Cancer and COVID Vaccines

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Abstract

Are Covid vaccines associated disproportionately with cancer compared to the other 98 vaccines in the VAERS database. We can answer this question by calculating the Proportional Reporting Ratio (PRR) for each cancer symptom associated with COVID vaccines. A PRR $>= 2$ is regarded as a danger signal, where the symptom is occurring at a disproportionate incidence compared to the other 98 vaccines.

Datasource

The dataset covers 33 years of VAERS data from 1990 to 2023 and includes data for 99 different vaccines and 16849 unique symptoms. The frequency of each symptom for each vaccine is counted and the proportional reporting ratio calculated for each symptom. The final dataset can be viewed here -

Safety Signal (online) : [1]
Downloadables (csv | excel) : [2]
About (pdf) : [3]
Coding (python) : [4]

Metric

Proportional Reporting Ratio as a Measure of Incidence

Proportional Reporting Ratio (PRR) is used as a measure of incidence of a symptom. PRR calculates the percentage of reports where a particular symptom is recorded following administration of a drug A, and sees if this varies significantly from the percentage of reports where the same symptom is recorded after administration of drug B.

The PRR is defined as the ratio between the frequency with which a specific adverse event is reported for the drug of interest (relative to all adverse events reported for the drug) and the frequency with which the same adverse event is reported for all drugs in the comparison group.

> *For example, suppose that nausea was reported 83 times for a given drug of interest, out of 1356 adverse events reported for the drug. Thus the proportion of adverse events of nausea for this drug is 83/1356 = 0.061. Suppose that we wish to compare the drug of interest to a class of drugs, for which nausea was reported as an adverse event 1489 times, out of 53789 total adverse events reported for drugs in the class. Thus, nausea was reported with proportion 1489 / 53789 = 0.028 for the class of drugs. The PRR in this case is 0.061 / 0.028 = 2.18. This tells us that nausea was reported more than twice as frequently (among all adverse event reports) for the drug of interest compared to drugs in the comparison group.* [5]

Cases	Drug of interest	Comparator
Event of interest	a	c
Other events	b	d

$$PRR = \frac{a/(a+b)}{c/(c+d)}$$

PRR is used by both the European Medical Association and by the Center for Disease Control as a valid measure of incidence of a symptom, and so is used to detect a safety signal when a disproportionate incidence of a symptom occurs. [6] [7]

> *CDC will perform Proportional Reporting Ratio (PRR) analysis [...], excluding laboratory results, to identify AEs that are disproportionately reported relative to other AEs. [...] To determine if results need further clinical review, consider if clinically important, unexpected findings, seriousness, specific syndrome or diagnosis rather than non-specific symptoms*

Method

Using the dataset - - [**?**], the PRR scores for 99 different vaccines were obtained for symptoms synonymous with "cancer".

Results

0.1 Highest PRR for Cancer

Out of all 99 vaccines in VAERS Covid vaccines have the HIGHEST PRR for -

1. Appendix cancer (18.85)
2. Breast Cancer (4.07) : Breast Cancer Female (5.08), Breast Cancer metastatic (5.31), Breast Cancer Recurrent (4.71), Breast Cancer Stage 1 (18.85), HER2 positive Breast cancer (10.77)
3. Cancer Screening (7.96)
4. Colon cancer metastatic (6.77)
5. Colorectal cancer (5.97)
6. Endometrial cancer (12.06)
7. Hepatic cancer (7.56), Hepatic cancer metastatic (3.58), Hepatic cancer stage 4 (25.13),
8. Laryngeal cancer stage 4 (75.41)
9. Lung cancer metastatic (4.51)
10. Oesophageal cancer metastatic (25.13)
11. Prostate cancer (3.77)
12. Renal cancer (3.42)
13. Tonsil cancer (3.98)
14. Recurrent cancer (3.58)

So COVID vaccines have the strongest safety signals in VAERS for Breast, Colon, Liver, Lung, Kidney cancer.

