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# **On the probability that the injury to XXXXXXXX was caused by the Covid vaccine**

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## **Executive Summary**

1. On 4 November 2021 at 3:45pm XXXXXXXX (referred to subsequently as “Jane”) received a Pfizer Covid vaccine booster jab having previously had two doses of the AstraZeneca vaccine earlier in 2021.
2. At some time within the next 20 minutes Jane, who was then a 72-year-old healthy and very active woman, suffered a stroke (a catastrophic intercranial haemorrhage) leaving her unconscious for 2 weeks and since then immobile, right-side paralysed and unable to speak.
3. I have been asked by Jane’s family if it is possible to determine the probability that Jane’s injury was caused by the vaccine.
4. It is not possible to provide a definitive probability answer to this question, but we can estimate the expected number of women aged 65–75 in England suffering a stroke coincidentally (i.e. not caused by the vaccine) shortly after a covid vaccine in a year. Then we can compare that number with the incidence of actual reported strokes of women aged 65-75 year shortly after a covid vaccine in 2021.
5. Based on historical data about strokes in England, there is about a 1 in 1.2 million probability that a randomly selected woman aged 65-75 who takes 3 covid jabs in a 1-year period would suffer a stroke coincidentally within 20 minutes of receiving one of the jabs. That is, therefore, an incredibly unlikely event. But, because there are about 3 million women aged 65-75 in England, if they all took 3 covid vaccines in a 1-year period there is about a 92% probability at least one would suffer a stroke coincidentally within 20 minutes of a jab. However, it is highly unlikely (less than 5% probability) there would be more than 5 such women. We would expect (statistically) between 1 to 5. That means Jane could have been one of the 1-5 such extremely unlucky women.

6. However, while it is difficult to get an accurate estimate, based on reports of adverse reactions to systems such as the Yellow Card Scheme and VAERS, it is likely that at least many dozens of women aged between 65-75 (far more so than men) suffered strokes within 24 hours of a covid vaccine in England in 2021. Even without clinical evidence to determine if these cases could have been caused by the vaccine, the fact that there have been many more than the 1 to 5 expected coincidental cases, suggests that the vaccines significantly increase the risk of strokes.
7. Hence, I believe there is sufficient statistical evidence to conclude that the stroke was several times more likely to have been caused by the vaccine than by chance.
8. There is also evidence to suggest that there is a 1 in 800 probability of a serious adverse reaction following a covid Pfizer vaccine<sup>1</sup>. While low, this probability is much higher than the 1 in 3.5 million probability of a coincidental stroke within 20 minutes of a covid Pfizer vaccine. Hence, there is no question that 'on the balance of probabilities' it is far more likely that Jane's injury was caused by the vaccine.
9. Moreover, there is additional evidence that strongly supports the hypothesis that the vaccine was a causal factor in Jane's injury. Specifically, it is known that the Pfizer batch, number FH0114, from which Jane received the vaccine was especially problematic. There are 1,970 separate adverse reaction reports for that batch alone, of which there are 73 within 24 hrs with a diagnosis that relates to clots (strokes, pulmonary emboli, dvt, clots in eyes etc). The batch comes from a spun up factory in Belgium.

### **About the author of this report**

10. I am a mathematician and computer scientist. I retired in 2022 having been awarded Professor Emeritus of Risk at Queen Mary University of London. I am a Director of Agena Ltd, a company specialising in artificial intelligence and Bayesian probabilistic reasoning. My current focus is on quantifying risk and uncertainty using causal, probabilistic models that combine data and knowledge.

