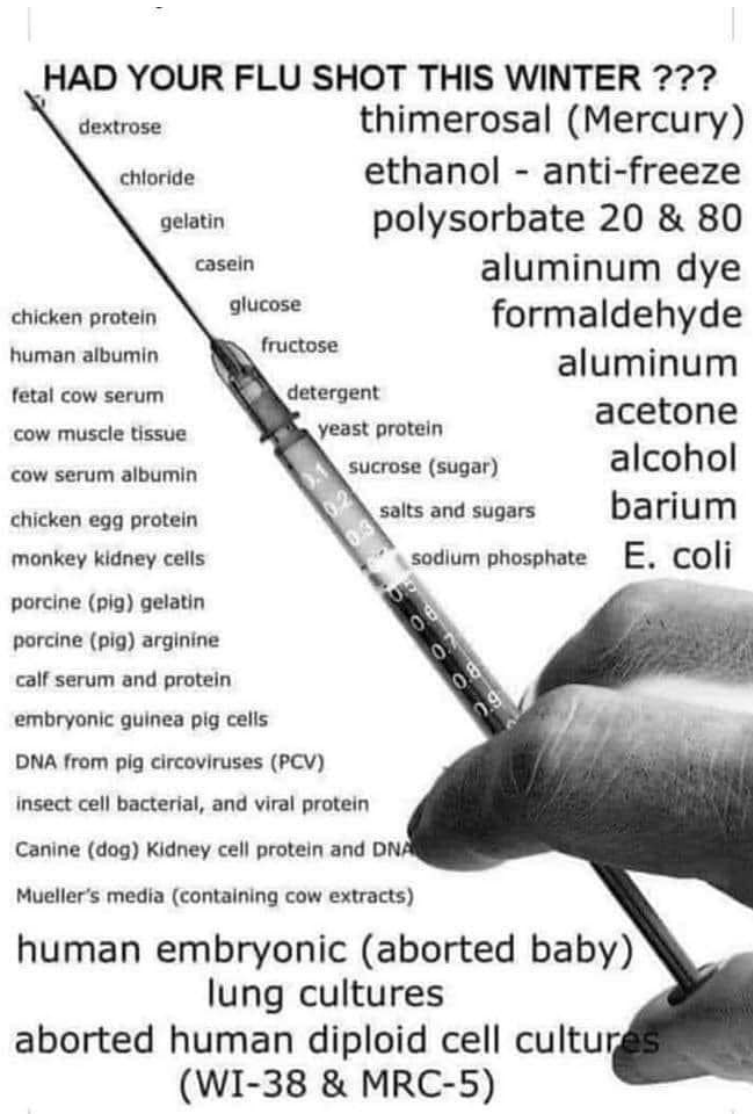


This alarming image has been circulating in emails and in Facebook Groups. Let's take a look.



Reminder: You may know this, but

A paper clip weighs about 1 gram  
Most vaccines are 0.5 milliliters (ml) or approximately 10 drops of water. The approximate weight is just over 0.5 grams.  
mg = milligram, 1/1,000 of a gram  
mcg = microgram, 1/1,000,000 of a gram  
ng = nanogram, 1/1,000,000,000 of a gram

I will start with the left column, continue with the center column, and finish with the right column. There are 37 items total, and I'll keep a running count of accurate claims.

1. *Chicken Protein* -- It turns out that "chicken protein" is different than "chicken egg protein". You can be allergic to chicken egg protein, and be able to consume chicken meat, or be exposed to chicken feathers, and have no allergic response.

[https://www.jacionline.org/article/S0091-6749\(97\)70154-4/pdf](https://www.jacionline.org/article/S0091-6749(97)70154-4/pdf)

Chicken meat proteins are not in any vaccine. Also see item #6

<https://www.vaccinesafety.edu/components-Excipients>.

