Guide to the No-Thimerosal Influenza Vaccine Choices in the USA for the 2013-2014 Flu Season

Introduction

Up until the 2002-2003 influenza (flu) season, the only flu vaccines marketed in the USA were Thimerosal-preserved trivalent inactivated-influenza vaccines, where the influenza viruses were grown in embryonated eggs\(^1\). After a suitable growth period (typically about 48 hours at 37 °C), the viruses are harvested by removing the allantoic fluid – about 10 ml per egg, inactivated with formaldehyde (or another aldehyde) and processed to make the final inactivated viral concentrates which are blended with other ingredients to form the final vaccine formulation. In general, these influenza vaccines contained two (2) inactivated A-strain influenza viruses and one (1) inactivated B-strain influenza virus preserved with a 0.01% level of Thimerosal.

Moreover, until 1997, there was no population recommendation that pregnant women be given a flu shot at any stage in pregnancy and, until 2002, there was no general recommendation to vaccinate any age-group of children with a flu vaccine each year and the general flu-vaccination programs were aimed at those 65 years of age and older.

The Influenza Vaccines Available for the 2013-2014 Flu Season

As we get ready for the 2013-2014 influenza season, the seasonal “flu vaccine” landscape for egg-culture-derived influenza vaccines has changed to include:

a. Four (4) injected trivalent inactivated-influenza vaccines that are preserved with Thimerosal (the multi-dose formulations of CSL Limited’s Afluria\(^2\); Sanofi Pasteur’s Fluzone\(^3\), Novartis’ Fluvirin\(^4\), and IDC Biomedical’s FluLaval\(^5\));

b. One (1) injected trivalent inactivated-influenza vaccine derived from egg culture that contains a reduced level of Thimerosal (the single-dose formulation of Fluvirin);

c. Six (6) injected trivalent inactivated-influenza vaccines that contain no Thimerosal (the single-dose formulations of Afluria, Fluzone, Fluzone High Dose\(^6\) for those 65 and older, Fluzone Intradermal for those 18 – 64, Novartis’ Agriflu\(^7\), and GlaxoSmithKline’s Fluarix\(^8\));

d. Two (2) quadrivalent inactivated-influenza vaccines containing 2 “A” strains and 2 “B” strains of the influenza viruses with no Thimerosal (the single-dose formulation of Fluzone Quadrivalent\(^9\) and Fluarix Quadrivalent);

e) One (1) quadrivalent inactivated-influenza vaccine containing 2 “A” strains and 2 “B” strains of the influenza viruses that is preserved with Thimerosal (the multi-dose FluLaval Quadrivalent\(^5\)); and

f) One (1) quadrivalent bioengineered (cold-adapted) live-virus vaccine (MedImmune’s FluMist Quadrivalent) that is inoculated (sprayed) into the nose rather than injected.

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\(^2\) Though at one time the FDA approved the Afluria influenza formulations for those 6 months of age and older, after “seizures” reports in young children, the FDA revised the age range to 5 years of age and older. For the 2013-2014 flu season, the CDC recommendation is for those 9 years of age and older. However, a few instances of “seizures” following Afluria inoculation have been reported in adults.

\(^3\) Not on CDC’s July 24, 2013 contracts’ price list — [http://www.cdc.gov/vaccines/programs/vfc/awardees/vaccine-management/price-list/](http://www.cdc.gov/vaccines/programs/vfc/awardees/vaccine-management/price-list/)
In addition, there are two new no-Thimerosal injected trivalent inactivated-influenza vaccines that are not produced using egg culture that have been approved by the US Food and Drug Administration (FDA): a) Protein Sciences Corporation’s Flublok®
, which is engineered to be produced by an insect cell culture system, and b) Novartis’ Flucelvax®, which is designed to produce using a Madin Darby Canine Kidney (MDCK) cell line.

Thus, there are 17 flu vaccine formulations that should be available in the USA for the 2013-2014 flu season, although the quantity of doses for some of them may be limited.

