Influenza A (H1N1) 2009 monovalent vaccine (IA/H1N1/2009 MV) "PANVAX™"
Why vaccinate in the post pandemic?

- Pandemic influenza virus is expected to remain for many years
  - Cases and outbreaks
- Intensified activity in India (Maharastra, Tamil Nadu, Kerala)
- Global virological surveillance
  - 51% of sub typed influenza A - pandemic strain
  - 302 cases of oseltamivir resistance
- Severe disease for some risk categories
- Need for protecting themselves
Influenza A/H1N1 vaccine

- Monovalent, unadjuvanted, inactivated, split-virus vaccine
- Prepared in embryonated chicken eggs
  - Purification by zonal centrifugation
  - Inactivation with beta propiolactone
  - Obtaining split virion with Na taurodeoxycholate
- Same technology used for manufacturing Trivalent Inactivated seasonal influenza Vaccines (TIV)
- Seed virus from the reassortant vaccine virus NYMC X-179A derived from the virus A/California/7/2009 (H1N1)
Pharmacology

• Induction of antibodies to the viral surface antigens; neuraminidase and haemoagglutinin
Prioritization for vaccination by WHO’s SAGE

- Health workers
- Pregnant women
- Individuals above 6 months with one of several chronic medical conditions
- Healthy young adults (15 - 49 years of age)
- Healthy young children
- Healthy adults >49 years < 65 years
- Healthy adults aged >65 years
Priority groups for vaccination in Sri Lanka

- **Health workers (Public and private sector)**
  - **Curative health institutions**:
    - All Medical Officers, Assistant and Registered Medical Officers,
    - Nursing Officers, Paramedical staff, clerical staff,
    - Attendants, laborers,
    - security staff and any other staff attached to curative health care institutions
  - **Preventive health care institutions**,
    - MOH, AMOH, other Medical Officers,
    - PHNS, SPHM, PHM, SPHI, PHI,
    - PPO, HMA, laborers or
    - any other staff attached to preventive health institutions (RDHS, MOH offices, and special campaigns)
Priority groups for vaccination in Sri Lanka

- Individuals with potential high risk of severe disease and complications of pandemic influenza A/H1N1 at any age
  - People with at least one chronic morbidity potentially capable of leading to severe disease, rapid progression or complication of pandemic influenza A/H1N1
    - chronic lung diseases including bronchial asthma
    - Chronic cardiovascular disorders excluding hypertension
    - Chronic renal, hepatic and haematological conditions including sickle cell disease,
    - metabolic disorders including diabetes mellitus
Priority groups for vaccination in Sri Lanka

• Individuals with potential high risk of severe disease and complications of pandemic influenza A/H1N1 at any age
  – People with immunosuppressive conditions
    • Immunosuppression caused by medications
    • HIV/AIDS
  – Those with disorders compromising respiratory function
    • e.g. spinal cord injuries, seizure disorders
  – Any other disease deemed high risk by a consultant physician/paediatrician or any other specialist medical officer
Priority groups for vaccination in Sri Lanka

- Any front line worker who is at risk of influenza A/H1N1
  - Staff at entry point to the country (Air/sea ports)
  - Members of the armed forces and police
  - Individuals involved in tourism industry
- Any person who travels to a foreign country
- Any other person who considers him/herself at risk
Priortising high risk individuals

- Majority - uncomplicated, self limited, mild disease
- Severe disease - among known high risk groups
- A majority of hospitalized patients - at least one chronic morbidity
- Development of severe course of pandemic influenza A/H1N1
- Rapid progression of pandemic influenza A/H1N1
- Development of complications of pandemic influenza A/H1N1
  - Major complication - ARDS due to viral pneumonitis
  - Multi organ failure, septic shock
  - Exacerbation of existing morbidity conditions
  - Encephalopathy, encephalitis
Dose, schedule & route of administration

- **Intramuscular or deep subcutaneous administration**
- **Children aged 10 years to 18 years**
  - A single dose of 0.5 ml
- **Adults over 18 years**
  - A single dose of 0.5 ml.
Efficacy and protection

• Efficacy in the clinical trial
  – Titers > 1:40 on HI assay - 96.7%
• Adequate immunity 2-3 weeks after vaccination
• Immunity – strain specific for H1N1
• Cross-protection by exposure to antigenically drifted strains of the same influenza subtype reported
• Duration of protection – at least a year
Contraindications

- Vaccine contains a limited amount of egg protein
- In persons who have severe egg allergy
  - Egg protein can induce immediate hypersensitivity reactions
- Known hypersensitivity to eggs, chicken protein, neomycin or polymyxin
- Hypersensitivity to seasonal influenza vaccines previously
- Hypersensitivity to Thiomersal containing vaccines previously
Precautions