0.2 Additional Safety Signals for Cancer

These are cancer symptoms where PRR $>= 2$

1. Bladder cancer (2.6)
2. Bone cancer (3.42)

3. Colon cancer (3.06)
4. Non-small cell lung cancer stage 4 (2.39)
5. Ovarian Cancer stage 3, 4 (18.85) (15.08)
6. Papillary Thyroid cancer (3.05)
7. Rectal Cancer (2.65)
8. Renal Cancer metastatic (2.39)
9. Skin cancer (3.05)
10. Testis cancer (3.14)
11. Throat cancer (10.05)

The PRRs for cancer symptoms associated with the bivalent booster are higher than the PRRs for cancer symptoms associated with the monovalent COVID shots - suggesting a cumulative effect due to multiple shots or a development of more cancer over time.

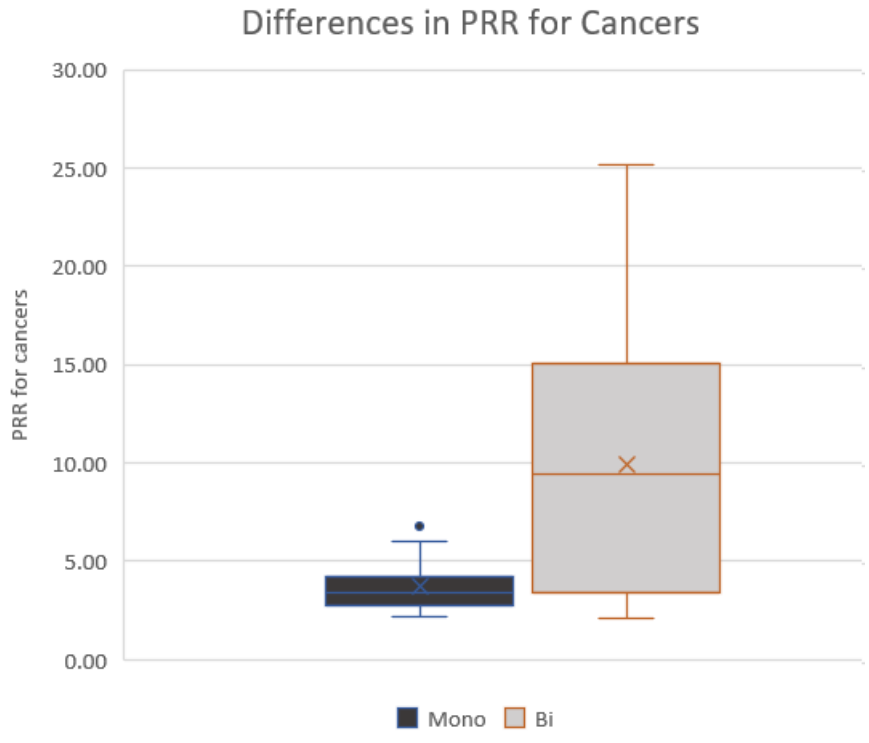

Figure 1: Higher PRR for bivalent compared to monovalent Covid vaccines for symptom of ”cancer”

