

Forgotten “Primum non nocere” and increased mortality after Covid-19 vaccination

Amrit Šorli

Stationary Cosmology Initiative, Slovenia

sorli.sci@gmail.com

<https://orcid.org/0000-0001-6711-4844>

Abstract

Background The main reason for the worldwide massive covid vaccination in 2021 was to reduce the high mortality caused by the Covid-19 virus in 2020. It is time that in 2022 a rigorous analysis is done of the effectiveness of this massive vaccination.

Methods In statistics, we have an accurate methodology to measure the impact of massive vaccination on public health. The mathematical relation between vaccinated/alive groups will be repeated between vaccinated/dead groups with high statistical certainty. This occurs because we are dealing with big numbers.

Results Calculations were done for five periods of four weeks: weeks 35-38 (2021), weeks 39-42 (2021), weeks 43-46 (2021), weeks 47-50 (2021), and weeks 51(2021)-2(2022). Obtained results are confirming that the mortality of the vaccinated infected groups is higher on average by 14.5% than the mortality of non-vaccinated infected groups.

Conclusions Results are suggesting the extension of the statistic between the vaccinated/alive group and the vaccinated/dead group for different age groups. These statistics will have higher statistical significance because of the elimination of the Simpson effect. Calculating the exact impact of covid-19 vaccination on the mortality rate is the necessary step to satisfy the first principle of medicine: “Primum non nocere”.

Keywords: Covid-19 vaccination, death rate, sick status days

1. Introduction

Alive people in a given country are set “alive”. In this set, we have a subset of “vaccinated”. As people are dying in a given time period, we have a set of dead persons. In this set, we have a subset of vaccinated persons. In case vaccines have no impact on the death rate following equation is valid:

$$\frac{\text{vaccinated}}{\text{alive}} = \frac{\text{dead vaccinated}}{\text{total deaths}} \quad (1).$$

We calculate the proportional number of dead vaccinated as follows:

$$\text{dead vaccinated proportional number} = \frac{\text{vaccinated} * \text{total deaths}}{\text{alive}} \quad (2).$$

The proportional number for a given time period should be always bigger than the statistical number of dead vaccinated. In this case, vaccines are saving lives. If the proportional number will be smaller than the statistical number, vaccines are increasing the death rate. This

calculation should be done for each month of the year 2021 for 5 age groups: up to 20 years, from 20 to 40, from 40 to 60, from 60 to 80, and above 80. In this way, the so-called Yule-Simpson effect in statistics is excluded. These precise statistical analyses would give us a highly precise result of how massive vaccination decreases the rate of deaths of the entire population, preventing people from dying because of covid. Or eventually, the opposite result is how massive vaccination increases the death rate of the entire population. Results of insurance company OneAmerica are not encouraging: “The head of the insurance company OneAmerica stated that their data indicated that the death rate for individuals aged 18 to 64 had increased 40% over the pre-pandemic period. Scott Davidson, the company’s CEO, stated that this represented the highest death rate in the history of insurance records, which does extensive data collection on death rates each year. Davidson also noted that this high death rate increase has never been seen in the history of death data collection. Previous catastrophes of monumental extent increased death rates by no more than 10 percent, 40% is unprecedented [1]. It is becoming clear that the Covid-19 vaccination analysis might not get the expected results.

There are no “hidden variables” that could influence the result of the calculation proposed in this article. Vaccinated and non-vaccinated people in a given country are eating the same food, drinking the same water, breathing the same air, and watching the same TV programs. The only reason that could impact their health status is the Covid-19 vaccination.

At this point, the crucial question is arising: is the Covid-19 vaccine saving more lives or causing excess deaths because of numerous heavy adverse reactions? Research published in NATURE states that the difference in the spread of the virus between those who have been vaccinated and those who have not been vaccinated is negligible [2]. A recent article in LANCET is confirming that Covid-19 is spreading at a similar rate between unvaccinated and vaccinated: “This study showed that the impact of vaccination on community transmission of circulating variants of SARS-Cov-2 appeared not to be significantly different from the impact among unvaccinated people” [3].

