

Newsletter

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Hot Topic 1

Changes to the Australian Immunisation Handbook 8th edition

Recently changes to the Australian Immunisation Handbook 8th edition were approved by the National Health and Medical Research Council (NHMRC). This article highlights some of the changes; for a description of all changes please see: <http://www.immunise.health.gov.au/handbook.htm>

Pertussis

- The low dose adolescent pertussis booster vaccine (dTpa, Boostrix™) can now be given at any time following a previously administered dose of tetanus toxoid containing vaccine.

Pneumococcal

- Recommended schedule of doses for the pneumococcal vaccine (7vPCV) in medical risk children under 5 years old.

Age at first dose (months)	Primary 7vPCV schedule	Additional pneumococcal vaccine doses
2-6	3 doses, 1-2 months apart	7vPCV at 12 months old 23vPPV at 4-5 years old
7-11	2 doses, 1-2 months apart	7vPCV either 2 months after second dose or at 12 months old (which ever is later) 23vPPV at 4-5 years old
12-59	2 doses, 2 months apart	No further 7vPCV doses 23vPPV at 4-5 years old

7vPCV = pneumococcal conjugate vaccine

23vPPV = pneumococcal polysaccharide vaccine

- Delayed-start and catch-up doses can be given a minimum of one month apart for children less than 12 months old.

Cholera

- An updated cholera vaccine chapter that includes the new cholera vaccine - Dukoral™. This is an inactivated vaccine providing protection against *V. cholerae* and some reduction in diarrhoea caused by enterotoxigenic *E.coli*, for use in children (over 2 years old) and adults.

Hepatitis A

- The age of administration of Hepatitis A VAQTA Paediatric/Adolescent vaccine has been changed from 2-17 years to 1-17 years.

NCIRS Fact Sheets

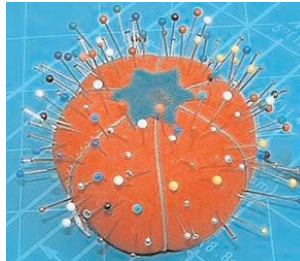
NCIRS is currently reviewing its vaccine related fact sheets (which can be viewed at www.ncirs.usyd.edu.au/facts/facts.html). We are currently updating existing fact sheets but also developing new fact sheets. If anyone has any suggestions regarding fact sheet topics they would like to see, or would like to provide comments on the fact sheets currently included on the NCIRS website, please forward these to karynp@chw.edu.au.

Hot Topic 2

Multiple Vaccines

Parents (and providers) may be concerned that children receive too many vaccines. Such concern may surround the misconception that multiple vaccines may overwhelm or weaken an infant's immune system. The following points may help to discuss this issue with parents.

- B and T cells develop around 14 weeks gestation, and newborns can generate both humoral (antibody) and cellular (T and B cell) responses at the time of birth.
- From the time of birth an infant's immune system responds to thousands of bacteria that immediately colonise its nose, throat, and intestines.
- Newborns are capable of mounting protective immune responses to vaccines with hours of birth.
- It has been estimated that infants have the theoretical capacity to respond to more than 10,000 vaccines at any one time.
- Even if 11 vaccines were given at one time, only about 0.1% of the immune system would be "used up" - and this is soon replenished.
- The vaccines we give children now actually contain fewer antigens (immunogenic proteins and polysaccharides) than they did 20 or 40 years ago. For example, the acellular pertussis vaccine currently in use contains only 3-5 antigens, as compared with the previously used whole cell pertussis vaccine that contained ~3000 antigens.
- Children respond to multiple vaccines given at the same time in a way that is similar to individual vaccines given at separate times. Studies testing children's immune responses to new vaccines are undertaken in conjunction with receipt of already existing vaccines.



- In some ways, vaccines actually prevent "weakening" of the immune system by preventing diseases that can lead to a secondary infection, such as pneumonia following influenza, or Group A strep infections following chickenpox.
- Combining vaccines into the same syringe, as opposed to giving multiple vaccines at different sites at one time, may actually result in lesser immune responses (in part based on the fact that agents used to buffer or stabilise the individual vaccines may be incompatible). Extensive modification and testing has been required in formulating many of the new generation of combination vaccines. It is important that all providers only use vaccines as directed by the manufacturer's instructions.

NCIRS is currently developing a fact sheet(s) regarding multiple vaccines and combination vaccines, and would welcome your input regarding what you would like to see. Please email any comments to Jennifer Anderson (jand9940@med.usyd.edu.au) or NCIRS.

Many of the points here are discussed in the following article:

P.A. Offit, J. Quarles, M.A. Gerber, et al. Addressing Parents' Concerns: Do Multiple Vaccines Overwhelm or Weaken the Infant's Immune System? *Pediatrics* 2002; 109: 124-129.

It is available to download free from: <http://pediatrics.aappublications.org>

The following online resources may also be useful

1. <http://www.cdc.gov/nip/vacsafe/concerns/gen/multiplevac.htm>
2. <http://www.immunize.org/catg.d/4038myth.htm>

Recent Journal Club topic

M.N. Oxman, M.J. Levin, G.R. Johnson, K.E. Schmader, S.E. Straus, et al. A vaccine to prevent herpes zoster and postherpetic neuralgia in older adults - "the shingles prevention study". *New England Journal of Medicine* 2005; 352: 2271-2284.

Background

The incidence and severity of herpes zoster (HZ) and postherpetic neuralgia increase with age in association with a progressive decline in cell-mediated immunity to varicella-zoster virus (VZV). The study tested the hypothesis that vaccination against VZV would decrease the incidence, severity, or both, of herpes zoster and postherpetic neuralgia among older adults.

