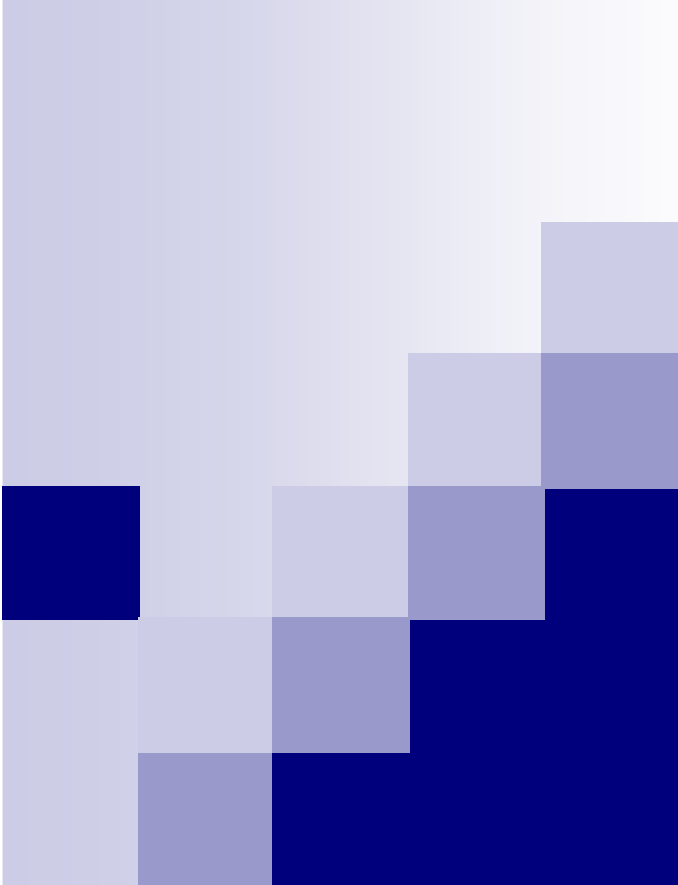




Why IPV and Varicella?

April 28th 2005

**Dr David Fuller
Paediatrician**

Immunisation Service, Royal Children's Hospital



Poliomyelitis

- 3 serotypes of poliovirus (P1, P2, P3)
- May cause asymptomatic infection
- Mild illness (headache, malaise, gi disturbance)
- Paralytic polio
 - occurs in between 0.1% and 1.3% of cases
 - spinal paralysis in 80% → 2-30% fatality
 - bulbar paralysis in 20% → 75% fatality



Poliomyelitis

- Dramatic reduction in worldwide incidence of polio
 - eradication by 2005?
- Americas certified free of polio in 1994
- Western Pacific (including Australia) polio free in 2000
- Cases still occurring, especially in South Asia, Eastern Mediterranean and Africa



Poliomyelitis

■ Australia

- Peak incidence 39.1/100 000 in 1938
- Fall in incidence since 1952
- Epidemics 1956 and 1961-2
- Last case 1978
- 2 cases of VAPP in 1986 and 1995
- Certified polio free in 2000







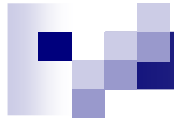
Polio vaccines

- Oral polio vaccine (OPV)
 - Sabin ®
 - Live attenuated virus
- Injectable polio (IPV)
 - IPOL ®
 - Combination vaccines
 - Inactivated virus



Polio vaccines

- Primary course of 3 doses, 1-2 months apart
- Booster at 4 years
- Subsequent booster only needed if
 - Traveling to location where polio prevalent
 - Healthcare workers in contact with polio
 - If exposed to continuing risk of infection, booster every 10 years



Why OPV is better than IPV

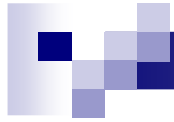
- Much better intestinal immunity
 - local as well as systemic immunity
 - reduces frequency of symptomless excretion of wild poliovirus
- Inhibits simultaneous infection by wild polioviruses
 - best vaccine for epidemics
- In developing countries:
 - immunise 1 child = immunise several
- Oral = less needles
- Cheap





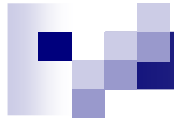
Vaccine associated paralytic poliomyelitis (VAPP)

- Risk when using OPV
- Occurs in 1 / 2.4 million doses
 - Greatest risk with first dose
 - 10 times higher rate reported in US compared with Australia
- Results from vaccine strain mutating back to wild type polio
- Usually type 3 Sabin strain



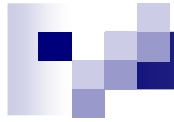
Side effects of IPV

- Local reactions
- Fever (5-10%)



Why IPV?