Preliminary research on the effectiveness of Covid-19 vaccination is not encouraging. Research done by Ingrid Tojersen has shown that the Covid-19 vaccination has been causing the deaths of the elder population [4,5]. Research done by Sivan Gazid and co-authors is confirming that the natural immunity of unvaccinated people is far better protection than Covid-19 vaccines [6]. At this point, it is clear that it is necessary to calculate the effectiveness of Covid-19 as we are proposing. BMJ editorial is suggesting, that for the rigorous mathematical evaluation of covid vaccine efficacy we need row data [7]. We could calculate the exact impact on the entire population in a given country and worldwide if we would have data on how many people who died in a given time period of one month have been at least once vaccinated. This would allow calculating the proportional number of “dead vaccinated” and comparing it with the actual statistical number of dead vaccinated people.

In each company or governmental agency, we can calculate the effectiveness of the Covid-19 vaccination by comparing the days of work with the sick status days in percentage in a given month or year:

Working days of vaccinated workers in one month..... 100%

Sick days of vaccinated workers in one month..... X%

$$X\% = \frac{N_{\text{sick days of vaccinated workers}} * 100}{N_{\text{working days of vaccinated workers}}} \quad (3)$$

Working days of nonvaccinated workers in one month..... 100%

Sick days of nonvaccinated workers in one month..... Y%

$$Y\% = \frac{N_{\text{sick days of nonvaccinated workers}} * 100}{N_{\text{working days of nonvaccinated workers}}} \quad (4).$$

In a given company, we can easily see which percentage of sick days is higher. Let's imagine we have a company with 100 employees. 50% of them are vaccinated, and 50% of them are not vaccinated. Vaccinated workers are protected from Covid-19, and should have a much smaller percentage of sick days than nonvaccinated workers. According to the Covid-19 vaccination doctrine percentage of sick days should be much smaller in the vaccinated group of people than in the non-vaccinated group of people.

In Slovenia and worldwide, we observe a highly increased number of dead-born babies in 2022 respect to the previous years. The first check that should be done is the possible influence of Covid-19 vaccination. The number of death-born babies X_D is the sum of the following numbers:

$$X_D = X_6 + X_5 + X_4 + X_3 + X_1 + X_0 \quad (5),$$

where X_6 is the number of dead-born babies where both parents are each three times vaccinated, where X_5 is the number of dead-born babies where one parent is three times vaccinated, and another parent is two times vaccinated (and so on), where X_0 is the number of dead-born babies where both parents have not been vaccinated. Using this model, we could see possible relations with the Covid-19 vaccination. EMA, VAERS, and the Yellow card reports on high numbers of vaccines' side effects [8,9,10] are alarming bells for detailed analysis proposed in this article.

A recent article in Vaccine (Elsevier) is confirming the excess risk of serious adverse effects: "Pfizer and Moderna mRNA COVID-19 vaccines were associated with an excess risk of serious adverse events of special interest of 10.1 and 15.1 per 10,000 vaccinated over placebo baselines of 17.6 and 42.2 (95 % CI -0.4 to 20.6 and -3.6 to 33.8), respectively. Combined, the mRNA vaccines were associated with an excess risk of serious adverse events of special interest of 12.5 per 10,000 vaccinated (95 % CI 2.1 to 22.9); risk ratio 1.43 (95 % CI 1.07 to 1.92)" [11]. The article reported that the excess risk of Adverse Effects of Special Interest (AEIs) was higher than the risk reduction for covid-19 hospitalization: "In the Moderna trial, the excess risk of serious AESIs (15.1 per 10,000 participants) was higher than the risk reduction for COVID-19 hospitalization relative to the placebo group (6.4 per 10,000 participants). In the Pfizer trial, the excess risk of serious AESIs (10.1 per 10,000) was higher than the risk reduction for COVID-19 hospitalization relative to the placebo group (2.3 per 10,000 participants)" [11].