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<sup>1</sup> Joseph Fraiman et al, 'Serious Adverse Events of Special Interest Following mRNA COVID-19 Vaccination in Randomized Trials in Adults' (2022) 40 Vaccine 5798

11. I have published 7 books and over 400 peer reviewed articles<sup>2</sup>. My work covers many areas, notably law and forensics. I have given expert testimony in major criminal and civil cases, and health.
12. Much of my expert testimony work has focused on computing probability and risk relating to rare events.
13. When the Covid crisis began in early 2020 I was Principal Investigator on a major interdisciplinary project dedicated to using Bayesian probabilistic methods to improve risk assessment and clinical decision-making for chronic diseases<sup>3</sup>. Inevitably therefore much of my research was redirected to analysing the Covid data and risk.
14. To date, I have authored or co-authored over 30 research articles related to different aspects of Covid data and risk<sup>4</sup>. I have just published a very well received book<sup>5</sup>, with Prof Martin Neil, detailing our key findings about Covid.
15. I believe I am well qualified to comment on this case.

**I. Estimating the expected number of strokes that would happen independently of a vaccine**

16. There are no easily available data about strokes that are specific for fit and healthy women aged 72, but there are data relevant to all women aged between 65 and 75. It is reasonable to use these data as an approximation since, while they include fit healthy women younger than 72 (for whom the risk of strokes is lower) they also include unhealthy women between 65 and 71 and all women aged 73-75 (all of whom will have a higher risk of strokes).
17. Prior to 2021, the number of women aged 65–75 who suffered a stroke each year in England was approximately 22,500. There are approximately 3 million women aged 65-75 in England. This means that in any given year the probability that any randomly selected woman aged 65-75 has a stroke is 22,500 divided by 3 million. This is approximately a 1 in 133 chance. The probability that in any given 20-minute period a randomly selected woman aged 65-75 has a stroke is

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<sup>2</sup> <https://www.normanfenton.com/publications-1>

<sup>3</sup> <https://pambayesian.org/>

<sup>4</sup> <https://www.normanfenton.com/covid-19>

<sup>5</sup> Norman E Fenton and Martin Neil, *Fighting Goliath: Exposing the Flawed Science and Statistics behind the COVID-19 Event* (Sovereign Rights Publishing 2024).

approximately 1 in 3.5 million (since there are 365 days in a year, 24 hours in each day and three 20-minute intervals in each hour).

18. So, the probability that in any year a randomly chosen woman aged 65-75 suffers a coincidental stroke within 20 minutes of a vaccine (i.e. not caused by the vaccine) is approximately 1 in 3.5 million. Assuming (as in the case of Jane) that such a woman has 3 covid vaccines in the year, then (using the Binomial Theorem):

**the probability that a randomly chosen woman aged 65-75 would suffer at least one stroke within 20 minutes of taking a vaccine, purely by chance, over a 1-year period is approximately 1 in 1.7 million.**

(Note that this probability is also the same if we replace 'taking vaccine' with any 'three times a year' event, such as perhaps having a routine GP visit, or hand-writing a letter).

That is an extremely low probability. However, as there are about 3 million women aged 65-75 in the UK, in any 1-year period there is about a 92% chance that at least one woman will suffer a coincidental stroke within 20 minutes of a vaccine (again, using the Binomial Theorem<sup>6</sup>). The probability of at least two such cases is 72%, the probability of at least 3 is 47%, the probability of at least 4 is 25%, the probability of at least 5 is 11%, and the probability of at least 6 is 4%. So, we would 'expect' between 1 and 5, but no more.

19. So, while it is incredibly unlikely that a specific woman aged 65-75 would suffer a coincidental stroke within 20 minutes of a vaccine within a 1-year period, it is more likely than not that at least one woman somewhere in the UK would. It is possible that Jane was one of the very few such unlucky women.

## **II. Was it more likely that the vaccine was a causal factor for the stroke than that it happened coincidentally?**

20. We now know that we would expect between 1 and 5 women aged between 65-75 to suffer a stroke coincidentally within 20 minutes of a vaccination in any one year. The additional data that we need to test the causation hypothesis are the **actual** number of women aged between 65 and 75 who suffered a stroke within 20 minutes of a covid vaccine in 2021. We know there is at least one, namely Jane. If

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<sup>6</sup> <https://youtu.be/xJKuq5PZQUs>

this number is much greater than the expected number of between 1 and 5, then we can conclude it is very probable that there is causation.