Choice Complicating Factors

Moreover, the diversity of listed age ranges associated with each of these influenza-vaccine formulations further complicates this picture as does the general recommendation that all should get at least one influenza vaccine dose each year even though the available influenza vaccines are not truly effective in preventing those inoculated with any influenza vaccine from subsequently contracting influenza or an influenza-like disease during the “flu season”.

If you want to avoid a live-virus vaccine, which can infect you or anyone inoculated with it and which these inoculees can spread to others, then you should avoid FluMist Quadrivalent.

If you are leery of new vaccines produced using other than egg-culture, then you should avoid Flublok and Flucelvax.

If you further want to avoid flu vaccines that contain Thimerosal, you should avoid the multi-dose formulations of Afluria², Fluzone, and Fluvirin; the multi-dose FluLaval and FluLaval Quadrivalent³; and the single-dose formulation of Fluvirin.

If the individual to be inoculated is under two years of age, Fluzone and Fluzone Quadrivalent³ are the only vaccines for children in that age group.

If you are 65 years of age or older, then you should avoid Flublok¹, Fluzone Intradermal, and FluMist.

If you are over 49 years of age, you should avoid Flublok¹ and FluMist.

If the person to be vaccinated is under 18 years of age, then the vaccines that should not be administered are Agriflu, Fluzone High Dose¹, Fluzone Intradermal, Flublok¹ and Flucelvax.

For children under two (2) years of age, the choices are Fluzone and Fluzone Quadrivalent³.

For children two (2) years old and older, the choices are Fluzone, Fluzone Quadrivalent³, and FluMist.

For children three (3) years old and older, the choices are Fluzone, Fluzone Quadrivalent³, Fluarix, Fluarix Quadrivalent, FluLaval, FluLaval Quadrivalent³, and FluMist Quadrivalent.

For children four (4) years of age and older, the choices are Fluzone, Fluzone Quadrivalent³, Fluvirin, Fluarix, Fluarix Quadrivalent, FluLaval, FluLaval Quadrivalent³, and FluMist Quadrivalent.

For children nine (9) years of age and older, the choices are Afluria², Fluzone, Fluzone Quadrivalent³, Fluvirin, Fluarix, Fluarix Quadrivalent, FluLaval, FluLaval Quadrivalent³, and FluMist Quadrivalent.

One “Example” Decision Tree for Selecting a No-Thimerosal Influenza Vaccine

In deciding which influenza vaccine, if any, is right for you, then, absent any contradiction for a particular vaccine, you may want to consider the following suggested vaccine decision tree (see Table 1, “Suggested Influenza Vaccination Decision Tree for Those Who Want a No-Thimerosal Vaccine” on page “T-1”), which follows the text of this article.
Some Additional Information about the Various Influenza Vaccine Formulations

For those seeking some pertinent information on the influenza vaccine formulations approved for the 2013-2014 “flu season”, which technically runs from July of 2013 through June of 2014 but, in terms of significant numbers of “flu-related” illnesses typically runs from late September of one year through March of the next year, a 3-part Table 2, “Mercury, Aluminum and Formaldehyde in Influenza Vaccines, Where Some Contain Thimerosal”, which follows Table 1 on pages “T-2” through “T-4”, provides some additional general information about each influenza vaccine formulation approved by the US Food and Drug Administration (FDA) for the 2013-2014 flu season.

Some Pricing Information from the CDC for Most of the Influenza Vaccines

For those seeking pricing information on the influenza vaccine formulations approved for the 2013-2014 “flu season”, it is provided in two CDC-derived tables, “Pediatric Influenza Vaccine Price List as of 24 July 2013” and “Adult Influenza Vaccine Price List as of July 24, 2013”, which follow Table 2 on page “T-5”.

