

# Historical annual reformulations of the influenza vaccine

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Since 1999, the World Health Organization has issued **annual recommendations for influenza vaccine formulations**. One reformulation of the influenza vaccine is for the Northern Hemisphere, and the other is for the Southern Hemisphere.<sup>[1]</sup> Both recommendations are trivalent, i.e. featuring three strains.

Since the 2012–13 season, the WHO recommendations have also included the formulation of an annual quadrivalent vaccine, featuring an additional B-strain.

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## Northern Hemisphere recommended strains

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The following is a list of WHO recommended strains for the Northern Hemisphere influenza season.

NH winter season	H1N1	H3N2	B-strain	additional B-strain for QIV
November 1998–April 1999 <sup>[2]</sup>	A/Beijing/262/95(H1N1)-like virus	A/Sydney/5/97(H3N2)-like virus	B/Beijing/184/93-like virus	N/A
November 1999–April 2000 <sup>[3]</sup>	A/Beijing/262/95 (H1N1)-like virus	A/Sydney/5/97 (H3N2)-like virus	B/Beijing/184/93-like virus or B/Shangdong/7/97-like virus	N/A
2000–2001 <sup>[4]</sup>	A/New Caledonia/20/99 (H1N1)-like virus	A/Moscow/10/99 (H3N2)-like virus	B/Beijing/184/93-like virus	N/A
2001–2002 <sup>[5]</sup>	A/New Caledonia/20/99(H1N1)-like virus	A/Moscow/10/99(H3N2)-like virus	B/Sichuan/379/99-like virus	N/A
2002–2003 <sup>[6]</sup>	A/New Caledonia/20/99(H1N1)-like virus	A/Moscow/10/99(H3N2)-like virus	B/Hong Kong/330/2001-like virus	N/A
2003–2004 <sup>[7]</sup>	A/New Caledonia/20/99(H1N1)-like virus	A/Moscow/10/99(H3N2)-like virus	B/Hong Kong/330/2001-like virus	N/A
2004–2005 <sup>[8]</sup>	A/New Caledonia/20/99(H1N1)-like virus	A/Fujian/411/2002(H3N2)-like virus	B/Shanghai/361/2002-like virus	N/A
2005–2006 <sup>[9]</sup>	A/New Caledonia/20/99(H1N1)-like virus	A/California/7/2004(H3N2)-like virus	B/Shanghai/361/2002-like virus	N/A
2006–2007 <sup>[10]</sup>	A/New Caledonia/20/99(H1N1)-like	A/Wisconsin/67/2005 (H3N2)-like virus	B/Malaysia/2506/2004-like virus	N/A
2007–2008 <sup>[11]</sup>	A/Solomon Islands/3/2006 (H1N1)-like virus	A/Wisconsin/67/2005 (H3N2)-like virus	B/Malaysia/2506/2004-like virus	N/A
2008–2009 <sup>[12]</sup>	A/Brisbane/59/2007 (H1N1)-like virus	A/Brisbane/10/2007 (H3N2)-like virus	B/Florida/4/2006-like virus	N/A
2009–2010 <sup>[13]</sup>	A/Brisbane/59/2007 (H1N1)-like virus	A/Brisbane/10/2007 (H3N2)-like virus	B/Brisbane/60/2008-like virus	N/A
2010–2011 <sup>[14]</sup>	A/California/7/2009 (H1N1)-like virus	A/Perth/16/2009 (H3N2)-like virus	B/Brisbane/60/2008-like virus	N/A
2011–2012 <sup>[15]</sup>	A/California/7/2009 (H1N1)-like virus	A/Perth/16/2009 (H3N2)-like virus	B/Brisbane/60/2008-like virus	N/A
2012–2013 <sup>[16]</sup>	A/California/7/2009 (H1N1)pdm09 <sup>[note 1]</sup> -like virus <sup>[17]</sup>	A/Victoria/361/2011 (H3N2)-like virus	B/Wisconsin/1/2010-like virus	B/Brisbane/60/2008-like virus
2013–2014 <sup>[18]</sup>	A/California/7/2009 (H1N1)pdm09 <sup>[note 1]</sup> -like virus	A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011 <sup>[note 2]</sup>	B/Massachusetts/2/2012-like virus	B/Brisbane/60/2008-like virus
2014–2015 <sup>[19]</sup>	A/California/7/2009 (H1N1)pdm09 <sup>[note 1]</sup> -like	A/Texas/50/2012 (H3N2)-like virus <sup>[note 3]</sup>	B/Massachusetts/2/2012-like virus	B/Brisbane/60/2008-like virus