**Is this substance used in flu vaccine manufacture? No. Score: 0/37**

2. *Human albumin* -- it is used as a diluent and stabilizer in two vaccines, MMRII and MMRV. Not in flu vaccines. Furthermore, albumin purified from human blood is being replaced by recombinant (synthetic) human albumin products.

"Human serum albumin (HSA) is widely used in clinical and cell culture applications. Conventional production of HSA from human blood is limited by the availability of blood donation and the high risk of viral transmission from donors."

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3223471/>

<https://www.vaccinesafety.edu/components-Excipients.htm>

**Is this substance used in flu vaccine manufacture? No. Score: 0/37**

3. *Fetal cow serum*. -- yes, it's used in vaccine production, for non-viral organisms. "Fetal bovine serum is the most widely used growth supplement added to eukaryotes in vitro cell cultures. It has been in use since the 1960s and, for over fifty years, has outperformed both synthetic and natural growth supplements." To the best of my knowledge, it's not used in flu vaccine manufacture.

<https://www.vaccinesafety.edu/components-Excipients.htm>

**Is this substance used in flu vaccine manufacture? No. Score: 0/37**

4. *Cow muscle tissue*. -- may be an ingredient in various growth mediums in some vaccines. Mueller's medium (see item # ) originally used essentially consommé made from beef heart. Growth mediums are purified out of the end product.

**Is this substance used in flu vaccine manufacture? No. Score: 0/37**

5. *Cow serum albumin*. More properly called Albumin, Bovine Serum, or bovine serum albumin. It's a stabilizing agent in the Japanese encephalitis vaccine, Pentacel, Quadracel, and a rabies vaccine. Amounts in the common pediatric vaccines Pentacel and Quadracel are on the order of <50 nanograms

<https://www.vaccinesafety.edu/components-Excipients.htm>

<https://www.fda.gov/vaccines-blood-biologics/questions-about-vaccines/bovine-derived-materials-used-vaccine-manufacturing-questions-and-answers>

**Is this substance used in flu vaccine manufacture? No. Score: 0/37**

6. *Chicken egg protein*. No intact protein cells from chicken eggs are found in vaccines produced using chicken eggs as the growth medium. There may be trace (<10 ng) amounts of chicken DNA in such vaccines. Also see item #1.

<https://www.vaccinesafety.edu/components-Excipients.htm>

**Is this substance used in flu vaccine manufacture? Yes, in all brands except Flucelvax and Flublok. Score: 1/37**

7. *Monkey Kidney Cells* This is a references to Vero (African monkey kidney epithelial cells) .Various lines of Vero cells have been used for human vaccine production for nearly 40 years, and were the only World Health Organization approved continuous cell line substrates for some time." Some sources list "live attenuated flu vaccine" as one of the vaccines that used Vero cells, but the current Package Insert for FluMist does not mention Vero cells.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4514150/>

<https://www.fda.gov/media/83072/download>

**Is this substance used in flu vaccine manufacture? No. Score: 0/37**

8. *Porcine (pig) Gelatin* -- hydrolyzed porcine gelatin is used as a stabilizer in the FluMist Quad and Zostavax (the first anti-shingles vaccine). Gelatin, species source not specified, is used as a stabilizer in the vaccines against Yellow Fever, MMRII, and MMRV.

<https://www.vaccinesafety.edu/components-Excipients.htm>

Muslim and Jewish religious authorities have agreed that porcine gelatin in injectable form is acceptable.

<https://www.vumc.org/health-wellness/news-resource-articles/immunizations-and-religk>

Is this substance used in flu vaccine manufacture? Yes, in the brand FluMist. Score: 2/37

**Is this substance used in flu vaccine manufacture? Yes, in the brand FluMist. Score: 2/37**

9. *Porcine (pig) Arginine*. Arginine is an amino acid, C<sub>6</sub>H<sub>14</sub>N<sub>4</sub>O<sub>2</sub>, obtained from the hydrolysis of plant and animal proteins. Arginine (without species origin) is listed as an excipient in FluMist, 2.42 mg/dose as a stabilizer. Since I'm feeling generous, I'll count the arginine and ignore the requirement for it to be porcine.

