keep gently nudging the immune system, eventually triggering it to attack the body" (Ruth Dobson of Queen Mary University of London quoted in Marshall 2026a).

## 2.5. REFERENCES

Bai, X et al (2025) Covid-19 infection, resilience, and depressive symptoms: The protective role of family functioning for ageing Chinese adults in Hong Kong Aging and Mental Health 29, 1, 59-68

Chen, H-J et al (2026) Transfer of IgG from long covid patients induces symptomology in mice Cell Reports Medicine ([https://www.cell.com/cell-reports-medicine/fulltext/S2666-3791\(26\)00110-2](https://www.cell.com/cell-reports-medicine/fulltext/S2666-3791(26)00110-2))

Deng, J et al (2021) The prevalence of depression, anxiety, and sleep disturbances in covid-19 patients: A meta-analysis Annals of the New York Academy of Sciences 1486, 1, 90-111

Kibuchi, E et al (2025) Are ethnic inequalities in covid-19 outcomes mediated by occupational risk? Analyses of a 2-year record linked national cohort study in Scotland European Journal of Public Health 35, 2, 379-385

Marshall, M (2026a) Why only some get ill from EBV New Scientist 7th February, p12

Marshall, M (2026b) We're learning more about long covid New Scientist 11th April, p14

Nyeo, S.S et al (2026) Population-scale sequencing resolves determinants of persistent EBV DNA Nature 650, 664-672

Van de Velde, S et al (2009) Measurement equivalence of the CES-D 8 in the general population in Belgium: A gender perspective Archives of Public Health 67, article 15

Zajacova, N et al (2025) Pain among US adults before, during, and after the covid-19 pandemic: A repeated cross-sectional study using the 2019-2023 National Health Interview Survey medRxiv (<https://www.medrxiv.org/content/10.1101/2024.10.24.24316018v2>)

### **3. TREATMENT MISCELLANY**

(A) Mutagenic drugs (eg: favipiravir; molnupiravir) work by increasing the mutation rate of a virus, which ultimately results in its extinction. "Mutational meltdown" is based on the assumption that new mutations are deleterious. RNA viruses are particularly vulnerable because of their comparably high mutation rates (Bank et al 2022).

But viruses can adapt and resist mutagenic drugs. Examples include remdesivir and SARS-CoV-2, and favipiravir and Ebola virus (Bank et al 2022). "Yet, favipiravir is one of the most effective compounds inducing extinction in in-vitro influenza A virus, foot-and-mouth disease virus, and West Nile virus. Across various screens in the laboratory in influenza virus, only one potential resistance mutant against favipiravir has been identified and experimentally validated to date. Because of its special mode of action, it was hypothesised that the effect of mutagenic drugs may depend on the viral replication system, the genome structure, and the time at which treatment starts" (Bank et al 2022 p2).

Bank et al (2022) warned of the risk of "new beneficial mutations. Increasing the mutation rate could allow the virus population to 'find' fit genotypes (eg: including multiple, individually deleterious mutations) that would be unreachable under the default mutation rate. The longer a virus population survives under mutagenic drug treatment, the larger the possibility that adaptive genotypes may appear, which could cause damage not just in the current host, but also when transmitted to new, untreated, hosts" (p2).

Using computer modelling, Bank et al (2022) found that mutagenic drugs could induce beneficial changes for the virus that may not be picked up in experimental trials. Three mechanisms of adaptation were noted that worked "either by successively increasing the growth rate of the virus, by altering the mutation rate of the virus, or by altering the fitness effects of all deleterious mutations that the virus is accumulating (and has accumulated) [ie: tolerance]" (Bank et al 2022 pp6-7).

#### Reference

Bank, C et al (2022) Evolutionary models predict potential mechanisms of escape from mutational meltdown [bioRxiv](https://www.biorxiv.org/content/10.1101/2022.06.21.496937v2) (https://www.biorxiv.org/content/10.1101/2022.06.21.496937v2)

(B) There are a few individuals who experience loss of smell during covid-19 infection, and afterwards the ability does not return. In such cases, Fieux et al (2025) showed that injection of blood cells called platelets into the nose can help. Of 32 patients, half received treatment and half a saline solution (placebo). The outcome task was to identify forty odours at baseline (pre-treatment) and one year later. The treatment group showed a significant improvement in odour recognition (Wong 2025)

## References

Fieux, M et al (2025) Long-term outcomes of PRP injections for post-viral olfactory loss: A prospective cohort study International Forum of Allergy and Rhinology 15, 4, 420-427

Wong, C (2025) Covid smell loss eased by injecting cells into the nose New Scientist 1st February, p10

(C) Severe covid-19 involves the potential of lung injury and acute respiratory failure among other symptoms, and so a treatment that could reduce death is important. Inhaled nebulised unfractionated heparin (UFH) is a possibility.

van Haren et al (2025) reported a meta-trial<sup>1</sup> of six randomised clinical studies. Though there were slight differences between the studies, the hospitalised covid-19 patients received UFH and standard care or standard care. The outcome measures were intubation (breathing tube inserted in the windpipe) or death at 28 days after randomisation to treatment or control. The studies involved 478 patients from ten hospitals in six countries (Argentina, Brazil, USA, Egypt, Indonesia, and Ireland) between June 2020 and December 2022.

Patients in the treatment group had lower rates of intubation or death than the control group (11.2% vs 22.4%).

It was not possible to have a placebo group at all sites, except in the USA study where inhaled nebulised sodium chloride was used with twenty-five patients, and this would have been the ideal in terms of research design.

---

<sup>1</sup> A meta-trial is “a prospective pooled analysis of individual de-identified patient-level data from multiple individual trials” (van Haren et al 2025 p4).