	virus			
2015–2016 <sup>[20]</sup>	A/California/7/2009 (H1N1)pdm09 <sup>[note 1]</sup> -like virus	A/Switzerland/9715293/2013 (H3N2)-like virus	B/Phuket/3073/2013-like virus	B/Brisbane/60/2008-like virus
2016–2017 <sup>[21]</sup>	A/California/7/2009 (H1N1)pdm09 <sup>[note 1]</sup> -like virus	A/Hong Kong/4801/2014 (H3N2)-like virus	B/Brisbane/60/2008-like virus	B/Phuket/3073/2013-like virus
2017–2018 <sup>[22]</sup>	A/Michigan/45/2015 (H1N1)pdm09 <sup>[note 1]</sup> -like virus <sup>[23]</sup>	A/Hong Kong/4801/2014 (H3N2)-like virus	B/Brisbane/60/2008-like virus	B/Phuket/3073/2013-like virus
2018–2019 <sup>[24]</sup>	A/Michigan/45/2015 (H1N1)pdm09 <sup>[note 1]</sup> -like virus	A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus	B/Colorado/06/2017-like virus (B/Victoria/2/87 lineage)	B/Phuket/3073/2013-like virus (B/Yamagata/16/88 lineage)

## Southern hemisphere recommended strains

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The following is a list of WHO recommended strains for the southern hemisphere influenza season.

<b>SH winter season</b>	<b>H1N1</b>	<b>H3N2</b>	<b>B-strain</b>	<b>additional B-strain for QIV</b>
1999 <sup>[25]</sup>	A/Beijing/262/95(H1N1)-like virus	A/Sydney/5/97(H3N2)-like virus	B/Beijing/184/93-like virus	N/A
May–October 2000 <sup>[26]</sup>	A/New Caledonia/20/99 (H1N1)-like virus	A/Moscow/10/99 (H3N2)-like virus	B/Beijing/184/93-like virus or B/Shangdong/7/97-like virus	N/A
May–October 2001 <sup>[27]</sup>	A/New Caledonia/20/99 (H1N1)-like virus	A/Moscow/10/99 (H3N2)-like virus	B/Sichuan/379/99-like virus	N/A
2002 <sup>[28]</sup>	A/New Caledonia/20/99(H1N1)-like virus	A/Moscow/10/99(H3N2)-like virus	B/Sichuan/379/99-like virus	N/A
2003 <sup>[29]</sup>	A/New Caledonia/20/99(H1N1)-like virus	A/Moscow/10/99(H3N2)-like virus	B/Hong Kong/330/2001-like virus	N/A
2004 <sup>[30]</sup>	A/New Caledonia/20/99(H1N1)-like virus	A/Fujian/411/2002(H3N2) - like virus	B/Hong Kong/330/2001-like virus	N/A
2005 <sup>[31]</sup>	A/New Caledonia/20/99(H1N1)-like virus	A/Wellington/1/2004(H3N2)-like virus	B/Shanghai/361/2002-like virus	N/A
2006 <sup>[32]</sup>	A/New Caledonia/20/99(H1N1)-like virus	A/California/7/2004(H3N2)-like virus	B/Malaysia/2506/2004-like virus	N/A
2007 <sup>[33]</sup>	A/New Caledonia/20/99(H1N1)-like	A/Wisconsin/67/2005 (H3N2)-like virus	B/Malaysia/2506/2004-like virus	N/A
2008 <sup>[34]</sup>	A/Solomon Islands/3/2006 (H1N1)-like virus	A/Brisbane/10/2007 (H3N2)-like virus	B/Florida/4/2006-like virus	N/A
2009 <sup>[35]</sup>	A/Brisbane/59/2007 (H1N1)-like virus	A/Brisbane/10/2007 (H3N2)-like virus	B/Florida/4/2006-like virus	N/A
2010 <sup>[36]</sup>	A/California/7/2009 (H1N1)-like virus	A/Perth/16/2009 (H3N2)-like virus	B/Brisbane/60/2008-like virus	N/A
2011 <sup>[37]</sup>	A/California/7/2009 (H1N1)-like virus	A/Perth/16/2009 (H3N2)-like virus	B/Brisbane/60/2008-like virus	N/A
2012 <sup>[38]</sup>	A/California/7/2009 (H1N1)pdm09 <sup>[note 1]</sup> -like virus <sup>[17]</sup>	A/Perth/16/2009 (H3N2)-like virus	B/Brisbane/60/2008-like virus	N/A
2013 <sup>[39]</sup>	A/California/7/2009 (H1N1)pdm09-like virus	A/Victoria/361/2011 (H3N2)-like virus	B/Wisconsin/1/2010-like virus	B/Brisbane/60/2008-like virus
2014 <sup>[40]</sup>	A/California/7/2009 (H1N1)pdm09-like virus	A/Texas/50/2012 (H3N2)-like virus <sup>[note 3]</sup>	B/Massachusetts/2/2012-like virus	B/Brisbane/60/2008-like virus
2015 <sup>[41]</sup>	A/California/7/2009 (H1N1)pdm09-like virus	A/Switzerland/9715293/2013 (H3N2)-like virus	B/Phuket/3073/2013-like virus	B/Brisbane/60/2008-like virus
2016 <sup>[42]</sup>	A/California/7/2009 (H1N1)pdm09-like virus	A/Hong Kong/4801/2014 (H3N2)-like virus	B/Brisbane/60/2008-like virus	B/Phuket/3073/2013-like virus
2017 <sup>[43]</sup>	A/Michigan/45/2015	A/Hong Kong/4801/2014	B/Brisbane/60/2008-like	B/Phuket/3073/2013-