Concluding Remarks

Since Sanofi Pasteur (Fluzone) and CSL Ltd (Afluria), marketed by Merck in the USA, produce both multi-dose Thimerosal-preserved influenza vaccines packaged in vials and single-dose no-Thimerosal influenza vaccines packaged in single-dose syringes, which have the same name, it is important to confirm that the dose of vaccine in a syringe was filled by the manufacturer and is not a dose filled by a doctor, a nurse, another licensed healthcare professional, a pharmacist or pharmacist’s assistant, or an influenza vaccine repackaging firm from a multi-dose vial of the Thimerosal-preserved formulation of either Fluzone or Afluria.

 Hopefully, some of the information provided in this document may be of help to the reader in deciding which flu vaccine, if any, he or she should consider this year for himself or herself or his or her child, children, and/or ward or wards.

By Paul G. King, PhD, CoMed Science Advisor
6 September 2013

**************************************************************************************************************
*The information provided in this article & any attachment thereto is just that — information. *
*It is not medical or legal advice and it does not require any specific action or actions. *
*While the information is thought to be accurate, no representation is made as to the accuracy of the information posted & other than it is my best understanding of the facts on the date that this article & any attachments thereto are posted. *
*Everyone should verify the accuracy of the information provided for themselves before acting on it. *
**************************************************************************************************************
Table 1. Suggested Influenza Vaccination Decision Tree for Those Who Want a No-Thimerosal Vaccine

1. Is a live-virus vaccine what you want? If “yes”, go to step “15.”; else go to step “2.”
2. Is a vaccine grown in a dog kidney cell line or in insect cells acceptable to you? If “yes”, go to step “3”; else go to step “17”.
3. Are you 18 years of age or older? If “yes”, then go to step “4”, else go to step “12”.
4. Are you truly allergic to eggs? If “yes”, then go to step “5”, else go to step “6”.
5. Are you under 49 years of age? If “yes”, then choose Flublok; else choose Flucelvax.
6. Is the person to be vaccinated 65 or more years of age? If “yes”, go to step “7”; else go to step “8”.
7. Choose from the available single-dose Afluria, Agriflu, Fluzone, Fluzone High Dose, Fuzone Quadrivalent, Fluarix, Fluarix Quadrivalent, and Flucelvax.
8. Is the person to be vaccinated 18 to 64 years of age? If “yes”, go to step “9”, else go to step “10”.
9. Choose from the single-dose formulations of Afluria, Agriflu, Fluzone, Fluzone High Dose, Flucelvax, Fluarix, Fluarix Quadrivalent, and Flucelvax.
10. Is the person to be vaccinated 18 through 49 years of age? If “yes”, go to step “11”, else go to step “12”.
11. Choose from the single-dose formulations of Afluria, Agriflu, Fluzone, Fluzone High Dose, Flucelvax, Fluarix, Fluarix Quadrivalent, Flublok and Flucelvax.
12. Is your child 9 years of age or older? If “yes”, then choose the appropriate single-dose formulation of Afluria, Fluzone, Fluzone Quadrivalent, Fluarix, or Fluarix Quadrivalent; else go to “13.”
13. Is your child 3 years of age or older? If “yes”, then choose the appropriate single-dose formulation of Fluzone, Fluzone Quadrivalent, Fluarix, or Fluarix Quadrivalent; else go to “14.”
14. For children less than 3 years of age, choose a 0.25-mL dose of the appropriate single-dose formulation of Fluzone or Fluzone Quadrivalent.
15. Is the person to be inoculated: a) 2 through 49 years of age and b) not pregnant or possibly pregnant? If yes, go to “16”; else go to step “2”.
16. Seek out the FluMist Quadrivalent vaccine, which is a live-virus influenza vaccine. [Note: This live-virus vaccine should not be given to women who are, may be, or may shortly become, pregnant.]
17. Are you or the individual to be inoculated seriously allergic to egg protein? If “yes”, go to “step “18.”, else go to step “19”.
18. If the individual is 18 years of age or older, then reconsider the Flublok inactivated-influenza vaccine (for those 18 to 49 years of age) or the Flucelvax inactivated-influenza vaccine (for those 18 years of age and older), else go to step “20.”
19. If you are an adult (18 years of age or older), consider omitting Flublok and Flucelvax from your candidate list and returning to step “6.”, else go to step “20.”.
20. Consult with your healthcare provider as to how to proceed.
## Table 2. Mercury, Aluminum and Formaldehyde in Influenza Vaccines, Where Some Contain Thimerosal, Part A