21. Submitted records of adverse reactions following vaccinations in the UK are recorded in the MHRA Yellow Card system and these were supposed to be incorporated into the US-based VAERS System which, unlike Yellow Card is searchable. However, many of the UK records have been purged from VAERS. Also, time of adverse reaction following vaccination is typically provided at no lower level of granularity than days. So, at best, we can search for those suffering strokes within 24 hours of vaccination. Using VAERS with the search terms:

"stroke", "cva" and "cerebral". Delimiters: covid-19 vaccines, all brands and  
Onset of Symptoms: 1 day.

returned a total number of 145,299 records.

22. Obviously, only a proportion of those 145,299 records will be women aged 65-75 and fewer still will be within 20 minutes of the vaccine. Moreover, the potential population of VAERS includes the whole of America and Europe. So, the total number of strokes recorded (within 20 minutes of vaccine) in VAERS in any population of 3 million women aged 65-75 will be much less than the 145,299. However, set against that, we also need to consider the under-reporting rate of vaccine adverse reactions (at most 10% are reported) and the fact that any adverse reaction within 20 minutes – as opposed to 24 hours – of a vaccine is more indicative of causation anyway.

23. This means it is reasonable to conclude that there are at least many dozens of reported strokes within 20 minutes of a covid vaccine in the relevant population - far more than the 1 to 5 expected coincidental cases.

### **III. Reported adverse reactions in the Pfizer batch that Jane received**

24. In addition to the generic statistical evidence supporting the vaccine causation hypothesis over the alternative coincidence hypothesis, there is damning evidence about the lethality of the specific Pfizer batch from which Jane received her vaccine on 4 Nov 2021.

25. The specific batch was numbered FH0114. There are 1,970 separate reports in VAERS for just that batch, of which there are 73 within 24 hrs with a diagnosis that

relates to clots (strokes, pulmonary emboli, dvt, clots in eyes etc). There is a damning report about that batch arising from an FOI<sup>7</sup>

26. The batch comes from a spun-up factory in Belgium<sup>8</sup>

#### **IV. Clinical evidence of increased risk of strokes from the covid vaccines**

27. Multiple case studies suggest the vaccines do increase the risk of stroke, especially in women.

28. There have been multiple papers reporting actual cases of strokes most likely caused by the covid vaccines:

- Kakovan et al (2022)<sup>9</sup> “Stroke Associated with COVID-19 Vaccines” is a comprehensive review of cases up to the end of 2021 of “increasing reports of various types of stroke including ischemic stroke, and hemorrhagic stroke, as well as cerebral venous sinus thrombosis (CVST) after COVID-19 vaccination” The review includes 133 references, many of which describe how these vaccines may cause the strokes. They report on 35 cases of patients with ischemic or hemorrhagic stroke within 1 to 21 days after the vaccination. Most were women within the age range of 26-60 years. They report on 221 cases of patients with CVST; of these 75% were female with median age 46, but most received the vaccine at least 7 days before the stroke.
- Schulz et al (2021)<sup>10</sup> “COVID-19 Vaccine-Associated Cerebral Venous Thrombosis in Germany” reported on 62 cases of CVT, primary ischemic stroke, primary intracerebral haemorrhages, and other neurological events occurring within 1 month of a COVID-19 vaccination in Germany. Of these 76% were female with a mean age of 47. They concluded that in 58% of the CVT cases it was “highly probable” that the cause was the vaccine.
- Al-Mahyani et al (2021)<sup>11</sup> “Ischaemic stroke as a presenting feature of ChAdOx1 nCoV-19 vaccine-induced immune thrombotic thrombocytopenia”.