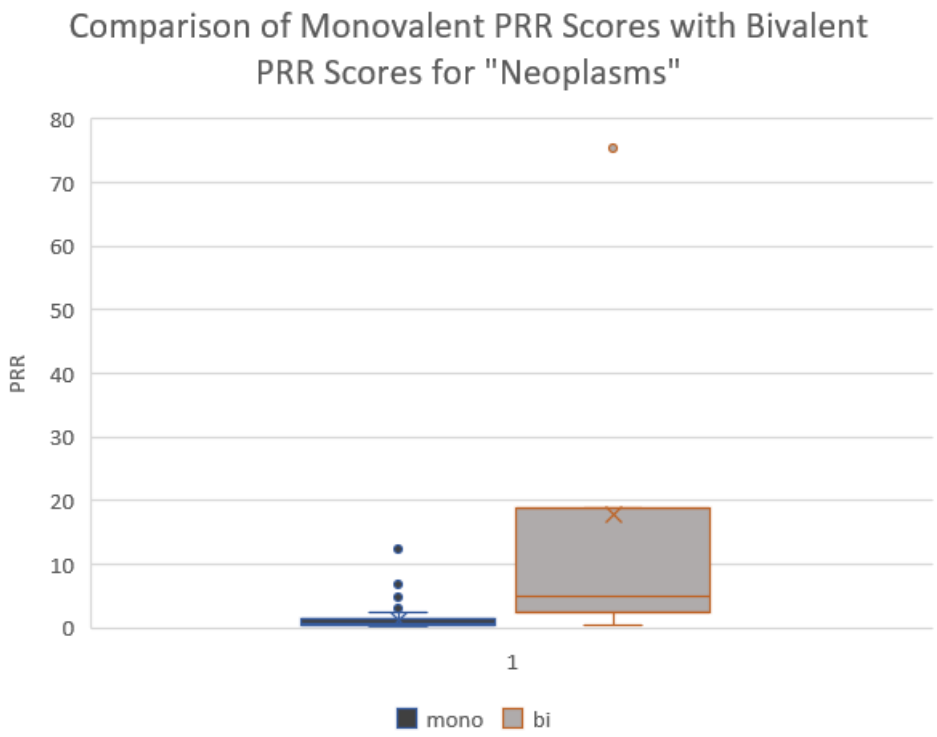

Figure 2: Higher PRR for bivalent compared to monovalent Covid vaccines for symptom of ”neoplasm”

0.3 Cancer Symptoms Unique to COVID Vaccines

Covid is the ONLY vaccine that has these symptoms in VAERS -

1. Adrenal gland cancer
2. Anaplastic thyroid cancer
3. Bile duct cancer, Bile duct cancer stage IV
4. Bladder cancer recurrent, Bladder cancer stage IV
5. Brain cancer metastatic
6. Breast cancer male, Breast cancer stage II, Breast cancer stage III, Breast cancer stage IV, Hormone receptor negative HER2 positive breast cancer, Hormone receptor positive breast cancer, Hormone receptor positive HER2 negative breast cancer, Triple positive breast cancer
7. Colon cancer stage IV
8. Endometrial cancer stage I, Endometrial cancer stage II, Endometrial cancer stage III
9. Epiglottic cancer
10. Fallopian tube cancer stage III
11. Gallbladder cancer, Gallbladder cancer metastatic, Gastric cancer stage I, Gastric cancer stage IV
12. Gastrointestinal cancer metastatic
13. Gingival cancer
14. Head and neck cancer metastatic
15. Hepatic cancer recurrent
16. Lip and/or oral cavity cancer recurrent
17. Metastatic gastric cancer
18. Metastatic salivary gland cancer
19. Metastatic uterine cancer
20. Nasal cavity cancer
21. Nasopharyngeal cancer, Nasopharyngeal cancer metastatic
22. Non-small cell lung cancer metastatic
23. Oropharyngeal cancer
24. Ovarian cancer metastatic, Ovarian cancer recurrent, Ovarian cancer stage II, Ovarian epithelial cancer, Ovarian germ cell cancer
25. Peritoneal cancer index

26. Pituitary cancer metastatic
27. Precancerous lesion of digestive tract
28. Prostate cancer recurrent
29. Rectal cancer metastatic
30. Refractory cancer
31. Renal cancer recurrent, Renal cancer stage I
32. Retroperitoneal cancer
33. Salivary gland cancer, Salivary gland cancer stage III
34. Scrotal cancer
35. Small cell lung cancer, Small cell lung cancer extensive stage, Small cell lung cancer metastatic
36. Targeted cancer therapy
37. Thyroid cancer metastatic, Thyroid cancer recurrent
38. Tongue cancer recurrent
39. Tonsil cancer metastatic
40. Tracheal cancer
41. Transitional cell cancer of the renal pelvis and ureter
42. Ureteric cancer
43. Vaginal cancer recurrent, Vaginal cancer stage 0, Vulval cancer metastatic