<table>
<thead>
<tr>
<th>Vaccine’s Registered Trade Name (if any)</th>
<th>Vaccine’s Manufacturer</th>
<th>Nominal Added Thimerosal Level</th>
<th>Mercury Level</th>
<th>Recommended for</th>
<th>[Not recommended for]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vaccine</strong>’s Manufacturer</td>
<td>[Aluminum Level]</td>
<td>[Formaldehyde Level]</td>
<td></td>
<td>[Other components]</td>
<td></td>
</tr>
<tr>
<td><strong>Vaccine’s Registered Trade Name</strong></td>
<td>[Recommended for]</td>
<td>[Not recommended for]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Afluria <em>(egg based)</em></td>
<td>CSL Limited</td>
<td>0 (single dose)</td>
<td>[0 ] µg /0.5 mL dose</td>
<td>Listed by FDA for 5 years of age and older – trivalent; 2 “A” &amp; 1 “B” strains; but CDC only recommends for those 9 years of age and older [See package insert.]</td>
<td></td>
</tr>
<tr>
<td>Afluria <em>(egg based)</em></td>
<td>CSL Limited</td>
<td>0.01% (multidose)</td>
<td>[24.5 ] µg / 0.5 mL dose</td>
<td>Listed by FDA for 5 years of age and older – trivalent; 2 “A” &amp; 1 “B” strains; but CDC only recommends for those 9 years of age and older; [See package insert.]</td>
<td></td>
</tr>
<tr>
<td>Agriflu (egg based)</td>
<td>Novartis Vaccines and Diagnostics Ltd.</td>
<td>0 (single dose)</td>
<td>[0 ] µg /0.5 mL dose</td>
<td>18 years of age and older – trivalent, 2 “A” &amp; 1 “B” strains [See package insert.]</td>
<td></td>
</tr>
<tr>
<td>Fluzone <em>(egg based)</em></td>
<td>Sanofi Pasteur, Inc.</td>
<td>0.01% (multidose; 5 ml vial)</td>
<td>[0 ] µg /0.5 mL dose</td>
<td>6 months of age and older – trivalent; 2 “A” &amp; 1 “B” strains [See package insert.]</td>
<td></td>
</tr>
<tr>
<td>Fluzone <em>(egg based)</em></td>
<td>Sanofi Pasteur, Inc.</td>
<td>0 (single-dose; 0.25-ml &amp; 0.5 ml syringes &amp; 0.5-ml vial)</td>
<td>[0 ] µg /0.5 mL dose</td>
<td>6 months of age and older – trivalent; 2 “A” &amp; 1 “B” strains [See package insert.]</td>
<td></td>
</tr>
<tr>
<td>Fluzone Quadrivalent (egg based)</td>
<td>Sanofi Pasteur, Inc.</td>
<td>0 (single-dose; 0.25-ml yellow-plunger syringe, 0.5 ml purple plunger syringe &amp; 0.5-ml vial)</td>
<td>[0 ] µg /0.5 mL dose</td>
<td>6 months of age and older – quadrivalent; 2 “A” &amp; 2 “B” strains [Only one for 6 months up to 3rd birthday] [See package insert.]</td>
<td></td>
</tr>
<tr>
<td>Fluzone High Dose – only for those 65 &amp; older</td>
<td>Sanofi Pasteur, Inc.</td>
<td>0 (single-dose; gray plunger)</td>
<td>[0 ] µg /0.5 mL dose</td>
<td>65 years of age and older – trivalent with 4x influenza antigens; 2 “A” strains &amp; 1 “B” strain [See package insert.]</td>
<td></td>
</tr>
<tr>
<td>Fluzone Intradermal – only for adults through 64 years of age</td>
<td>Sanofi Pasteur, Inc.</td>
<td>0 (single-dose; 0.1-ml 'syringe')</td>
<td>[0 ] µg /0.5 mL dose</td>
<td>18 through 64 years of age – trivalent 2; “A” &amp; 1 “B” strains [See package insert.]</td>
<td></td>
</tr>
</tbody>
</table>