<https://www.fda.gov/media/83072/download>

**Is this substance used in flu vaccine manufacture? Yes, in the brand FluMist. Score: 3/37**

10. *Calf serum and protein*. This is a bit confusing. How would this be different than item #5, "cow serum albumin"? "Calf serum and protein" isn't listed for any vaccine, but some variations are. "Fetal bovine serum albumin" is listed as a stabilizer in the vaccines Rotateq and Varivax. "Calf Serum Albumin" is listed as a stabilizer in Zostavax, Kinrix, and Pediarix. "Calf serum protein albumin" is listed as a stabilizer in the vaccine IPOL

Bovine products of any kind do not appear to be used in the manufacture of any flu vaccine.

**Is this substance used in flu vaccine manufacture? No. Score: 3/37**

11. *Embryonic Guinea Pig Cells* -- The Oka/Merck strain of varicella vaccine virus, used in the Varivax vaccine approved in the US, was passaged through embryonic guinea pig cell cultures before a final passage through WI-38 human diploid cell cultures. I believe that is the only way embryonic guinea pig cells have any relationship to any US-approved vaccines.

<https://www.fda.gov/media/76000/download>

**Is this substance used in flu vaccine manufacture? No. Score: 3/37**

12. *DNA from Pig Circoviruses (PCV)* In 2010, porcine circovirus DNA (PVC1 and PVC2) were found in both approved rotavirus vaccines, Rotarix and Rotateq. Neither PCV1 nor PCV2 is known to infect or cause disease in humans.

<https://www.cidrap.umn.edu/news-perspective/2010/05/second-rotavirus-vaccine-found-contain-porcine->

[circovirus#:~:text=The%20FDA%20said%20neither%20has,both%20have%20strong%20safety%20records.](#)

.....

**Is this substance used in flu vaccine manufacture? No. Score: 3/37**

13. *Insect cell bacterial, and viral protein.* This is word salad, but since I've read all the flu vaccine Package Inserts, I'm thinking it's a garbled reference to Section 11 for FluBlok. A quote from the PI:

contains purified HA proteins produced in a continuous insect cell line (expresSF+®) that is derived from Sf9 cells of the fall armyworm, *Spodoptera frugiperda* (which is related to moths, caterpillars and butterflies), and grown in serum-free medium composed of chemically-defined lipids, vitamins, amino acids, and mineral salts. Each of the four HAs is expressed in this cell line using a baculovirus vector (*Autographa californica nuclear polyhedrosis virus*), extracted from the cells with Triton X-100 and further purified by column chromatography. The purified HAs are then blended and filled into single-dose syringes.

<https://www.fda.gov/media/123144/download>

Since I'm feeling generous, I'll say it is such a reference.

**Is this substance used in flu vaccine manufacture? Yes, in the brand FluBok. Score: 4/37**

14. *Canine (dog) Kidney Cell Protein and DNA* --The MDCK cell line was derived from a kidney of an apparently normal adult female cocker spaniel, September, 1958, by S.H. Madin and N.B. Darby. Since then, variations on the MDCK cell lines have been produced to facilitate flu vaccine production. While "embryonated chicken eggs" were the first influenza viral growth medium, they are not necessarily the best, especially since some influenza virus strains do not grow well in eggs.

Flucelvax contains <10 ng per dose of residual MDCK cells or fragments.

<https://www.atcc.org/products/all/CCL-34.aspx#:~:text=The%20MDCK%20cell%20line%20was,Madin%20and%20N.B.%20Darby.&text=The%20cells%20are%20positive%20for%20keratin%20by%20immunoperoxidase%20staining.-Cellular%20Products&text=Comments-This%20line%20is%20hyperdiploid%20and%20there,bi%2Dmodal%20chromosome%20number%20distribution.>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4514150/>

[https://link.springer.com/chapter/10.1007/1-4020-3103-3\\_163](https://link.springer.com/chapter/10.1007/1-4020-3103-3_163)

<https://www.fda.gov/media/123144/download>

**Is this substance used in flu vaccine manufacture? Yes, in the brand Flucelvax. Score: 5/37**

15. *Human Embryonic (aborted baby) Lung Culture* -- this is WI-38 and MR-5. Human diploid cells are not used in flu vaccine manufacture.