0.4 Recurrent Cancer

COVID is the only vaccine that has so many "recurrent" symptoms. These are almost entirely Leukemia, Lymphoma and cancer symptoms. Out of all 99 vaccines in VAERS, COVID vaccines have the highest PRR for "recurrent cancer", the highest PRR for "breast cancer recurrent", the highest PRR for "Leukemia recurrent",

0.5 Metastatic cancer

Metastatic cancer is cancer that is spreading. The organs that cancer spreads to with greatest frequency are the lymph nodes. Out of all 99 vaccines in VAERS, COVID vaccines have the highest PRR for metastases to bone, spine, breast and central nervous system, Liver, Lymph nodes. The highest PRR is for metastases to lymph nodes, so COVID vaccines have a strong association with Lymphoma.

SYMPTOM	COVID19
Acute myeloid leukaemia recurrent	inf
Angioimmunoblastic T-cell lymphoma re	inf
Diffuse large B-cell lymphoma recurrent	inf
Bladder cancer recurrent	inf
Chronic lymphocytic leukaemia recurren	inf
T-cell lymphoma recurrent	inf
Mantle cell lymphoma recurrent	inf
Non-Hodgkin's lymphoma recurrent	inf
Hepatic cancer recurrent	inf
Chronic myeloid leukaemia recurrent	inf
Lip and/or oral cavity cancer recurrent	inf
Ovarian cancer recurrent	inf
Prostate cancer recurrent	inf
Renal cancer recurrent	inf
Thyroid cancer recurrent	inf
Tongue cancer recurrent	inf
Lung adenocarcinoma recurrent	inf
Melanoma recurrent	inf
Vaginal cancer recurrent	inf
Pancreatic carcinoma recurrent	inf
Paralysis recurrent laryngeal nerve	inf
Plasma cell myeloma recurrent	inf
Recurrent subareolar breast abscess	inf
Breast cancer recurrent	4.11
Leukaemia recurrent	3.58
Recurrent cancer	3.58

Figure 3: Recurrent cancers

SYMPTOM		COVID19
Metastases to abdominal wall	0	inf
Metastases to adrenals	0	inf
Metastases to chest wall	0	inf
Metastases to neck	0	inf
Metastases to nervous system	0	inf
Metastases to oesophagus	0	inf
Metastases to pancreas	0	inf
Metastases to peritoneum	0	inf
Metastases to pituitary gland	0	inf
Metastases to soft tissue	0	inf
Metastases to spinal cord	0	inf
Metastases to spleen	0	inf
Metastases to testicle	0	inf
Metastases to trachea	0	inf
Metastases to lymph nodes	0	18.30923077
Metastases to bone	0	5.333558527
Metastases to spine	0	5.174347825
Metastases to central nervous system	0	4.67681438
Metastases to liver	0	3.78125418
Metastases to lung	0	3.468518872
Metastases to the mediastinum	0	2.388160535
Metastases to skin	0	1.990133779

Figure 4: Metastatic Cancer

0.6 Lymphoma

Covid vaccines have a clear association with lymphoma - which is cancer of the lymph nodes, T-cells and B-cells.

COVID-19 monovalent has high PRR scores for T-cell lymphoma, but the symptom of T-cell lymphoma is entirely absent for COVID-19-2 bivalent! Instead, the bivalent has very high scores for B-cell lymphoma. There may be some mechanistic reason for this.