	(H1N1)pdm09-like virus <sup>[23]</sup>	(H3N2)-like virus	virus	like virus
2018 <sup>[44]</sup>	A/Michigan/45/2015 (H1N1)pdm09-like virus	A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus	B/Phuket/3073/2013-like virus	B/Brisbane/60/2008-like virus

## Notes

1. (H1N1)pdm09 is newer nomenclature for the 2009 pandemic H1N1 virus, not a different strain.
2. It is recommended that A/Texas/50/2012 is used as the A(H3N2) vaccine component because of antigenic changes in earlier A/Victoria/361/2011-like vaccine viruses (such as IVR-165) resulting from adaptation to propagation in eggs.
3. A/Texas/50/2012 is an A(H3N2) virus that following adaptation to growth in eggs has maintained antigenic properties similar to the majority of recently circulating cell-propagated A(H3N2) viruses including A/Victoria/361/2011

## See also

- 2009 flu pandemic vaccine

## References

1. WHO Report on Global Surveillance of Epidemic-prone Infectious Diseases (<http://www.who.int/csr/resources/publications/surveillance/Influenza.pdf>) (pdf)
2. "Recommendations for Influenza Vaccine Composition Northern hemisphere November 1998-April 1999" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index23.html>). WHO. Retrieved 14 June 2012.
3. "Recommendations for Influenza Vaccine Composition Northern hemisphere: November 1999 to April 2000" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index21.html>). WHO. Retrieved 14 June 2012.
4. "Recommendations for Influenza Vaccine Composition Northern hemisphere: 2000-2001" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index19.html>). WHO. Retrieved 14 June 2012.
5. "Recommendations for Influenza Vaccine Composition Northern hemisphere: 2001-2002" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index17.html>). WHO. Retrieved 14 June 2012.
6. "Recommendations for Influenza Vaccine Composition Northern hemisphere: 2002-2003" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index15.html>). WHO. Retrieved 14 June 2012.
7. "Recommendations for Influenza Vaccine Composition Northern hemisphere: 2003-2004" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index13.html>). WHO. Retrieved 14 June 2012.
8. "Recommendations for Influenza Vaccine Composition Northern hemisphere: 2004-2005" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index11.html>). WHO. Retrieved 14 June 2012.
9. "Recommendations for Influenza Vaccine Composition Northern hemisphere: 2005-2006" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index9.html>). WHO. Retrieved 14 June 2012.
10. "Recommendations for Influenza Vaccine Composition Northern hemisphere: 2006-2007" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index7.html>). WHO. Retrieved 14 June 2012.
11. "Recommendations for Influenza Vaccine Composition Northern hemisphere: 2007-2008" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index5.html>). WHO. Retrieved 14 June 2012.
12. "Recommendations for Influenza Vaccine Composition Northern hemisphere: 2008-2009" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index3.html>). WHO. Retrieved 14 June 2012.
13. "Recommendations for Influenza Vaccine Composition Northern hemisphere: 2009-2010" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index1.html>). WHO. Retrieved 14 June 2012.
14. "Recommended viruses for influenza vaccines for use in the 2010-2011 northern hemisphere influenza season" ([http://www.who.int/influenza/vaccines/virus/2010\\_11north/en/index.html](http://www.who.int/influenza/vaccines/virus/2010_11north/en/index.html)). WHO. Retrieved 14 June 2012.
15. "Recommended composition of influenza virus vaccines for use in the 2011-2012 northern hemisphere influenza season" ([http://www.who.int/influenza/vaccines/virus/2011\\_12north/en/index.html](http://www.who.int/influenza/vaccines/virus/2011_12north/en/index.html)). WHO. Retrieved 14 June 2012.