Theoretical research published back in 2021 has estimated that Covid-19 will diminish the death rate [12]. The proposed statistical analysis presented in this article can verify the

theoretical study of how many lives were saved by covid vaccines in a particular country not only for ages above 60 but for the entire population.

2. Calculations of the death rate of the infected vaccinated group and infected non-vaccinated group using official data of the UK HEALTH SECURITY AGENCY

According to the official interpretation, vaccinated people are highly protected against infection. Because of this, we expect that the group of infected unvaccinated people will die because of the Sars-CoV-2 virus at a much higher rate than the other group of infected vaccinated people. We will evaluate the death rate of the infected vaccinated group and infected unvaccinated group in the set “alive”. In both groups, people are dying so we have in a given time period a new set of dead persons that have been infected. Some of them have not been vaccinated and others have been vaccinated.

We have for every 4 weeks a subset of Sars-CoV-2 infected dead people. We assume that vaccination has no impact on people’s health, so we can write the following equation:

$$\frac{\text{alive vaccinated}}{\text{alive}} = \frac{\text{Sars-CoV-2 infected vaccinated deaths proportional number}}{\text{Sars-CoV-2 infected deaths}} \quad (6).$$

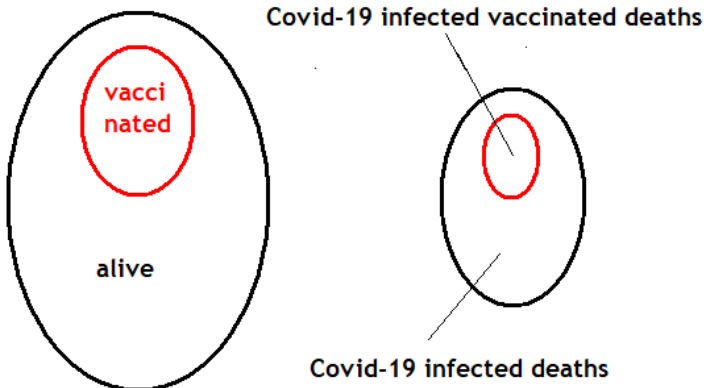


Figure 1: set of alive and set of Sars-CoV-2 infected deaths

Out of equation (6) follows:

$$\text{infected vaccinated deaths proportional n.} = \frac{\text{alive vaccinated} * \text{Sars-CoV-2 infected deaths}}{\text{alive}} \quad (7).$$

Using equation (7) we can calculate the proportional number of Sars-CoV-2 infected vaccinated dead persons in England in a given 4 weeks. The number we get is a proportional number where there is no impact of the vaccination on the death rate. When 10% of the population is vaccinated in the group of Covid-9 infected dead persons, 10% will be vaccinated. When 20% of the population is vaccinated in the group of Sars-CoV-2 infected dead persons, 20% will be vaccinated, and so on. When 100% of the population is vaccinated in the group of Sars-CoV-2 infected dead persons, 100% will be vaccinated. This “Sars-CoV-2 infected vaccinated dead

proportional number” (in short “proportional number”) can be named "vaccine variant" using terms used in physics.

Now we compare the numbers of Sars-CoV-2 infected vaccinated dead persons in official statistics with the “Sars-CoV-2 infected vaccinated deaths proportional number” we calculate. The statistical number of Sars-CoV-2 infected vaccinated dead persons must be lower than the proportional number. In this case, vaccines are saving people’s lives:

$$\text{covid infected vaccinated deaths} < \text{proportional number} \quad (8).$$

We can calculate how many Sars-CoV-2 infected persons have been saved from death with vaccination in a given 4 weeks by the following equation:

$$\text{Eq. (9): saved lives} = \text{Sars-CoV-2 infected vaccinated deaths proportional number} - \text{Sars-CoV-2 infected vaccinated deaths in statistics}$$

In case, that the number of Sars-CoV-2 infected vaccinated dead is bigger than the proportional number of covid infected vaccinated dead, vaccination has a negative impact on mortality rate, it takes lives, some people have died prematurely because of being vaccinated:

$$\text{Eq. (10): lost lives} = \text{Sars-CoV-2 infected vaccinated deaths in statistics} - \text{Sars-CoV-2 infected vaccinated deaths proportional number}$$