SYMPTOM	COVID19	COVID19-2
Adult T-cell lymphoma/leukaemia	inf	0
Angioimmunoblastic T-cell lymphoma re	inf	0
Angioimmunoblastic T-cell lymphoma sta	inf	0
Enteropathy-associated T-cell lymphoma	inf	0
T-cell lymphoma recurrent	inf	0
T-cell lymphoma stage III	inf	0
T-cell lymphoma stage IV	inf	0
Cutaneous T-cell lymphoma	8.76	0
Angioimmunoblastic T-cell lymphoma	3.18	0
T-cell lymphoma	1.39	0
Peripheral T-cell lymphoma unspecified	1.19	0
Hepatosplenic T-cell lymphoma	0.00	0

Figure 5: T-cell Lymphoma

SYMPTOM	COVID19	COVID19-2
B-cell lymphoma stage II	inf	0
B-cell lymphoma stage III	inf	0
Diffuse large B-cell lymphoma recurrent	inf	0
Diffuse large B-cell lymphoma stage II	inf	0
Diffuse large B-cell lymphoma stage IV	inf	0
B-cell lymphoma	2.32	0.93
Diffuse large B-cell lymphoma	1.88	1.93
High-grade B-cell lymphoma	0.80	37.71
Extranodal marginal zone B-cell lymphor	0.80	0.00
Primary mediastinal large B-cell lymphon	0.80	0.00
B-cell lymphoma recurrent	0.40	0.00
B-cell lymphoma stage IV	0.00	0.00
Nodal marginal zone B-cell lymphoma	0.00	0.00

Figure 6: B-cell Lymphoma

In addition to this, 39 symptoms of Lymphoma are unique to COVID vaccines -

SYMPTOM	COVID19
Adult T-cell lymphoma/leukaemia	inf
Anaplastic lymphoma receptor tyrosine k	inf
Epstein-Barr virus associated lymphoma	inf
Angiocentric lymphoma	inf
Angioimmunoblastic T-cell lymphoma re	inf
Angioimmunoblastic T-cell lymphoma sta	inf
Enteropathy-associated T-cell lymphoma	inf
B-cell lymphoma stage II	inf
B-cell lymphoma stage III	inf
Diffuse large B-cell lymphoma recurrent	inf
Burkitt's lymphoma	inf
Burkitt's lymphoma stage I	inf
Burkitt's lymphoma stage IV	inf
Cutaneous lymphoma	inf
Diffuse large B-cell lymphoma stage II	inf
Diffuse large B-cell lymphoma stage IV	inf
Follicle centre lymphoma, follicular grade	inf
Follicular lymphoma stage I	inf
Follicular lymphoma stage II	inf
Follicular lymphoma stage III	inf
Follicular lymphoma stage IV	inf
Gastrointestinal lymphoma	inf
T-cell lymphoma recurrent	inf
T-cell lymphoma stage III	inf
T-cell lymphoma stage IV	inf
Leukaemic lymphoma	inf

Figure 7: Lymphoma symptoms unique to COVID vaccines

Clinical Studies

Several studies have found a link between COVID vaccines and lymphoma -

Study 1 : [8] In a case study by Goldman [8], a patient was given a PET scan then received the COVID vaccine. 8 days later they received another PET scan - which showed that lymphoma had increased 5.3 times, and was now twice as much on the right side compared to the left side of the body (see picture below). Goldman notes the dramatic speed and magnitude of the progression manifested on two PET scans performed 22 days apart. Such a rapid evolution would be highly unexpected in the natural course in the disease. He concludes that the vaccine may have caused the Lymphoma to progress rapidly.