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[https://assets.publishing.service.gov.uk/media/669f8e2cfc8e12ac3edb02c1/FOI\\_24.307\\_All\\_Yellow\\_Card\\_reports\\_for\\_COVID-19\\_PfizerBioNTech\\_vaccine\\_Batch\\_FH0114\\_Drug\\_Analysis\\_Print.pdf](https://assets.publishing.service.gov.uk/media/669f8e2cfc8e12ac3edb02c1/FOI_24.307_All_Yellow_Card_reports_for_COVID-19_PfizerBioNTech_vaccine_Batch_FH0114_Drug_Analysis_Print.pdf)

<sup>8</sup> <https://fyi.org.nz/request/26792/response/102916/attach/html/4/HNZ00052246%20OIA%20response.pdf.html>

<sup>9</sup> <https://pmc.ncbi.nlm.nih.gov/articles/PMC8894799/>

<sup>10</sup> <https://onlinelibrary.wiley.com/doi/10.1002/ana.26172>

<sup>11</sup> <https://jnnp.bmj.com/content/92/11/1247.full>

The authors report on three cases of women in the UK who presented with ischaemic stroke which turned out to be vaccine-induced immune thrombotic thrombocytopenia (VITT) following the AstraZeneca vaccine. A similar detailed case is presented in Elaidouni et al (2022)<sup>12</sup> “Acute ischemic stroke after first dose of inactivated COVID-19 vaccine: A case report.

- Michele et al “Malignant cerebral infarction after ChAdOx1 nCov-19 vaccination: a catastrophic variant of vaccine-induced immune thrombotic thrombocytopenia”<sup>13</sup>. The authors report on two cases, both women aged 55 and 57 respectively.

29. In their analysis of Pfizer’s and Moderna’s own trial data Fraiman et al<sup>14</sup> showed that there is a 1 in 800 probability of a serious adverse reaction following each covid mRNA vaccine. While low, this probability is much higher than the 1 in 3.5 million probability of a stroke purely by chance within 20 minutes of a covid Pfizer vaccine. Hence, there is no question that ‘on the balance of probabilities’ it is far more likely that Jane’s injury was caused by the vaccine.

## V. Conclusion

30. While serious adverse reactions shortly after a covid vaccine are quite rare (approximately 1 in 800) it is far more unlikely that a woman aged between 65-75 would suffer a stroke coincidentally (i.e. **not caused by the vaccine**) shortly after a covid vaccine (approximately 1 in 3.5 million probability).

31. In the England population of women aged between 65-75 we would expect between 1 and 5 of these coincidental strokes to occur in any year assuming each such woman had 3 vaccine doses. But there is strong evidence that the actual number of reported strokes shortly after the vaccine is many times more than that, suggesting that the vaccine was a causal factor in most such strokes.

32. The specific Pfizer batch from which Jane received the vaccine was known to have caused at least 1,970 separate adverse reactions (73 of which were similar to that of Jane)..

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<sup>12</sup> <https://pmc.ncbi.nlm.nih.gov/articles/PMC8983275/>

<sup>13</sup> <https://www.nature.com/articles/s41467-021-25010-x>

<sup>14</sup> Joseph Fraiman and others, ‘Serious Adverse Events of Special Interest Following MRNA COVID-19 Vaccination in Randomized Trials in Adults’ (2022) 40 Vaccine 5798 <[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4125239](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4125239)> accessed 28 June 2022.

33. Hence, taking account of basic analysis of historical stroke data, reports of adverse reactions following covid vaccines and the specific problems of the Pfizer batch from which Jane was injected, lead me to conclude that 'on the balance of probabilities' it is far more likely that the vaccine was a causal factor in Jane's injury than the alternative hypothesis.

**Statement of Truth**

I believe that the facts stated in this statement are true. I understand that proceedings may be brought against anyone who makes, or causes to be made, a false statement in a document verified by a statement of truth without an honest belief of its truth.

Signed:  \_\_\_\_\_

Dated: 3 March 2025 \_\_\_\_\_