## Reference

van Haren, F.M.P et al (2025) Efficacy of inhaled nebulised unfractionated heparin to prevent intubation or death in hospital patients with covid-19: An investigator-initiated international meta-trial of randomised clinical studies eClinical Medicine 88, 103339

(D) An AI drug-discovery platform has proposed an abandoned drug could be used to treat a range of viruses. The drug is "ERA-923", developed for breast cancer treatment, but abandoned in the early 2000s after poor clinical trial data. This drug could be adapted to bind to the Thumb-1 domain on viruses and block their replication. Experiments with mice with covid-19 have tried with success (new drug named "MDL-001"), but the data are unpublished at this time by "Model Medicines" (the developers) (Klein 2026).

## Reference

Klein, A (2026) All-in-one anti-viral fights colds and covid New Scientist 11th April, p12

## **4. MISCELLANY**

- 4.1. Sex ratio at birth
- 4.2. Air pollution

### **4.1. SEX RATIO AT BIRTH**

“The ability to adjust offspring sex may be an evolutionary mechanism to promote survival of mammalian species under adverse conditions” (Cleaver and Non 2024 p1). This has been formalised in the “Trivers-Willard hypothesis” (Trivers and Willard 1973), which proposes that mothers in poor environments are more likely to have daughters than sons. “This is because in times of stress, prenatal parental investment in offspring may decrease, which is expected to have adverse effects on offspring fitness. Daughters are a ‘safer bet’ for reproductive success of a lineage, as weak female mammalian offspring in poor conditions are more likely to successfully reproduce than weak male offspring, and females are more likely to survive infancy and childhood” (Cleaver and Non 2024 p1).

At a population level it should be possible to see differences in the sex ratio at birth (SRB) in times of scarcity and stress compared to times of abundance. That is the ratio of male to total births will be lower in hard times.

The human global SRB is approximately 0.51 (male births/total births) (ie: 51 males born to 49 females) (Cleaver and Non 2024). Various studies have found differences in SRB (table 4.1).

STUDY	GROUP	MALES BORN
Grech (2023)	Black women in USA	Less than Whites
Cameron & Dalerum (2009)	Billionaires	More than general public
Catalano & Bruckner (2012)	Sweden 1862-1991	Less in times of economic downturn
Fukuda et al (1998)	Kobe earthquake, Japan, 1995	Less nine months later

Table 4.1 - Examples of studies showing differences in SRB.

The covid-19 pandemic was a stressful event, so a

decrease in the SRB was predicted. This has been found in some studies (eg: South Africa; Masukume et al 2022), but not others (eg: Iran; Saadat 2021) (Cleaver and Non 2024).

Cleaver and Non (2024) analysed data for the USA, hypothesising that "there would be a decrease in the SRB in the United States potentially 3-5 months after the onset of the covid-19 pandemic in March 2020, due to selection against male foetuses during the second or third trimester of gestation..." (p2). Birth data came from the "National Centre for Health Statistics" for the period 2015 to 2021 (over 25 million singleton births over seven years).

Overall, no significant change in SRB was found during the pandemic, but the SRB was lower in disadvantaged groups (based on race/ethnicity, age, and education) generally. Less males were born to Black and Hispanic (vs White) mothers, those with less than 12 years of education, and older mothers (eg: 45 years and above). But Asian mothers had more sons than White mothers.

## References

Cameron, E.Z & Dalerum, F (2009) A Trivers-Willard effect in contemporary humans: Male-biased sex ratios among billionaires PLoS ONE 4, e4195 (Freely available at <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0004195>)

Catalano, R.A & Bruckner, T (2012) Economic antecedents of the Swedish sex ratio. In Kieselbach, T & Mannila, S (eds) Unemployment, Precarious Work and Health Wiesbaden: VS Verlag fur Sozialwissenschaften

Cleaver, P & Non, A.L (2024) Were fewer boys born in the United States during the early months of the covid-19 pandemic? A test of the Trivers-Willard hypothesis Evolutionary Anthropology 33, e22043

Fukuda, M et al (1998) Decline in sex ratio at birth after Kobe earthquake Human Reproduction 13, 2321-2322

Grech, V (2023) Divergences in sex ratio at birth in US Census Regions due to racial factors: Chronic stress and female foeticide Public Health 221, 170-174

Masukume, G et al (2022) Covid-19 onset reduced the sex ratio at birth in South Africa PeerJ 10, e13985

Saadat, M (2021) Sex ratio at birth in covid-19 era: A report from Iran EXCLI Journal 20, 1499-1501

Trivers, R.L & Willard, D.E (1973) Natural selection of

parental ability to vary the sex ratio of offspring Science 179, 90-92

#### **4.2. AIR POLLUTION**

"A drop in air pollution during the covid-19 lockdowns changed the chemistry of the atmosphere, driving a surge in methane levels that has concerning implications for future global warming. Methane lasts only about a decade in the atmosphere but heats Earth far more than carbon dioxide" (Luhn 2026 p8). Atmospheric methane doubled from 20 million to 40 m tonnes per year between 2020 and 2022, and then returned to 20 m in 2023 (Luhn 2026), in the main due to reduced emissions from transportation, aviation, and shipping (eg: nitrogen oxide) during the pandemic (Ciais et al 2026). Nitrogen oxide breaks down methane, so less of the former means more of the latter (Luhn 2026).

#### References

Ciais, P et al (2026) Why methane surged in the atmosphere during the early 2020s Science 391, eadx8262

Luhn, A (2026) Lower emissions during lockdown linked to a rapid rise in methane New Scientist 14th February, p8