The calculation for weeks 35-38 in year 2021

A “vaccinated” person in this calculation is the person that was vaccinated with the first dose or more. Let’s calculate the proportional number of dead vaccinated in England between weeks 35 and 38. In this timeframe, there were 3165 covid deaths in the UK. 2448 of them have been vaccinated [13]. We see that the percentage of vaccinated people in the UK with one dose in this period is 65.1% [1]. In 2021 the population of the United Kingdom was 56.191.000 people. 65.1% of the entire population is 36.580.300 people.

$$\text{proportional number} = \frac{36.580.300 * 3165}{56.191.000}$$

$$\text{proportional number} = 2060.$$

Officially declared vaccinated covid dead persons between 35 and 38 weeks are 2448.

$$\text{covid infected vaccinated deaths declared} = 2448.$$

This means that $2448 - 2060 = 388$ persons had prematurely passed away due to the vaccination in the period of week 35 - 38.

$$\text{lost lives} = 2448 - 2060 = 388$$

The calculation for weeks 39 - 42, 2021

Let's calculate the proportional number of dead vaccinated in England between weeks 39 and 42. In this period there were 2772 covid deaths in the UK. 2270 of them have been vaccinated [13]. We see that the percentage of vaccinated people in the UK with one dose in this period is 66.1% [13]. The population of the UK was 56.191.000 people in 2021. 66.1% of the entire population is 37.142.200 people.

$$\text{proportional number} = \frac{37.142.200 * 2772}{56.191.000}$$

$$\text{proportional number} = 1832.$$

Officially declared vaccinated covid dead persons between 39 and 42 weeks are 2270.

$$\text{covid infected vaccinated dead declared} = 2270.$$

This means that $2270 - 1832 = 438$ persons had prematurely passed away due to the vaccination in the period weeks 39 - 42:

$$\text{lost lives} = 2270 - 1832 = 438$$

The calculation for weeks 43-46, 2021

Let's calculate the proportional number of dead vaccinated in England between weeks 43 and 46. In this period there were 3726 covid deaths in the UK. 2992 of them have been vaccinated [13]. We see that the number of vaccinated people in England in this period with the first dose is 67.4% [13]. The population of the UK was 56.191.000 people in 2021. 67.4% of the entire population is 37.872.700 people. We use equation (7) and we get:

$$\text{proportional number} = \frac{37.872.700 * 3726}{56.191.000}$$

$$\text{proportional number} = 2511.$$

Officially declared vaccinated covid dead persons between 43 and 46 weeks are 2992.

$$\text{covid infected vaccinated deaths declared} = 2992.$$

This means that $2992 - 2511 = 481$ persons had prematurely passed away due to the vaccination in the period weeks 43 - 46:

$$\text{lost lives} = 2992 - 2511 = 481$$

The calculation for weeks 47-50, 2021

Let's calculate the proportional number of dead vaccinated in England between weeks 47 and 50. In this period there were 2956 covid deaths in the UK. 2140 of them have been vaccinated [13]. By 19 December 2021, the overall vaccine uptake in the UK for dose 1 was 68.2%, see page 3 COVID-19 vaccine surveillance report – week 51[13]. The population of the UK was 56.191.000 people in 2021. 68.2.% of the entire population is 38.322.200 people. We use equation (7) and we get:

$$\text{proportional number} = \frac{38.322.200 * 2956}{56.191.000}$$

$$\text{proportional number} = 2016.$$

Officially declared vaccinated covid dead persons (one dose or more) between 47 and 50 weeks are 2140.