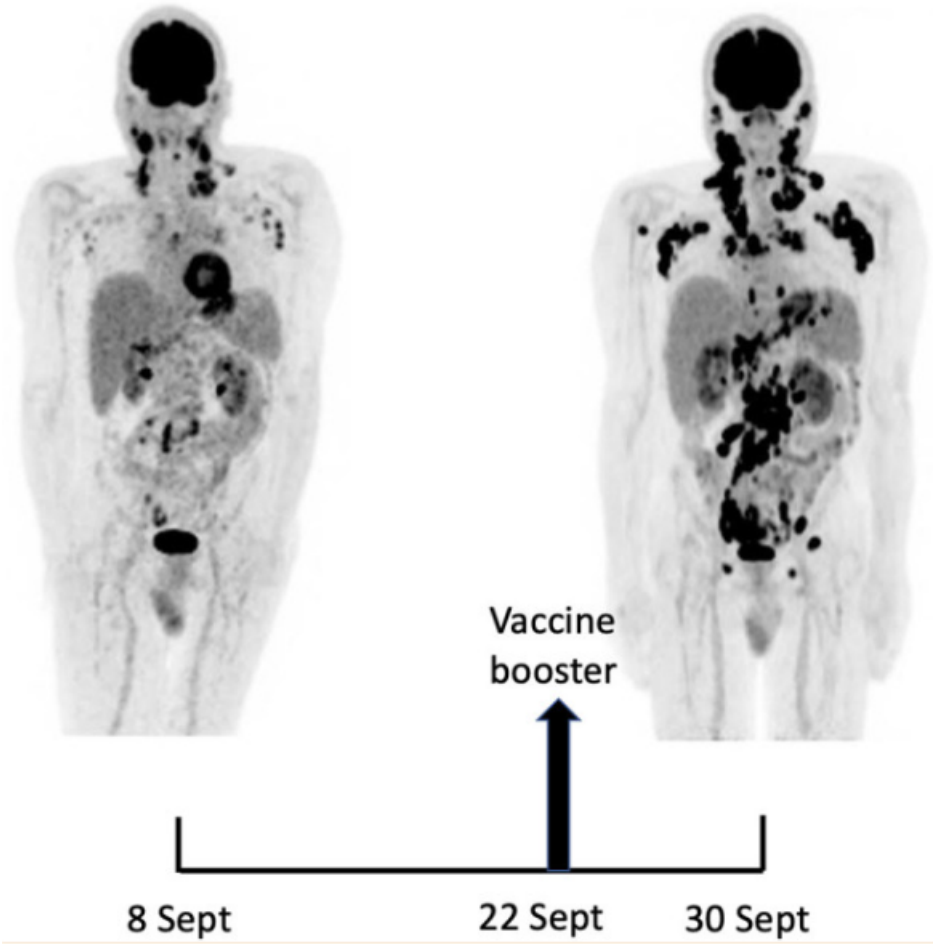

Figure 8: Goldman : Increase in lymphoma by 5.3 times 8 days after COVID vaccine

Goldman found a clear increase in number, size and metabolic activity of pre-

existing lymphadenopathies, which had now spread to several new locations in the body.

Study 2 : [9] In another study of 728 patients who received the Pfizer COVID vaccine, 36% developed hypermetabolic lymph nodes after the first dose, and 54% developed them after the second dose. The lymph nodes were enlarged 7% after the first dose and 18% after the second. 5% of the patients developed malignant nodes [9]

Study 3 : [10] A young balb mouse was administered the Pfizer vaccine, and 2 days later it died from malignant infiltration of its heart, lungs, liver, kidney and spleen by lymphoid neoplasms.

References

[1] Paardekooper-Knoll-Frank, "Safety signal," 2023. Available at link.

[2] Paardekooper, "Downloadable datasets for prr safety signals for all vaccines in vaers," 2023. Available at link.

[3] Paardekooper, "About the dataset: pdf," 2023. Available at link.

[4] Paardekooper, "Detailed methodology for dataset creation : Prr safety signals for all vaccines in vaers," 2023. Available at link.

[5] Wikipedia, "Proportional reporting ratio," 2023. Available at link.

[6] EMA, "Guideline on the use of statistical signal detection methods in the eudravigilance data analysis system," 2006. Available at link.

[7] CDC, "Vaccine adverse event reporting system (vaers) standard operating procedures for covid-19 (as of 29 january 2021)," 2021. Available at link.

[8] Goldman, "Rapid progression of angioimmunoblastic t cell lymphoma following bnt162b2 mrna vaccine booster shot: A case report," 2021. Available at link.

[9] Treglia, "Pet findings after covid-19 vaccination: "keep calm and carry on.," May 2021. Available at link.

[10] Sander, "B-cell lymphoblastic lymphoma following intravenous bnt162b2 mrna booster in a balb/c mouse: A case report," May 2023. Available at link.