* For influenza vaccines produced in both single-dose (“preservative free”) & multi-dose formulas [Afluria, Fluzone (but not Fluzone Quadrivalent), & Fluvirin], these vaccines should be avoided unless there is definite proof that the dose being offered is a single-dose vial or syringe that was filled by the vaccine’s manufacturer!

¶ Octylphenol Ethoxylate is a non-specific name for a family of surfactants – e.g., DOW’s ‘TRITON X-’ family.

§ Nonylphenol Ethoxylate is a non-specific name for a family of surfactants – e.g., DOW’s ‘TERGITOL™ NP-’ family.
### Table 2 — Mercury, Aluminum and Formaldehyde in Influenza Vaccines, Where Some Contain Thimerosal, Part B

<table>
<thead>
<tr>
<th>Vaccine's Registered Trade Name (if any)</th>
<th>Vaccine's Manufacturer</th>
<th>Nominal Added Thimerosal Level</th>
<th>Mercury Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>[Aluminum Level]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>[0]</td>
</tr>
<tr>
<td></td>
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<td>[0]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>[0]</td>
</tr>
</tbody>
</table>

**Fluvirin® (egg based)**
- Novartis Vaccines and Diagnostics Ltd.
- **0.01% (multi-dose vial)**
- **25 µg/0.5 ml dose**
- **Recommended for**
  - 4 years of age and older – trivalent; 2 "A" & 1 "B" strains
  - [See package insert.]

**Fluvirin® (egg based) – only for those 4 years of age & older**
- Novartis Vaccines and Diagnostics Ltd.
- **< 0.0002 %**
- **Recommended for**
  - 4 years of age and older – trivalent; 2 "A" & 1 "B" strains
  - [See package insert.]

**Fluarix and Fluarix Quadrivalent (egg based)**
- GlaxoSmithKline Biologicals
- **0 (single dose)**
- **Recommended for**
  - 3 years of age and older – trivalent and quadrivalent
  - [See package insert.]

**FluMist Quadrivalent (egg based; bioengineered live viruses)**
- MedImmune Vaccines, Inc.
- **0 (single dose)**
- **Recommended for**
  - 2 years through 49 years of age – quadrivalent; 2 "A" & 2 "B" strains
  - [See package insert.]

* For influenza vaccines produced in both single-dose ("preservative free") & multi-dose formulas [Afluria, Fluzone (but not Fluzone Quadrivalent), & Fluvirin], these vaccines should be avoided unless there is definite proof that the dose being offered is a single-dose vial or syringe that was filled by the vaccine’s manufacturer!

1 Octylphenol Ethoxylate is a non-specific name for a family of surfactants – e.g., DOW’s ‘TRITON X-’ family.

2 Nonylphenol Ethoxylate is a non-specific name for a family of surfactants – e.g., DOW’s ‘TERGITOL™ NP-’ family.
### Table 2 — Mercury, Aluminum and Formaldehyde in Influenza Vaccines, Where Some Contain Thimerosal, Part C