$$\text{covid infected vaccinated deaths declared} = 2140$$

This means that $2140 - 2016 = 124$ persons had prematurely passed away due to the vaccination in the period weeks 47 - 50:

$$\text{lost lives} = 2140 - 2016 = 124$$

The calculation for weeks 51,2021 – 2,2022

Let's calculate the proportional number of dead vaccinated in England between weeks 51 2021 and weeks 2 2022. In this period there were 3893 covid deaths in the UK. 2878 of them have been vaccinated. By 16 January 2022, the overall vaccine uptake in England for dose 1 was 68.9%, see page 3 [13]. The population of the UK was 56.191.000 people in 2021. 68.9.% of the entire population is 38.322.200 people. We use equation (4) and we get:

$$\text{proportional number} = \frac{38.715.500 * 3893}{56.191.000}$$

$$\text{proportional number} = 2682.$$

Officially declared vaccinated covid dead persons (one dose or more) between 52 weeks 2021 and weeks 2 2022 are 2878.

$$\text{covid infected vaccinated deaths declared} = 2878$$

This means that $2878 - 2682 = 196$ persons had prematurely passed away due to the vaccination in the period weeks 47 - 50:

$$\text{lost lives} = 2878 - 2682 = 196$$

Below we have the results of all calculated periods:

weeks 35-38: total covid infected deaths are 3165, number of covid infected vaccinated deaths is 2448, number of dead because of heavy adverse effects caused by vaccination is 388 which is 15% of covid infected vaccinated deaths

weeks 39-42: total covid infected deaths are 2772, number of covid infected vaccinated deaths is 2270, number of dead because of heavy adverse effects caused by vaccination is 438 which is 19% of covid infected vaccinated deaths

weeks 43-46: total covid infected deaths are 3726, number of covid infected vaccinated deaths is 2992, number of dead because of heavy adverse effects caused by vaccination is 481 which is 16% of covid infected vaccinated deaths

weeks 47-50: total covid infected deaths are 2956, number of covid infected vaccinated deaths is 2140, number of dead because of heavy adverse effects caused by vaccination is 124 which is 6% of covid infected vaccinated deaths

weeks 51(2021)-2(2022): total covid infected deaths are 3893, number of covid infected vaccinated deaths is 2878, the number of dead because of heavy adverse effects caused by vaccination is 196 which is 7% of covid infected vaccinated deaths

In 20 weeks, the total number of deaths of people that were tested covid positive are 16.505. The total number of the covid test positive vaccinated deaths is 12.728. The total number of deaths because of heavy adverse effects caused by vaccination is 1627 persons. This means in the group of covid test positive vaccinated deaths which is 12.728 persons, 12.8% have died because of heavy adverse effects. When all time periods will be calculated, we will have a more detailed percentage.

The total number of deaths of the covid test positive people that died in 20 weeks is 12.728. The total proportional number of vaccinated infected people that died is 11.101. This means, in the group of covid positive vaccinated deaths there is a 14.5% higher rate of mortality than in the group of covid positive unvaccinated considering vaccines would not have any influence on the death rate. Data confirm that infected vaccinated people have a 14.5% higher probability to die of covid infection than infected unvaccinated.

According to the official narrative, vaccines are saving lives, which means the number of covid infected vaccinated deaths statistically recorded should be significantly lower than the proportional calculated number of the covid infected vaccinated deaths. We got the opposite results, see table 1 below. The statistical number of the covid infected vaccinated deaths is significantly higher than the calculated proportional number of covid infected vaccinated deaths, which means that infected vaccinated people are dying at a higher rate than infected unvaccinated, presumably because of negative effects caused by vaccines.

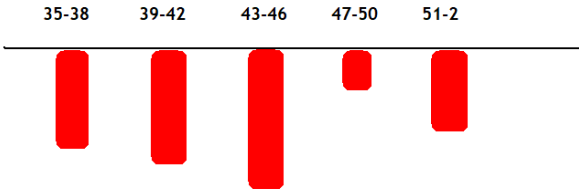


Figure 2: Obtained results

These results are limited in scope but of high statistical significance. It is unlikely that in any other time period, vaccines would save lives. Knowing the rules of statistics, we do not expect that, had we calculated the relationship between the proportional and real number of vaccinated covid deaths for all time periods, we would get results that contradicted our findings. We are therefore inclined to conclude that covid vaccines are causing heavy adverse effects that lead to premature death, and not only in England. The relation between the “vaccinated covid infected deaths” and “non-vaccinated covid infected deaths” in a short 4 weeks period is a statistically significant indicator that points to the results of Covid-19 vaccination. Covid vaccination was supposed to be safe and efficient, and it was predicted that it would significantly decrease the number of Sars-CoV-2 infected vaccinated deaths compared to the number of covid infected unvaccinated deaths.