16. "Recommended composition of influenza virus vaccines for use in the 2012-2013 northern hemisphere influenza season" ([http://www.who.int/influenza/vaccines/virus/recommendations/2012\\_13\\_north/en/index.html](http://www.who.int/influenza/vaccines/virus/recommendations/2012_13_north/en/index.html)). WHO. Retrieved 14 June 2012.
17. "Standardization of terminology of the pandemic A(H1N1) 2009 virus" (<http://www.who.int/wer/2011/wer8643.pdf>) (PDF). WHO. Retrieved 14 June 2012.
18. "20 February 2013 Page 1 of 21 Recommended composition of influenza virus vaccines for use in the 2013-2014 northern hemisphere influenza season" ([http://www.who.int/influenza/vaccines/virus/recommendations/201302\\_recommendation.pdf](http://www.who.int/influenza/vaccines/virus/recommendations/201302_recommendation.pdf)) (PDF). WHO. Retrieved 22 February 2013.
19. "Recommended composition of influenza virus vaccines for use in the 2014-15 northern hemisphere influenza season" ([http://www.who.int/influenza/vaccines/virus/recommendations/2014\\_15\\_north/en/](http://www.who.int/influenza/vaccines/virus/recommendations/2014_15_north/en/)). WHO. Retrieved 20 February 2014.
20. "Recommended composition of influenza virus vaccines for use in the 2015-16 northern hemisphere influenza season" ([http://www.who.int/influenza/vaccines/virus/recommendations/2015\\_16\\_north/en/](http://www.who.int/influenza/vaccines/virus/recommendations/2015_16_north/en/)). WHO. Retrieved 2 March 2015.
21. "Recommended composition of influenza virus vaccines for use in the 2016-17 northern hemisphere influenza season" ([http://www.who.int/influenza/vaccines/virus/recommendations/2016\\_17\\_north/en/](http://www.who.int/influenza/vaccines/virus/recommendations/2016_17_north/en/)). WHO. Retrieved 19 May 2016.
22. "Recommended composition of influenza virus vaccines for use in the 2017-18 northern hemisphere influenza season" ([http://www.who.int/influenza/vaccines/virus/recommendations/2017\\_18\\_north/en/](http://www.who.int/influenza/vaccines/virus/recommendations/2017_18_north/en/)). WHO. Retrieved 16 March 2017.
23. "WHO switches H1N1 in Southern Hemisphere flu vaccine" (<http://www.cidrap.umn.edu/news-perspective/2016/09/who-switches-h1n1-southern-hemisphere-flu-vaccine>). *University of Minnesota - Center for Infectious Disease Research and Policy (CIDRAP)*. 29 September 2016. Retrieved 12 September 2017. "A/Michigan/45/2015 replaces the longstanding A/California/7/2009 and is recommended to improve protection against two subclades that have emerged over the past season."
24. "Recommended composition of influenza virus vaccines for use in the 2018-19 northern hemisphere influenza season" ([http://www.who.int/influenza/vaccines/virus/recommendations/2018\\_19\\_north/en/](http://www.who.int/influenza/vaccines/virus/recommendations/2018_19_north/en/)). WHO. Retrieved 22 Feb 2018.
25. "Recommendations for Influenza Vaccine Composition Southern hemisphere 1999" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index22.html>). WHO. Retrieved 22 June 2012.
26. "Recommendations for Influenza Vaccine Composition Southern hemisphere: May–October 2000" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index20.html>). WHO. Retrieved 22 June 2012.
27. "Recommendations for Influenza Vaccine Composition Southern hemisphere: May–October 2001" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index18.html>). WHO. Retrieved 22 June 2012.
28. "Recommendations for Influenza Vaccine Composition Southern hemisphere: 2002" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index16.html>). WHO. Retrieved 22 June 2012.
29. "Recommendations for Influenza Vaccine Composition Southern hemisphere: 2003" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index14.html>). WHO. Retrieved 22 June 2012.
30. "Recommendations for Influenza Vaccine Composition Southern hemisphere: 2004" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index12.html>). WHO. Retrieved 22 June 2012.
31. "Recommendations for Influenza Vaccine Composition Southern hemisphere: 2005" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index10.html>). WHO. Retrieved 22 June 2012.
32. "Recommendations for Influenza Vaccine Composition Southern hemisphere: 2006" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index8.html>). WHO. Retrieved 22 June 2012.
33. "Recommendations for Influenza Vaccine Composition Southern hemisphere: 2007" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index6.html>). WHO. Retrieved 22 June 2012.
34. "Recommendations for Influenza Vaccine Composition Southern hemisphere: 2008" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index4.html>). WHO. Retrieved 22 June 2012.
35. "Recommendations for Influenza Vaccine Composition Southern hemisphere: 2009" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index2.html>). WHO. Retrieved 22 June 2012.
36. "Recommendations for Influenza Vaccine Composition Southern hemisphere: 2010" (<http://www.who.int/influenza/vaccines/vaccinerecommendations1/en/index.html>). WHO. Retrieved 22 June 2012.
37. "Recommended composition of influenza virus vaccines for use in the 2011 southern hemisphere influenza season" (<http://www.who.int/influenza/vaccines/virus/2011south/en/index.html>). WHO. Retrieved 22 June 2012.