- No risk of VAPP
 - With polio eradicated from Australia, no longer need the other benefits of OPV
- IPV funded from 1st November 2005



Why IPV now and not 5 years ago?

- Cost
- Other vaccine priorities
- An extra needle
 - = 4 needles at 2 and 4 months
 - combination vaccines



Combination IPV vaccines

- 4, 5 and 6 valent vaccines
- GSK Group
 - Infanrix Hexa ® (DTPa, IPV, Hib, Hep B) = 6
 - Infanrix Penta ® (DTPa, IPV, HepB) = 5
 - Infanrix IPV ® (DTPa, IPV) = 4
- Sanofi Pasteur group
 - Pediacel ® / Poliacel ® (DTPa, IPV, Hib) = 5
 - Quadracel ® (DTPa, IPV) = 4



Combination IPV vaccines

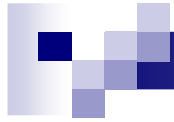
- Which one used in schedule will depend on Health Department tendering and negotiations in each state
- May result in less needles (and will not result in any more)
- Hib component is PRP-T (tetanus protein), therefore needs 3 doses for primary course (as opposed to 2 doses with Comvax)



B



A



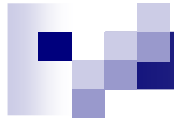
Varicella

- Chickenpox

- ☐ Usually mild disease in children
- ☐ More severe in adults
- ☐ 5% cases sub-clinical

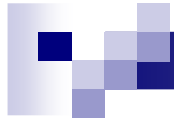
- Reactivation → zoster / shingles

- ☐ 1% cases < 12 years; 81% cases > 40 years



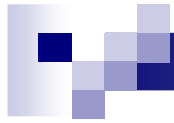
Varicella

- Incubation period 10 to 21 days (usually 2 weeks)
- Infectious from 48 hours before lesions until spots crusted over



Varicella

- Complications of varicella infection
 - Pneumonia
 - Cellulitis
 - Susceptible to Staph and Strep infections
 - → sepsis, TSS
 - Cerebellar ataxia (1:4000), encephalitis (1.8:10000)
 - Meningitis, transverse myelitis, thrombocytopaenia
 - Congenital varicella syndrome / severe neonatal varicella
- Even uncomplicated varicella can be very unpleasant



Varicella

- Each year in Australia
 - 240,000 cases]
 - 1,200 hospitalisations] Underestimates ++
 - 4.2 deaths]
- Adults:
 - 25% varicella cases
 - 40% varicella admissions
- Case fatality rate 3 / 100 000



Varicella vaccines

- Varilrix ® – GSK

- Stable in fridge for up to 2 years

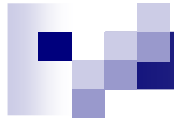
- Varivax ® – MSD/CSL

- Stable in fridge for up to 18 months

- Protective effectiveness:

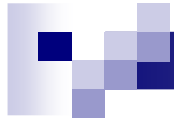
- Any disease: 85%

- Mod-severe disease: 97%



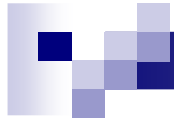
Varicella vaccines

- 12 months – 13 yrs
 - No history of varicella: 1 dose
- 14 years +
 - No history of varicella and seronegative: 2 doses
- Post Exposure prophylaxis:
best given within 3 days, can be up to 5 days
- Cost: \$50-\$60 per dose



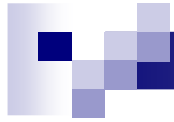
Varicella vaccines – side effects

- Minor side effects
 - fever
 - local reactions
 - rash (5-26 days)
 - Wild type varicella median 8 days
 - VZV median 21 days
 - vaccine failure (15%)



Varicella vaccines

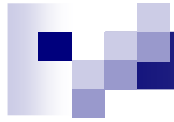
- Transmission of vaccine virus
 - Only 3 case reports in the world from healthy recipients
- Risk of zoster
 - Reduced in vaccinees (2.6 per 100 000 compared to 68 per 100 000)
 - Possible short term increase in zoster in non-immunised adults (due to less natural boosting)?



Varicella vaccines

- From 1st November 2005 funded for
 - All children turning 18 months (born after 1/5/04)
 - Catch up for 10-13 year olds without history of varicella

- Can still be given to children from 12 months (at own expense)
 - Some data suggests less effective for first 12 months after vaccine, but similar efficacy thereafter



Varicella vaccines

- Can be given same day as MMR or 1 month later
- MMR – V combined vaccine?