

Swine flu vaccination: introduction & recent developments

Abstract

Swine flu is a viral disease caused by H1N1 virus. This virus has genes drawn from swine, avian and human sources. The 2009 outbreak of swine flu in United States and subsequent spread to almost across the world has drawn the attention of scientific community. Swine flu poses danger to public health. It has caused some 2500 deaths in India alone. Many efforts have been made to develop effective drugs and vaccines against swine flu. Occurrence of bullous pemphigoid and narcolepsy as adverse reactions to vaccination has raised concerns for safety and therapeutic monitoring. The present article focuses on vaccination and attempts to outline the historical developments and issue related to it.

Keywords: swine flu, h1n1 virus, vaccination, safety, monitoring

Volume 6 Issue 1 - 2018

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Received: September 07, 2017 | **Published:** February 20, 2018

Introduction

Swine flu (H1N1 influenza) is an infectious disease. It has been reviewed in biomedical literature.¹ Past of swine flu has been described in detail in reputed journal Science.² Swine flu has been assumed to be a danger for public health.³ The challenges of swine flu have been discussed.⁴ Swine flu has become a global threat.⁵

Vulnerable groups

The most vulnerable group includes women,⁶ pregnant women in the second and third trimesters,⁷ children,⁸ travelers,⁹ and health care workers.¹⁰ Vaccination against Swine flu affair has been discussed in public health.¹¹ At one time, H1N1 (Swine) flu vaccine was considered compulsory for hospital staff.¹² Vaccination of primary health care staff assumes greater importance.¹³ Nurses have been exhorted to take benefit of swine flu vaccine.¹⁴ Healthcare workers may not have the swine flu vaccine.¹⁵

Vaccination

Determinants of swine flu vaccination success have been discussed.¹⁶ 1976 swine flu vaccine recipients have enhanced neutralization response to 2009 H1N1 virus.¹⁷ Swine flu vaccine is considered thousand-fold safer than the infection.¹⁸ Developing countries are eagerly waiting H1N1 vaccine.¹⁹ Mark Mulligan is credited with Emory swine flu vaccine trial.²⁰ China readied for swine flu vaccination.²¹ China was first to start vaccination against Swine flu.²² Four groups have been identified to be at risk.²³ Effortswere made to make swine flu vaccine before the winters of 2009.²⁴ Swine flu vaccine is approved in Europe.²⁵ 1976 and 2009 versions of Swine flu vaccines have been compared.²⁶ Children may need two doses of swine flu vaccine.²⁷ Need is felt to create Swine flu vaccine awareness in pregnant women.²⁸ Swine flu vaccine utility is doubted.²⁹ Swine flu vaccine has faced global opposition.³⁰ UK has developed a useful framework for pandemic flu vaccination.³¹ Australian swine flu vaccination plans have also faced criticism.³² Effective swine flu vaccine is waited.³³

Vaccine formulation

Swine flu vaccine development efforts and problems have been highlighted.³⁴ Swine flu vaccine has agitated the adjuvant debate.³⁵

H1N1 vaccine used mercury based preservative-thimerosal and hence, health-care workers in US have become apprehensive.³⁶ Adjuvanted vaccine approach for Swine flu has been reported.³⁷ AS03(B)-adjuvanted split virion H1N1 vaccine has been used in Gemany.³⁸ Pandemrix swine flu vaccine using squalene has proven to be a catastrophe.³⁹ Dilemmas have surrounded swine flu vaccine.⁴⁰

ADR monitoring issues

Bullous pemphigoid has been reportedly triggered by swine flu vaccination.⁴¹ Narcolepsy has Swine flu connection.⁴² UK has seen a judgement to compensate a boy developing narcolepsy after swine flu vaccine. He got 120,000 pounds for damage.⁴³ Safety of swine influenza A (H1N1) vaccines needs monitoring.⁴⁴ Serious adverse events of swine flu vaccination need to be self-reported by patients.⁴⁵ ADR monitoring of swine flu vaccine in children is deemed important. The swine flu ADR portal has been developed.⁴⁶

General practitioners

GPs have tried to collaborate with NHS for children vaccination.⁴⁷ UK GPs have agreed to lead swine flu vaccination.⁴⁸ UK GPs have made efforts to vaccinate all vulnerable groups well-before Christmas.⁴⁹

Pharma companies

Government ordered swine flu vaccine supplies.⁵⁰ GSK's swine flu vaccine order feared cancellation.⁵¹ Government made efforts to offload vaccine supplies.⁵² Confidential documents of WHO and drug companies have been sought by swine flu review panel.⁵³

Regional effects

India has seen more than 2500 deaths from Swine flu.⁵⁴ Turks exhibited opposition to A/H1N1 influenza vaccination.⁵⁵ Anti-swine flu vaccine movement exists in France.⁵⁶

Conclusion

Swine flu is a threat to global public health. The developed as well as developing countries are affected by it. Vaccination is an important tool in fight against swine flu. Dedicated efforts are needed to create awareness rough appropriate channels including the social media.