(I combined these two items)

*Aborted Human Diploid Cell Cultures (WI-38 & MR-5)* Why repeat this inaccurate information, except to arouse disgust?

<https://www.historyofvaccines.org/content/articles/human-cell-strains-vaccine-development>

**Is this substance used in flu vaccine manufacture? No. Score: 5/37**

16. *Dextrose* --is a sugar. "Dextrose is a type of simple sugar made from corn. It is similar to fructose and chemically identical to glucose, which is blood sugar.

Simple sugars, including dextrose, fructose, and glucose, appear in foods such as table sugar, honey, and bread."

<https://www.medicalnewstoday.com/articles/322243#overview>

Dextrose is only in the adenovirus vaccine, which is not available to the public.

**Is this substance used in flu vaccine manufacture? No. Score: 5/37**

17. *Chloride* " First, some science. The chloride ion is the anion (negatively charged ion) Cl<sup>-</sup>. It is formed when the element chlorine (a halogen) gains an electron ". Chloride does not exist as a single substance, because it 's an anion. There are chloride containing compounds in vaccines, such as sodium chloride (table salt) and potassium chloride (which is consumed as a table salt substitute). These chloride salts are used as buffering agents and growth medium nutrients. But chloride alone as a vaccine excipient? No.

**Is this substance used in flu vaccine manufacture? No. Score: 5/37**

18. *Gelatin* -- see the porcine gelatin discussion in item #8. Again being generous, allow the double count.

**Is this substance used in flu vaccine manufacture? Yes, in the brand FluMist.**

**Score: 6/37**

19. *Casein* is a family of related phosphoproteins found in mammalian milk, and is in many minimally-processed foods such as milk, and is also widely used in food production.

The CDC's Vaccine Excipient Table lists casein as an ingredient only in the cholera vaccine.

<https://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/b/excipient-table-2.pdf>

The "Table of Excipients" published by the Institute for Vaccine Safety at Johns Hopkins lists "bovine casein" as a medium nutrient in a number of vaccines, but no flu vaccines

<https://www.vaccinesafety.edu/components-Excipients.htm>

**Is this substance used in flu vaccine manufacture? No. Score: 6/37**

20. *Glucose* is a simple sugar with the molecular formula  $C_6H_{12}O_6$ . Glucose is the most abundant monosaccharide, a subcategory of carbohydrates. Glucose is naturally occurring, and is found in fruits and other parts of plants in its free state. In animals, glucose is released from the breakdown of glycogen in a process known as glycogenolysis. Glucose, as intravenous sugar solution, is on the World Health Organization's List of Essential Medicines

The CDC's Vaccine Excipient Table and the IVS Table of Excipients lists glucose as an ingredient only in one rotavirus vaccine, Rotarix.

<https://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/b/excipient-table-2.pdf>

**Is this substance used in flu vaccine manufacture? No. Score: 6/37**

21. *Fructose*, or fruit sugar, is a simple ketonic monosaccharide found in many plants, where it is often bonded to glucose to form the disaccharide sucrose. It is one of the three dietary monosaccharides, along with glucose and galactose, that are absorbed directly into blood during digestion.

The CDC's Vaccine Excipient Table lists D-fructose as an ingredient only in the adenovirus vaccine, which is only given to military personnel.

The "Table of Excipients" published by the Institute for Vaccine Safety at Johns Hopkins does not list fructose in any vaccine.