- Review previous medical history on hypersensitivity to any type of vaccine
  - not a contraindication.
- Postpone vaccination during febrile and acute illness
- Guillain Barre Syndrome (GBS) within 6 months of previous influenza vaccination,
  - I A /H1N1/ 2009 MV vaccination - based on potential benefits and risks.
- Immunocompromised individuals- diminished immune response
- Availability of emergency trays and staff to manage hypersensitivity reactions
Safety

- Conclusions are based on
  - relatively limited use of IA/H1N1 MV vaccine
  - extensive use of seasonal TIV in industrialized countries

- AEFI in adults:
  - Most common local AEFI
    - tenderness, pain, redness and swelling at the injection site
    - Majority - mild and self limiting
  - Most common systemic AEFI
    - headache, malaise and muscle ache
    - Majority - mild and self limiting
Safety

• **AEFI in children:**
  - **Most common local AEFI**
    • pain redness and swelling at the injection site.
    • Majority - mild and self limiting
  - **Most common systemic AEFI**
    • irritability, rhinitis, fever, cough, loss of appetite, vomiting, diarrhea, headache, muscle ache and sore throat
    • Majority - mild and self limiting
WHO experience: 1st safety review by GACVS

- Vaccine use -> 50 countries since September
- Passive PMS - since introduction
- 150 million doses distributed (from 21.09-02.12)
- 45 million doses - adjuvanted vaccines
- Reported AEFI - within the known safety profile
- Severe AEFI - very limited
  - mainly allergic reactions
  - Immediate hypersensitivity reactions (urticaria, angioedema and anaphylaxis)
  - Overall reporting rate of anaphylaxis - 0.1-1.0 per 100000 doses
  - Reporting rate in Canada - 4.0 per 100000 doses (adjuvanted vaccine)
WHO experience: 1st safety review by GACVS

- Deaths related to IA/H1N1 MV vaccine
  - temporally associated deaths - small number
  - Cause of death - majority unrelated to vaccination
  - Related to vaccination - due to anaphylactic shock

- Safety in immunocompromised - no evidence of safety concerns
VAERS surveillance of H1N1 vac.

June 2010 report

- In USA- 127 million doses as of 28/5/10
- 11180 AEFI reported
- 92.2% non serious AEFI (local)
- 868 (7.7%) serious AEFI (not different from seasonal influenza vaccines)
  - 60 deaths - Preliminary findings indicate no common cause or pattern to causally associate with vaccine
  - 143 GBS cases (background rate 80-160 cases per week)
- No new or unusual events or patterns
Important information

- Clear to slightly opaque liquid with some sediment that resuspends upon shaking.
- Multi dose vials contain 5ml or 10ml
- Multi dose vials
  - Storage - 2-8°C
  - Must not be frozen
  - Protect from light
  - Discard within 24 hours after piercing the stopper (local recommendation - 6 hours)
  - Shelf life - 12 months in 2-8°C
Epidemiology of H1N1 in Pregnancy in Sri Lanka

- No of lab confirmed deaths due to H1N1: 46
- Deaths due to H1N1 among pregnant women: 7
- Deaths due to H1N1 in the general population: 39
- H1N1 specific death rate among pregnant women = 3.5/100000 pregnant women
- H1N1 specific death rate in the general population = 0.2 per 100000 population
- 17.5 fold higher deaths among pregnant women
Use of the vaccine in pregnancy

- Safety and effectiveness
  - not established in clinical trials in pregnant women.

- Acceptance by regulatory authorities worldwide (ACIP, TGA, WHO)
  - benefits of vaccinating pregnant women outweigh the risks.

- Pregnancy – an increased risk for severe disease,
  - Potential for spontaneous abortion and/or death, especially during the second and third trimesters

- Inactivated non-adjuvanted Influenza A/H1N1/2009 vaccines
  - the preferred option
  - based on the extensive safety data on their (inactivated, non-adjuvanted seasonal influenza vaccine) use in pregnant women.

- USA, Canada, Australia, UK and many other countries
  - recommend vaccination of pregnant women irrespective of the trimester against pandemic influenza A/H1N1.
Use of the vaccine in pregnancy

- AEFI with inactivated seasonal influenza vaccines
  - not differed among pregnant and non-pregnant vaccinees.

- The CDC Immunization Safety Office (2006)
  - no unexpected adverse events following trivalent influenza vaccines in approximately 2 million pregnant women vaccinated between 2000 and 2003.

- Recommendations given the current epidemiological situation of H1N1 pandemic,
  - Consider the benefits and risks of vaccination on individual case by case basis before administering the vaccine to a pregnant lady in Sri Lanka.