WHO biosafety risk assessment and guidelines for the production and quality control of human influenza vaccines containing the pandemic influenza A H1N1 (2009) virus: Update[1]

Originally published 28 May 2009[2]
Updated 23 July 2009[3]
Updated 21 April 2010

Introduction

This document updates guidance[4] from the World Health Organization (WHO) to national regulatory authorities and vaccine manufacturers on the safe production and quality control of human influenza vaccines that include the pandemic influenza A (H1N1) 2009 virus, and is relevant to both vaccine development and production activities.

Intended use of the document

This document provides guidance to national regulatory authorities and vaccine manufacturers. If a national regulatory authority so desires, these guidelines may be adopted as definitive national requirements or modifications may be justified and made by a national regulatory authority.

Testing of reassortant viruses derived from the pandemic H1N1 (2009) virus being considered for vaccine production

In previous versions of this document, WHO issued guidance that all influenza A (H1N1)/2009 reassortant viruses developed as candidate pandemic vaccine strains needed to be tested for attenuation in ferrets. At that time, there was uncertainty about some features of the infection with wild-type pandemic (H1N1) 2009 virus. Our current understanding of the infection and disease has advanced, and vaccines and antiviral therapy are now available[5]. Moreover, the pandemic (H1N1) 2009

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[1] This document provides recommendations on the safe handling of pandemic influenza (H1N1) virus for vaccine production and quality control. The implementation of these recommendations into national regulatory legislation is the exclusive prerogative and responsibility of national authorities.

[2] Update of WHO biosafety risk assessment and guidelines for the production and quality control of human influenza pandemic vaccines. 28 May 2009. Available at http://www.who.int/biologicals/publications/trs/areas/vaccines/influenza/H1N1_vaccine_production_biosafety_SHOC.27May2009.pdf, accessed 08 April 2010

[3] WHO biosafety risk assessment and guidelines for the production and quality control of human influenza pandemic vaccines: Update. 23 July 2009. Available at http://www.who.int/biologicals/areas/vaccines/influenza/CP116_2009-2107_Biosafety_pandemicA_H1N1_flu_vaccines-Addendum-DRAFTFINAL.pdf, accessed 08 April 2010

[4] WHO Expert Committee on Biological Standardization: fifty-sixth report. Geneva, World Health Organization, 2007. (WHO Technical Report Series No. 941). Annex 5: WHO biosafety risk assessment and guidelines for the production and quality control of human influenza pandemic vaccines, pp. 265-299. Available at: http://www.who.int/biologicals/publications/trs/areas/vaccines/influenza/Annex%205%20human%20pandemic%20influenza.pdf, accessed 08 April 2010

[5] Available at http://www.who.int/csr/resources/publications/swineflu/LaboratoryHumanspecimensinfluenza/en/

vaccine reassortants that were tested were found to be attenuated in the ferret model. Further, the pandemic (H1N1) 2009 vaccine reassortant viruses are now being incorporated into seasonal influenza vaccines.

Any new reassortant viruses derived from the pandemic (H1N1) 2009 virus do not need to undergo safety testing in ferrets.

Risk assessment for production of vaccines containing pandemic (H1N1) 2009 reassortants or viruses

Question 1

What containment level should be assigned for vaccine production from and quality control of attenuated pandemic (H1N1) 2009 reassortants?

Answer for inactivated virus vaccines and for live attenuated influenza vaccines

Vaccine production at the current date is in response to a need for seasonal influenza vaccines. Therefore vaccine manufacture, including from attenuated pandemic (H1N1) 2009 reassortants strains, should take place in compliance with recommendations from WHO for seasonal influenza vaccine production[6,7]. There are no specified biosafety containment levels for production of seasonal influenza vaccines.

Laboratory managers and workers should however consult the biorisk management guidance to contain pandemic (H1N1) 2009 viruses published by WHO[5].

Question 2

What containment level should be assigned for vaccine production from and quality control of wild-type pandemic (H1N1) 2009 viruses?

Response

Vaccine production at the current date is in response to a need for seasonal influenza vaccines. Therefore vaccine manufacture, including from wild-type pandemic (H1N1) 2009 strains, should take place in compliance with recommendations from WHO for seasonal influenza vaccine production[6,7]. There are no specified biosafety containment levels for production of seasonal influenza vaccines.

Laboratory managers and workers should however consult the biorisk management guidance to contain pandemic H1N1 (2009) viruses published by WHO[5].

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[6] Recommendations for the production and control of influenza vaccine (inactivated). Available at http://www.who.int/biologicals/publications/trs/areas/vaccines/influenza/ANNEX%203%20InfluenzaP99-134.pdf, accessed 08 April 2010

[7] Recommendations to assure the quality, safety, and efficacy of influenza vaccines (human, live attenuated) for intranasal administration, document endorsed by ECBS 2009, TRS in preparation