**Is this substance used in flu vaccine manufacture? No. Score: 6/37**

22. *Detergent* -- there is no excipient called "detergent" in any vaccine

<https://www.vaccinesafety.edu/components-Excipients.htm>

<https://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/b/excipient-table-2.pdf>

**Is this substance used in flu vaccine manufacture? No. Score: 6/37**

23. *Yeast protein*. Some vaccines (such as the Hepatitis B vaccine) are produced using modified yeast cultures; there may be residual amounts of proteins in those vaccines. Yeast cultures are not used in flu vaccine production.

**Is this substance used in flu vaccine manufacture? No. Score: 6/37**

24. *Sucrose* is common sugar. It is a disaccharide, a molecule composed of two monosaccharides: glucose and fructose. Sucrose is produced naturally in plants, from which table sugar is refined. It has the molecular formula C<sub>12</sub>H<sub>22</sub>O<sub>11</sub>.

Sucrose is used in a number of vaccines, including some flu vaccines, as a stabilizer. The amounts are typically <10 mcg/dose for injectable flu vaccines and 13.68 mg/dose for the nasal vaccine.

**Is this substance used in flu vaccine manufacture? Yes, in the brands Afluria and FluMist. Score: 7/37**

25. *Salts and sugars*. I'm am afraid I find this just a silly listing, as we have discussed the sugars above, and will discuss the salts below. Without more specificity, I am going to score this zero.

**Is this substance used in flu vaccine manufacture? No. Score: 7/37**

26. *Sodium phosphate* is a generic term for a variety of salts of sodium (Na<sup>+</sup>) and phosphate (PO<sub>4</sub><sup>3-</sup>). Phosphate also forms families or condensed anions including di-, tri-, tetra-, and polyphosphates. Most of these salts are known in both anhydrous (water-free) and hydrated forms. Sodium phosphates have many applications in food and for water treatment. For example, sodium phosphates are often used as emulsifiers (as in processed cheese), thickening agents, and leavening agents for baked goods. They are also used to control pH of processed foods. Sodium phosphate is listed as an ingredient in many vaccines, including some flu vaccines.

**Is this substance used in flu vaccine manufacture? Yes, in the brands Afluria and FluMist. Score: 8/37**



27. *Mercury (thimerosal)* -- Thimerosal is not mercury, and mercury is not thimerosal. The chemical formula for thimerosal is  $C_9H_9HgNaO_2S$  It is only used in multi-dose vials. Typically around 25.4 mcg (or millions of a gram) per dose. Thimerosal is a safe and effective anti-microbial. Most flu vaccines now come in single-dose vials, so do not need or contain thimerosal.

<https://www.cdc.gov/vaccinesafety/concerns/thimerosal/timeline.html>

**Is this substance used in flu vaccine manufacture? Yes, in the brands Afluria and FluMist. Score: 9/37**

28. *Ethanol-- antifreeze.* This is just completely wrong. First, ethanol is also called alcohol, ethyl alcohol and grain alcohol. It is not used in vaccines. A compound, d 2-phenoxy-ethanol, is used in some vaccines as a stabilizer, but not flu vaccines. Second, ethanol is not antifreeze. Antifreeze is typically a mixture of distilled water with a base product - ethylene or propylene glycol. Finally, there has never been anti-freeze in any vaccine, no matter how many times it's been so claimed. Polyethylene glycol (a chemical used in antifreeze and personal care products like skin creams and toothpaste) was formerly used to deactivate the virus in some flu vaccines, but is no longer used.