There are technical issues concerning the development of a suitable vaccine for swine flu. The safety and efficacy issues of this vaccine need to be addressed before vaccine finds acceptance amongst the masses. The effective vaccine against swine flu is still awaited.

Acknowledgments

None.

Conflicts of interest

None.

References

- Calisher CH. Swine flu. *Croat Med J*. 2009;50(4):412–415.
- Cohen J. Swine flu outbreak. New details on virus's promiscuous past. *Science*. 2009;324(5931):1127.
- Anjum Q. Swine flu—a new threat to community. *J Pak Med Assoc*. 2009;59(10):659–660.
- Astray Mochales J, Lopaz Perez MA. [Swine flu (H1N1) pandemic: Challenges and repercussions for the health care system]. *Farm Hosp*. 2009;33(6):293–295.
- Cohen J, Enserink M. Infectious diseases. As swine flu circles globe, scientists grapple with basic questions. *Science*. 2009;324(5927):572–573.
- Anonymous Share with women. H1N1 flu (swine flu). *J Midwifery Womens Health*. 2009;54(6):517–518.
- Lim BH, Mahmood TA. Influenza A H1N1 2009 (Swine Flu) and Pregnancy. *J Obstet Gynaecol India*. 2011;61(4):386–393.
- Anonymous Swine flu: What to expect? *Child Health Alert*. 2009;27:1–2.
- Leggat PA, Speare R, Aitken P. Swine flu and travelers: An Australian perspective. *J Travel Med*. 2009;16(6):373–376.
- Wiwanitkit V. Health care workers and swine flu. *Disaster Med Public Health Prep*. 2011;5(1):9.
- Haug C. Vaccination against the swine flu in 2009. *Tidsskr Nor Laegeforen*. 2012;132(8):929.
- Cheson BD. Making the H1N1 (swine) flu vaccine mandatory for hospital employees. *Clin Adv Hematol Oncol*. 2009;7(10):614.
- Maceira Castineira MM, Deben Sanchez M, Ramil Hermida L, et al. [vaccination of primary health care staff in the area of Ferrol (Galicia) against seasonal and swine flu]. *Aten Primaria*. 2012;44(3):180–181.
- Dame Christine B. Nurses must consider the benefits of having the swine flu vaccine. *Nurs Times*. 2009;105(34):13.
- Jordan R, Hayward A. Should healthcare workers have the swine flu vaccine? *BMJ*. 2009;339:b3398.
- Myers LB, Goodwin R. Determinants of adults' intention to vaccinate against pandemic swine flu. *BMC Public Health*. 2011;11(1):15.
- McCullers JA, Van De Velde LA, Allison KJ, et al. Recipients of vaccine against the 1976 "swine flu" have enhanced neutralization responses to the 2009 novel H1N1 influenza virus. *Clin Infect Dis*. 2010;50(11):1487–1492.
- Ellis O. Swine flu vaccine is a "thousandfold" safer than the infection, say experts. *BMJ*. 2009;339: b3802.
- Enserink M. Swine flu pandemic. Developing countries to get some h1n1 vaccine—but when? *Science*. 2009;326(5954):782.
- Mulligan M. Mark Mulligan leads Emory swine flu vaccine trial. Interview by Brooke Grindlinger. *J Clin Invest*. 2009;119(9):2438.
- Parry J. China gears up for swine flu vaccination as virus spreads inland. *BMJ*. 2009;339:b3778.
- Stone R. Swine flu outbreak. China first to vaccinate against novel H1N1 virus. *Science*. 2009;325(5947):1482–1483.
- Dinsdale P. Four at-risk groups will be first to be vaccinated against swine flu, says chief medical officer. *BMJ*. 2009;339:b3363.
- Davies J. Swine flu vaccines: Reaching the finish line. *Cell*. 2009;139(3):449–451.
- Cook S. European agency approves swine flu vaccines for licensing. *BMJ*. 2009;339:b3992.
- Jameson M. A practical comparison of the 2009 versus 1976 swine flu vaccines. *Md Med*. 2009;10(3):24–26.
- Wise J. Children are likely to need two doses of swine flu vaccine. *BMJ*. 2009;339:b3969.
- Wise J. Reassure pregnant women over swine flu vaccine, health officials urge. *BMJ*. 2009;339: b4642.
- Gostin LO. Swine flu vaccine: What is fair? *Hastings Cent Rep*. 2009;39(5):9–10.
- Kmietowicz Z. Opposition to swine flu vaccine seems to be growing worldwide. *BMJ*. 2009;339: b3461.
- Myers LB, Goodwin R. Using a theoretical framework to determine adults' intention to vaccinate against pandemic swine flu in priority groups in the UK. *Public Health*. 2012;126(Suppl 1):S53–56.
- Sweet M. Australia's swine flu vaccination plans come under fire. *BMJ*. 2009;339: b3656.
- Gulland A. Sixty seconds on . . . Swine flu vaccine. *BMJ*. 2017;356: j749.
- Wiwanitkit V. Swine flu vaccine: Present status. *Hum Vaccin*. 2009;5(11):777–778.
- Schubert C. Swine flu agitates the adjuvant debate. *Nat Med*. 2009;15(9):986–987.
- Edlich RF, Mason SS, Dahlstrom JJ, et al. Pandemic preparedness for swine flu influenza in the United States. *J Environ Pathol Toxicol Oncol*. 2009;28(4):261–264.
- Ozturk S. Swine flu vaccine adjuvants and multiple sclerosis – Is there potential for harmful effect? *Med Hypotheses*. 2010;75(1):50–52.
- von Kries R, Weiss S, Falkenhorst G, et al. Post-pandemic seroprevalence of pandemic influenza A (H1N1) 2009 infection (swine flu) among children <18 years in Germany. *PLoS One*. 2011;6(9):e23955.
- Bruun Laursen A. [Catastrophic consequences of Pandemrix swine flu vaccine containing squalene]. *Ugeskr Laeger*. 2017;175(20):1447.
- Enserink M, Kaiser J. Swine flu outbreak. Devilish dilemmas surround pandemic flu vaccine. *Science*. 2009;324(5928):702–705.
- Walmsley N, Hampton P. Bullous pemphigoid triggered by swine flu vaccination: Case report and review of vaccine triggered pemphigoid. *J Dermatol Case Rep*. 2011;5(4):74–76.
- Vogel G. Immunology. Swine flu connection provides clues about narcolepsy. *Science*. 2013;342(6165):1430.
- Dyer C. UK vaccine damage scheme must pay pound 120,000 to boy who developed narcolepsy after swine flu vaccination. *BMJ*. 2015;350:h3205.
- Evans D, Cauchemez S, Hayden FG. "Prepandemic" immunization for novel influenza viruses, "swine flu" vaccine, Guillain-Barre Syndrome, and the detection of rare severe adverse events. *J Infect Dis*. 2009;200(3):321–328.