<table>
<thead>
<tr>
<th>Vaccine Trade Name (if any)</th>
<th>Vaccine Manufacturer</th>
<th>Nominal Added Thimerosal Level</th>
<th>Mercury Level [Aluminum Level] {Formaldehyde Level}</th>
<th>Recommended for [Not recommended for]</th>
</tr>
</thead>
</table>
| Flulaval (egg based)        | ID Biomedical Corporation of Quebec | 0.01% (multidose only) | 25 µg /0.5 ml dose [ 0 ] { ≤25 µg /0.5 mL dose}  < Residual amounts of ovalbumin (≤0.3 µg) & sodium deoxycholate (≤550 µg). > See package insert for other components. | 3 years and older — trivalent; 2 "A" & 1 "B" strains  
Note: Lower age limit was 18 years of age for the 2012-13 formulation  
[See package insert.] |
| Flulaval Quadrivalent (egg based) [Note: Only limited quantities will be available for 2013-2014 influenza season.] | ID Biomedical Corporation of Quebec | 0.01% (multidose only) | 25 µg /0.5 ml dose [ 0 ] { ≤25 µg /0.5 mL dose} < α-tocopheryl hydrogen succinate [a vitamin E] (≤320 µg), polysorbate 80 [a surfactant] (≤887 µg), and residual amounts of ovalbumin (≤0.3 µg) and sodium deoxycholate (≤550 µg). > See package insert for other components. | 1 years and older — quadrivalent; 2 "A" & 2 "B" strains  
[See package insert.] |
| Flublok (engineered to be produced by an insect cell line) | Protein Sciences Corporation | 0 (single dose) | 0 [ 0 ] { 0 } < Residual amounts of baculovirus & host cell proteins (≤ 29.5 mcg), baculovirus & cellular DNA (≤ 10 ng), & Triton X-100 (≤ 100 mcg). > See package insert for other components. | 18 through 49 years of age — trivalent; 2 "A" & 1 "B" strains  
[See package insert.] |
| Flucelvax (grown in Madin Darby Canine Kidney (MDCK) cell line) | Novartis Vaccines and Diagnostics, Inc. | 0 (single dose) | 0 [ 0 ] { 0 }  < Residual MDCK cell protein (≤ 8.4 µg), protein other than HA (≤ 120 µg), MDCK cell DNA (≤ 10 ng), polysorbate 80 (≤ 1125 µg), cetyltrimethylammonium bromide (≤ 13.5 µg), and β-propiolactone (≤ 0.5 µg). > See package insert for other components. | 18 years & older — trivalent; — trivalent; 2 "A" & 1 "B" strains  
[See package insert.] |

* For influenza vaccines produced in both single-dose (‘preservative free’) & multi-dose formulas [Afluria, Fluzone (but not Fluzone Quadrivalent), & Fluvirin], these vaccines should be avoided unless there is definite proof that the dose being offered is a single-dose vial or syringe that was filled by the vaccine’s manufacturer!

† Octylphenol Ethoxylate is a non-specific name for a family of surfactants — e.g., DOW’s ‘TRITON X’ family.

‡ Nonylphenol Ethoxylate is a non-specific name for a family of surfactants — e.g., DOW’s ‘TERGITOL™ NP.’ family.
### Pediatric Influenza Vaccine Price List as of 24 July 2013