<https://www.vaccinesafety.edu/components-Excipients.htm>

[https://www.monarchchemicals.co.uk/Information/News-Events/700-/The-difference-between-Propylene-Glycol-and-Ethylene-Glycol-in-antifreezehttps://www.supremecourt.gov/opinions/URLs\\_Cited/OT2010/09-152/Am.Academy.PDF](https://www.monarchchemicals.co.uk/Information/News-Events/700-/The-difference-between-Propylene-Glycol-and-Ethylene-Glycol-in-antifreezehttps://www.supremecourt.gov/opinions/URLs_Cited/OT2010/09-152/Am.Academy.PDF)

<https://vaxopedia.org/2018/03/28/which-vaccines-contain-antifreeze/>

**Is this substance used in flu vaccine manufacture? No. Score: 9/37**

29. *Polysorbate 20 &80.* First, some chemistry: The term surfactant comes from the word surface active agent. They are molecules that have distinct regions: one region rejects water or liquid (nonpolar) and one region that is attracted to water or liquid (polar) regions. Surfactants thus, so to speak, serve to "weld" liquid and gaseous mixtures, and cause the decrease in surface or interfacial tensions. Surfactants are particularly useful in mixing oil and water.

<https://www.biolinscientific.com/blog/what-are-surfactants-and-how-do-they-work>

Polysorbate 20 is used in Flublok, an adult vaccine.

The amounts of polysorbate 20 used in the vaccine is  $\leq 27.5$  mcg

Polysorbate 80 is reported to be in FluAd, a flu vaccine for those over 65; in Fluarix; in Flucelvax (the highest amount;  $\leq 1500$  mcg) and in Flulaval ( $\leq 887$  mcg)

<https://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/b/excipient-table-2.pdf>

<https://www.vaccinesafety.edu/components-Excipients.htm>

PS20 and PS80 are the most commonly used surfactants in biotherapeutic formulations and are also added to foods and cosmetic products as emulsifying agents. The Dailymed database refers to PS20 and PS80 as excipients in 2475 and 6326 drugs, respectively, with oral, parenteral, ophthalmic, and topical routes of administration. The FDA has granted PS80 the status of generally recognized as safe (GRAS), and both PSs are listed in its Inactive Ingredients Database. Per the WHO, the accepted oral daily intake of PSs by adults is 25 mg/kg, compared with 10 mg/kg as suggested by the Scientific Committee on Food.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7022221/>

Taking the above-mentioned limits, let us propose a hypothetical average 6 month old girl baby, weighing 7.3 kg, who received Flulaval. She would be exposed to (887 mcg/7.3 kg) or 121.5 mcg/kilo, far less than the accepted intake dose.

**Is this substance used in flu vaccine manufacture? Yes, in the brands Afluria and FluMist. Score: 10/37**

30. *Aluminum Dye*-- aluminum lake dye is part of the outer coating of the adenovirus type 7 tablet. "Adenovirus vaccine is only available for United States military personnel. There is currently no adenovirus vaccine available to the general public."

<https://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/b/excipient-table-2.pdf>

**Is this substance used in flu vaccine manufacture? No. Score: 10/37**

31. *Formaldehyde* is used in many vaccines, including flu vaccines, to inactivate the viruses. The human body makes formaldehyde as a part of protein synthesis, and the small amounts in vaccines do not change the amount of formaldehyde circulating in the blood. Fluzone Quadrivalent has the most, at  $\leq 100$  mcg/dose.

<https://www.chop.edu/centers-programs/vaccine-education-center/vaccine-ingredients/formaldehyde>

**Is this substance used in flu vaccine manufacture? Yes, in the brands Flud, Fluarix, Flulval, Fluzone High-dose, and Fluzone. Afluria and FluMist. Score: 11/37**

32. *Aluminum*, the element, is not used in vaccines. Various aluminum salts and compounds are used as adjuvants. For example, the pneumococcal vaccine Prevnar13 has 0.125 mcg of aluminum phosphate as an adjuvant. So 1/8 of a millionth of a gram of aluminum phosphate. No aluminum salts are used in flu vaccine manufacture

<https://fullfact.org/online/vaccine-ingredients/>

**Is this substance used in flu vaccine manufacture? No. Score: 11/37**

33. *Acetone* --Part of the outer coating of the adenovirus vaccine. "Adenovirus vaccine is only available for United States military personnel. There is currently no adenovirus vaccine available to the general public."

