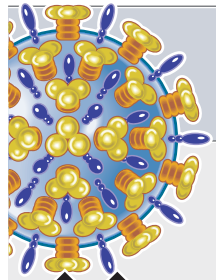
Race to produce a swine flu vaccine

Pharmaceutical companies are racing against time to mass-produce vaccines for the lethal A(H1N1) swine flu strain in time for the flu season.

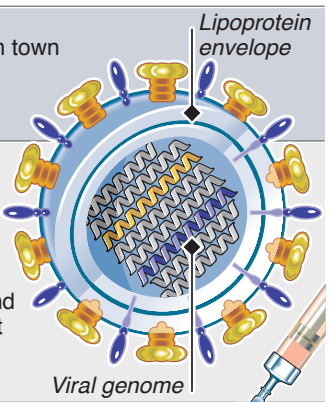


Week 1 – Mar 17, 2009, Mexico: Six in 10 people in town of La Gloria, Veracruz, are sickened by previously unknown influenza virus

Week 4: WHO and Centers for Disease Control isolate virus and identify it as strain of swine influenza ***A(H1N1)***

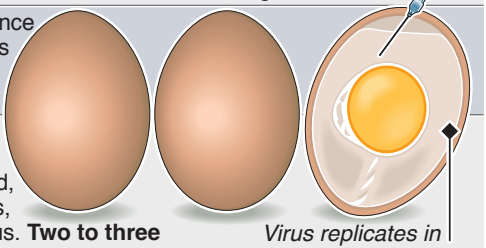
Haemagglutinin (HA) molecules bind virus to cell and inject contents into it

Neuraminidase (NA) molecules cause infected host cell to release new viruses



Weeks 5-8: Live-virus reference strain passed to vaccine-makers to prepare ***seed virus***. **This takes three to four weeks**

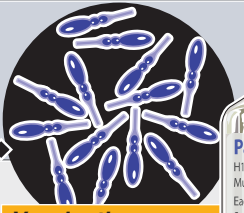
Week 9: Seed virus inoculated into fertilized hens' eggs. Embryo becomes infected, virus multiplies. After three days, eggs are opened to harvest virus. **Two to three eggs needed to produce one dose of vaccine**

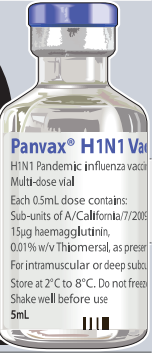


Weeks 10-16: Bulk virus chemically inactivated. Virus particles concentrated by centrifugation, viral envelope stripped away using detergent to leave HA genetic fragments. HA added to generic vaccine which has already been approved

Weeks 16-21: Vaccine fast-tracked through clinical trials – volunteers receive two doses 21 days apart

Weeks 21-28: Full-scale production. By October, millions of vials are filled and packed into cartons with data sheets and syringes





Vaccination: *Within weeks, body develops antibodies to protect against pandemic influenza*

Source: Sanofi Pasteur, CSL Biotherapies, GSK