3. Discussion

Results of insurance company OneAmerica are not encouraging: “The head of the insurance company OneAmerica stated that their data indicated that the death rate for individuals aged 18 to 64 had increased 40% over the pre-pandemic period. Scott Davidson, the company’s CEO, stated that this represented the highest death rate in the history of insurance records, which does extensive data collection on death rates each year. Davidson also noted that this high death rate increase has never been seen in the history of death data collection. Previous catastrophes of monumental extent increased death rates no more than 10 percent, 40% is unprecedented” [1]. It is becoming clear that Covid-19 vaccination did not get positive results.

We could calculate the exact impact on the entire population in England and worldwide if we would have data on how many people who died in a given time period of four weeks have been at least once vaccinated. This would allow calculating the proportional number of “dead vaccinated” and comparing it with the actual statistical number of deaths. The proposed calculation might be difficult to understand for medical experts, so I will give an example: Let’s imagine that in a given country we give in January 2021 a red bracelet on the hands of 30% of entire population. In every age group, exactly 30% of people have red bracelet. We follow number of deaths in the next months, and we will see that exactly 30% dead people in each age group will have a red bracelet. This is how statistics of big numbers work. We can imagine that Covid-10 vaccine is a red bracelet and has no impact on the health of the vaccinated person. On this plausible preposition, we calculate a proportional number of deaths. Comparing the proportional number of deaths with the real statistical number of deaths is showing the real impact of vaccination on the population death rate.

4. Percentage account of increased mortality caused by covid vaccination

Calculation of the covid vaccination on increased mortality can also be done by middle school mathematics if someone would have an attempt to see the real impact of vaccination. Most statistics about covid vaccines effectiveness that are published are avoiding this calculation because there is a huge pressure on medical profession to hide devastating results of covid vaccination. But this is only the question of time. Human society is developed

to the stage that will not support the unbearable lie stories of how covid vaccines are saving human lives.

In this simple effective calculus the entire population of a given country is divided into 5 age groups: 0-20 years, 21 to 40 years, 41 to 60 years, 61 to 80 years, and over 80 years. Each age group (total number – TN) consists of two subgroups: vaccinated subgroup (VA) and unvaccinated subgroup (UN):

$$\mathbf{TN = VA + UN} \quad (8)$$

where **TN** stands for all people in a particular group, **VA** stands for vaccinated persons and **UN** stands for unvaccinated persons. A certain number of people die each month in each age group:

$$\mathbf{D = Dva + Dun}$$

where **D** means all dead people in a certain age group, **Dva** means dead vaccinated people and **Dun** means unvaccinated dead people. Unvaccinated people are not protected from the deadly virus Kovid-19 and therefore should die in greater numbers. The calculation of mortality expressed in percentage in the vaccinated subgroup in a certain age group for each month is calculated as follows:

mortality in percentage of vaccinated subgroup: $\mathbf{100Dva / VA}$.

The calculation of the mortality in percentage in the unvaccinated subgroup in a certain age group for each month is as follows:

mortality in percentage of unvaccinated subgroup: $\mathbf{100Dun / UN}$.

For each month, it is possible to accurately calculate the mortality of the vaccinated subgroup in a certain age group and the mortality of the unvaccinated subgroup in a certain age group. Avoiding these calculations is avoiding the fact that covid vaccination has done an unrepairable harm to the public health worldwide. Carrying out these calculations and inform about them scientific medical community is the main task of every medical journal whose editors respect the first principle of medicine: “Primum non nocere”!