**Notes:** The table below reflects new contracts for the 2013-2014 Pediatric Flu.

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Brandname/ Tradename</th>
<th>NDC</th>
<th>Packaging</th>
<th>CDC Cost/ Dose</th>
<th>Private Sector Cost/ Dose</th>
<th>Contract End Date</th>
<th>Manufacturer</th>
<th>Contract Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza [5, 6] (Age 6 months and older)</td>
<td>Fluzone®</td>
<td>49281-0332</td>
<td>10 pack - 1 dose tip-activated syringe</td>
<td>$7.69</td>
<td>$10.69</td>
<td>2/21/2014</td>
<td>Sanofi Pasteur</td>
<td>200-2013-54015</td>
</tr>
<tr>
<td>Influenza [5, 6] (Age 6-35 months)</td>
<td>Fluzone® Pediatric dose No Preservative</td>
<td>49281-0333</td>
<td>10 pack - 1 dose tip-activated syringe</td>
<td>$7.69</td>
<td>$10.69</td>
<td>2/21/2014</td>
<td>Sanofi Pasteur</td>
<td>200-2013-54015</td>
</tr>
<tr>
<td>Influenza [5, 6] (Age 36 months and older)</td>
<td>Fluzone® No Preservative</td>
<td>49281-0011-15</td>
<td>10 pack - 1 dose tip-activated syringe</td>
<td>$7.69</td>
<td>$10.69</td>
<td>2/21/2014</td>
<td>Sanofi Pasteur</td>
<td>200-2013-54015</td>
</tr>
<tr>
<td>Influenza [5, 6] (Age 36 months and older)</td>
<td>Fluarix® Quadrivalent Preservative Free</td>
<td>58160-0116-02</td>
<td>10 pack - 1 dose tip-activated syringe</td>
<td>$7.69</td>
<td>$10.69</td>
<td>2/21/2014</td>
<td>Sanofi Pasteur</td>
<td>200-2013-54015</td>
</tr>
<tr>
<td>Influenza [5, 6] (Age 4 years and older)</td>
<td>FluMist® No Preservative Quadrivalent</td>
<td>66521-0161-11</td>
<td>10 pack - 1 dose tip-activated syringe</td>
<td>$7.69</td>
<td>$10.69</td>
<td>2/21/2014</td>
<td>Novartis</td>
<td>200-2013-54019</td>
</tr>
<tr>
<td>Influenza [5, 6] (Age 9 years and older)</td>
<td>Fluvirin® Antibiotic free</td>
<td>66521-0161-10</td>
<td>10 pack - 1 dose tip-activated syringe</td>
<td>$7.69</td>
<td>$10.69</td>
<td>2/21/2014</td>
<td>Novartis</td>
<td>200-2013-54019</td>
</tr>
</tbody>
</table>

**Footnotes:**

1. Vaccine cost includes $2.25 dose Federal Excise Tax
2. Vaccine cost includes $3.00 per dose Federal Excise Tax
3. Vaccine cost includes $3.75 per dose Federal Excise Tax
4. Vaccine cost includes $4.50 per dose Federal Excise Tax
5. Vaccine cost includes $6.75 per dose Federal Excise Tax
6. Vaccine which contains Thimerosal as a preservative

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### Adult Influenza Vaccine Price List as of July 24, 2013

**Notes:** The table below reflects new contracts for the 2013-2014 Adult Flu.

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Brandname/ Tradename</th>
<th>NDC</th>
<th>Packaging</th>
<th>CDC Cost/ Dose</th>
<th>Private Sector Cost/ Dose</th>
<th>Contract End Date</th>
<th>Manufacturer</th>
<th>Contract Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza [5, 6] (Age 6 months and older)</td>
<td>Fluzone®</td>
<td>49281-0332</td>
<td>10 pack - 1 dose tip-activated syringe</td>
<td>$7.819</td>
<td>$10.69</td>
<td>2/21/2014</td>
<td>Sanofi Pasteur</td>
<td>200-2013-54015</td>
</tr>
<tr>
<td>Influenza [5, 6] (Age 18 years and older)</td>
<td>FluLaval®</td>
<td>19515-0890-07</td>
<td>10 pack - 1 dose tip-activated syringe</td>
<td>$7.819</td>
<td>$10.69</td>
<td>2/21/2014</td>
<td>Novartis</td>
<td>200-2013-54019</td>
</tr>
</tbody>
</table>

**Footnotes:**

1. Vaccine cost includes $2.25 dose Federal Excise Tax
2. Vaccine cost includes $3.00 per dose Federal Excise Tax
3. Vaccine cost includes $3.75 per dose Federal Excise Tax
4. Vaccine cost includes $4.50 per dose Federal Excise Tax
5. Vaccine cost includes $6.75 per dose Federal Excise Tax
6. Vaccine which contains Thimerosal as a preservative