<https://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/b/excipient-table-2.pdf>

**Is this substance used in flu vaccine manufacture? No. Score: 11/37**

34. *Alcohol*. This is another meaningless, fearmongering entry, like #25, "salts and sugars", and #38, "E. coli". In chemical terms, "Alcohol, any of a class of organic compounds characterized by one or more hydroxyl (—OH) groups attached to a carbon atom of an alkyl group (hydrocarbon chain)...Alcohols are among the most common organic compounds. They are used as sweeteners and in making perfumes, are valuable intermediates in the synthesis of other compounds, and are among the most abundantly produced organic chemicals in industry."

<https://www.britannica.com/science/alcohol>

**Is this substance used in flu vaccine manufacture? No. Score: 11/37**

35. *Barium* -- was a microingredient in one flu vaccine for those over 65, Flud, although the 2020 package insert doesn't mention it.

<https://www.vaccinesafety.edu/components-Excipients.htm>

<https://www.fda.gov/media/94583/download>

**Is this substance used in flu vaccine manufacture? Not currently. Score: 11/37**

36. *E. Coli* -- this is just a scare tactic, because what the general public knows about *E. coli* is that it is a dangerous infectious organism, not the truth, which is it has many, many strains, some of which are used in vaccine and medication production.  
[https://en.wikipedia.org/wiki/List\\_of\\_strains\\_of\\_Escherichia\\_coli](https://en.wikipedia.org/wiki/List_of_strains_of_Escherichia_coli)

**Is this substance used in flu vaccine manufacture? Not currently. Score: 11/37**

So this list got an accuracy score of 30.6%. Generally speaking, anything below 59% is considered an F grade. Well done, meme maker, you failed!

The influenza vaccines approved for use in the US, 2020-2021 season

Vaccine Name	Age range	cell/egg/recombinant	Features	Manufacturer
Afluria Quadrivalent >6 months multidose vial	> 6 months	egg	thimerosal	Seqirus USA
Afluria Quadrivalent >36 months single dose	>36 months	egg		Seqirus USA
Afluria Quadrivalent 6-35 months single dose	6-35 months	egg		Seqirus USA
Fluad Trivalent >65 Years	>65 years	egg	adjuvant MF59.	Seqirus USA
Fluad Quadrivalent >65 Years	>65 years	egg	adjuvant MF59.	Seqirus USA
Fluarix Quadrivalent single dose	> 6 months	egg		GlaxoSmithKline
Flublok Quadrivalent >18 years	>18 years	RC	3X more hemagglutinin antigen	Sanofi Pasteur
Flucelvax quadrivalent multidose vial	>4 years	cell	thimerosal	Seqirus USA
Flucelvax quadrivalent single dose	>4 years	cell		Seqirus USA
FluLaval Quadrivalent single dose	>6 months	egg		GlaxoSmithKline
Flumist Quadrivalent single dose	2 years-49 years	egg		Astra Zeneca
Fluzone Highdose Trivalent >65 years	>65 years	egg		Sanofi Pasteur
Fluzone Highdose Quadrivalent >65 years	>65 years	egg	4X more antigen	Sanofi Pasteur
Fluzone Quadrivalent multidose vial	> 6 months	egg	thimerosal	Sanofi Pasteur
Fluzone Quadrivalent single dose	> 6 months	egg		Sanofi Pasteur

An online version of this article is available at my blog, "I Speak of Dreams"

Had Your Flu Shot This Winter????--List of Concerning "Ingredients" -- Or Are They In Flu Shots At All?

[https://lizditz.typepad.com/i\\_speak\\_of\\_dreams/2020/11/had-your-flu-shot-this-winter-list-of-concerning-ingredients-or-are-they-in-flu-shots-at-all.html](https://lizditz.typepad.com/i_speak_of_dreams/2020/11/had-your-flu-shot-this-winter-list-of-concerning-ingredients-or-are-they-in-flu-shots-at-all.html)