5. Conclusions

Covid-19 vaccination should significantly decrease the number of covid infected vaccinated deaths in comparison to the number of covid infection unvaccinated deaths. There are no "hidden variables" that could influence the results because covid-infected vaccinated and covid-infected unvaccinated are living under the same conditions. The results of the presented analysis call for an extensive analysis of UK HEALTH SECURITY AGENCY data for all four weeks periods of the time of covid vaccination for different age groups in England.

A simple calculation at the end of the article can give us detailed analysis of Covid-19 vaccination impact on the mortality rate in a given month. This should be done urgently in order to preserve the first principle of medicine: “Primum non nocere”. Obtained results are not encouraging. It seems that massive covid vaccination has done an unrepairable harm to the public health worldwide. How this has happened still is an unanswered question. One thing is clear: at the end of the year 2020 all security measures of public health has been destroyed, all protocols for early treatment of Covid-19 with tested medicals were banned. Politics has established new rules of medicine that are not scientific, they are pure dogmatism. This is where medical doctors have lost their holy grail of medicine. Medicine has become a tool of globalist politics to reach their goals. The only way for medical doctors to continue their mission with respect and grace is to take medicine back into their hands.

References:

1. Blaylock RL. COVID UPDATE: What is the truth? *Surg Neurol Int.* 2022 Apr 22;13:167. doi: 10.25259/SNI_150_2022 PMID: 35509555; PMCID: PMC9062939.
2. Yuyang Lei et al., SARS-CoV-2 Spike Protein Impairs Endothelial Function via Downregulation of ACE 2, *Circulation Research.* 2021;128:1323–1326, 31 Mar 2021, <https://doi.org/10.1161/CIRCRESAHA.121.318902>
3. Smriti Mallapaty, COVID vaccines cut the risk of transmitting Delta — but not for long, *Nature* (2021) <https://www.nature.com/articles/d41586-021-02689-y>
4. Ingrid Tojersen, *BMJ* 2021; 372 doi: <https://doi.org/10.1136/bmj.n149> (Published 15 January 2021)
5. Ingrid Tojersen, *BMJ* 2021; 373 doi: <https://doi.org/10.1136/bmj.n1372> (Published 27 May 2021)
6. Sivan Gazid et al., Comparing SARS-CoV-2 natural immunity to vaccine-induced immunity: reinfections versus breakthrough infections, August 25, 2021 <https://www.medrxiv.org/content/10.1101/2021.08.24.21262415v1.full.pdf>
7. Editorials, Covid-19 vaccines and treatments: we must have raw data, now, *BMJ* 2022; 376 doi: <https://doi.org/10.1136/bmj.o102> (Published 19 January 2022) Cite this as: *BMJ* 2022;376:o102
8. Yellow card reports, <https://www.gov.uk/government/publications/coronavirus-covid-19-vaccine-adverse-reactions>
9. VAERS <https://vaers.hhs.gov/>
10. EMA <https://www.ema.europa.eu/en>
11. Fraiman J, Erviti J, Jones M, Greenland S, Whelan P, Kaplan RM, Doshi P. Serious adverse events of special interest following mRNA COVID-19 vaccination in randomized trials in adults. *Vaccine.* 2022 Sep 22;40(40):5798-5805. <https://doi.org/10.1016/j.vaccine.2022.08.036>

12. Meslé MM, Brown J, Mook P, Hagan J, Pastore R, Bundle N, Spiteri G, Ravasi G, Nicolay N, Andrews N, Dykhanovska T, Mossong J, Sadkowska-Todys M, Nikiforova R, Riccardo F, Meijerink H, Mazagatos C, Kyncl J, McMenamin J, Melillo T, Kaoustou S, Lévy-Bruhl D, Haarhuis F, Rich R, Kall M, Nitzan D, Smallwood C, Pebody RG. Estimated number of deaths directly averted in people 60 years and older as a result of COVID-19 vaccination in the WHO European Region, December 2020 to November 2021. *Euro Surveill.* 2021 Nov;26(47):2101021. <https://doi.org/10.2807/1560-7917.ES.2021.26.47.2101021>

13. UK HEALTH SECURITY AGENCY

<https://www.gov.uk/government/publications/covid-19-vaccine-weekly-surveillance-reports>