45. Mackenzie IS, MacDonald TM, Shakir S, et al. Influenza H1N1 (swine flu) vaccination: A safety surveillance feasibility study using self-reporting of serious adverse events and pregnancy outcomes. *Br J Clin Pharmacol.* 2012;73(5):801–811.
46. Griffith R, Tegenah C. The swine flu, advice giving and the reporting of adverse drug reactions. *Br J Community Nurs.* 2009;14(9):405–409.
47. Kmietowicz Z. GPs make deals with local NHS to vaccinate children against swine flu. *BMJ.* 2009;339: b5450.
48. O'Dowd A. GPs will lead UK's swine flu vaccination campaign. *BMJ.* 2009;339:b2879.
49. Pownall M. GPs are told to vaccinate all priority groups against swine flu before Christmas. *BMJ.* 2009;339: b5110.
50. Doherty L. Government orders supplies of swine flu vaccine to cope with pandemic. *Paediatr Nurs.* 2009;21(7):4.
51. Mayor S. Department of Health agrees deal with GSK to cancel part of swine flu vaccine order. *BMJ* 2010;340: c1946.
52. White C. Government is in talks with GSK to offload surplus swine flu vaccine. *BMJ.* 2010;340:c170.
53. Zarocostas J. Swine flu pandemic review panel seeks access to confidential documents between WHO and drug companies. *BMJ.* 2010;340:c2792.
54. Cousins S. Death toll from swine flu in India exceeds 2500. *BMJ.* 2015;351: h4966.
55. Gaygisiz U, Gaygisiz E, Ozkan T, et al. Why were turks unwilling to accept the A/H1N1 influenza–pandemic vaccination? People's beliefs and perceptions about the swine flu outbreak and vaccine in the later stage of the epidemic. *Vaccine.* 2010;29(2):329–333.
56. Ward JK. Rethinking the antivaccine movement concept: A case study of public criticism of the swine flu vaccine's safety in France. *Soc Sci Med.* 2016;159:48–57.