38. "Recommended composition of influenza virus vaccines for use in the 2012 southern hemisphere influenza season" (<http://www.who.int/influenza/vaccines/virus/recommendations/2012south/en/index.html>). WHO. Retrieved 22 June 2012.
39. "Recommended composition of influenza virus vaccines for use in the 2013 influenza season" ([http://www.who.int/influenza/vaccines/virus/recommendations/201209\\_recommendation.pdf](http://www.who.int/influenza/vaccines/virus/recommendations/201209_recommendation.pdf)) (PDF). WHO. Retrieved 18 October 2012.
40. "Recommended composition of influenza virus vaccines for use in the 2014 southern hemisphere influenza season" ([http://www.who.int/influenza/vaccines/virus/recommendations/2014\\_south/en/index.html](http://www.who.int/influenza/vaccines/virus/recommendations/2014_south/en/index.html)). WHO. Retrieved 30 September 2013.
41. "Recommended composition of influenza virus vaccines for use in the 2015 southern hemisphere influenza season" ([http://www.who.int/influenza/vaccines/virus/recommendations/2015\\_south/en/](http://www.who.int/influenza/vaccines/virus/recommendations/2015_south/en/)). WHO. Retrieved 2 October 2014.
42. "Recommended composition of influenza virus vaccines for use in the 2016 southern hemisphere influenza season" ([http://www.who.int/influenza/vaccines/virus/recommendations/2016\\_south/en/](http://www.who.int/influenza/vaccines/virus/recommendations/2016_south/en/)). WHO. Retrieved 30 November 2015.
43. "Recommended composition of influenza virus vaccines for use in the 2017 southern hemisphere influenza season" ([http://www.who.int/influenza/vaccines/virus/recommendations/2017\\_south/en/](http://www.who.int/influenza/vaccines/virus/recommendations/2017_south/en/)). WHO. 29 September 2016. Retrieved 22 October 2016.
44. "Recommended composition of influenza virus vaccines for use in the 2018 southern hemisphere influenza season" ([http://www.who.int/influenza/vaccines/virus/recommendations/2018\\_south/en/](http://www.who.int/influenza/vaccines/virus/recommendations/2018_south/en/)). WHO. 28 September 2017. Retrieved 28 September 2017.

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