Methods

The study enrolled 38,546 adults 60 years of age or older in a randomized, double-blind, placebo-controlled trial of an investigational live attenuated Oka/Merck VZV vaccine ("zoster vaccine"). Herpes zoster was diagnosed according to clinical and laboratory criteria. The pain and discomfort associated with herpes zoster were measured repeatedly for six months. The primary end point was the burden of illness due to herpes zoster, a measure affected by the incidence, severity, and duration of the associated pain and discomfort. The secondary end point was the incidence of postherpetic neuralgia.

Results

More than 95 percent of the subjects continued in the study to its completion, with a median of 3.12 years of surveillance for herpes zoster. A total of 957 confirmed cases of herpes zoster (315 among vaccine recipients and 642

"the shingles prevention study" continued

among placebo recipients) and 107 cases of postherpetic neuralgia (27 among vaccine recipients and 80 among placebo recipients) were included in the efficacy analysis. The use of the zoster vaccine reduced the burden of illness due to herpes zoster by 61.1 percent ($P < 0.001$), reduced the incidence of postherpetic neuralgia by 66.5 percent ($P < 0.001$), and reduced the incidence of herpes zoster by 51.3 percent ($P < 0.001$). Reactions at the injection site were more frequent among vaccine recipients but were generally mild.

Conclusions

The zoster vaccine markedly reduced morbidity from herpes zoster and postherpetic neuralgia among older adults.

The above study was presented in NCIRS journal club. Herpes zoster (shingles) is a common and serious illness, especially with increasing age. Together with its neurologic complications such as postherpetic neuralgia, the burden of illness from zoster is large. This trial is a landmark study reporting the effectiveness of a vaccine against zoster. The vaccine is currently being evaluated for licensure.

A few points worth noting are:

- * in 1999 >157,000 cases of HZ occurred in Australia at a rate of 830/100,000 population
- * average annual hospitalisation rate in Australia is 24/100,000, or 10/100,000 for HZ as the principal diagnosis
- * ~15 deaths/year are attributed to HZ in Australia
- * The vaccine in this trial is an investigational "zoster vaccine" derived from the Oka/Merck strain of varicella zoster virus, but has at least 14 times greater potency than the currently licensed varicella vaccines - it is not the same as the varicella vaccine. Much higher doses of vaccine virus are required to stimulate virus-specific T cell responses in varicella-immune elderly adults.

Hot Topic 3

Immunisation topics: Royal Australasian College of Physicians Annual Scientific Meeting, May 2005, Wellington, New Zealand

MeNZ B: New Zealand meningococcal B vaccine program

During this plenary program, Dr Diana Lennon presented "Introducing a vaccine that is needed, including issues of disease burden and vaccine effectiveness", while Jane O'Hallahan presented "Introducing a vaccine that can be delivered, including issues of public acceptability, practical delivery, safety monitoring and responding to anti-vaccination issues". This was followed by Dr Richard Milne's "An economic evaluation of vaccination against meningococcal disease".

Estimates of chronic hepatitis B virus infection in the Northern Territory (NT)

Dr Nicholas Wood (NCIRS, The Children's Hospital at Westmead) presented the hepatitis B results from the NT, part of a national serosurvey in 1996-1999. There was a significantly higher proportion with evidence of past infection in all age groups, particularly under 9 years old, in the NT compared to national results.

Is immunisation the key to unlocking primary health care for refugee and migrant young people?

Dr Bronwyn Milne (The Children's Hospital at Westmead) presented the results of a survey examining the vaccination status of refugee and migrant young people attending an Intensive English Centre (IEC) high school in Western Sydney. Less than 1/3 self-reported

that they had received MMR or hepatitis B vaccines in the past. Targeted immunisation programs can be provided to these children in IEC high schools.

Survey of influenza immunisation uptake in "at risk" children

Dr Kate Hale (The Children's Hospital at Westmead) presented the results of a survey examining the uptake of flu vaccine in "at risk" children from a tertiary children's hospital. Overall, 42% of "at risk" children surveyed had received the flu vaccine in 2004. Education and active promotion was recommended to improve this low vaccine coverage.

Whooping cough: are health care workers putting children at risk?

Dr Elizabeth Peardon (Fairfield Health Service, Fairfield, NSW) presented the results of a survey aimed to collect the attitudes and knowledge of health care workers (HCW) in south west Sydney. In the HCW surveyed, it was found that 1/3 did not know their immunisation status against pertussis and had some misconceptions about the length of immunity following primary immunisation. An educational program to increase HCW vaccination knowledge and rates was recommended.

Hot Topic 4

Vaccination and pregnancy

One way to protect newborns from some infectious diseases in the first months of life is through maternal vaccination. An excellent example of this is the prevention of neonatal tetanus, a disease not seen in industrialised countries, by maternal vaccination. There is increasing interest in expanding this strategy to combat other vaccine preventable diseases, such as pertussis and pneumococcus. However, most licensed vaccines in Australia are not indicated for use in pregnant women. The NHMRC takes the position that the use of vaccines during pregnancy should generally be avoided at any stage of the pregnancy, because little or no safety data may exist. In general, pregnant women are excluded from clinical vaccine trials and unless the vaccine is indicated for maternal immunisation, little safety data on use in pregnancy is collected prior to licensure. In addition to safety concerns for the fetus, there is a concern that maternal antibodies transferred across the placenta may lessen the infant's primary antibody response to vaccination. This is known as tolerance. Despite this, vaccination of pregnant women should be considered on the basis of the risk of vaccination versus the benefits of protection. Several vaccines are recommended for use during pregnancy and are summarised below.

Influenza

- Influenza vaccine is safe and recommended for women who will be in the second or third trimester of pregnancy during the influenza season.

Tetanus

- WHO recommends that non-immune women, pregnant for the first time, should receive at least two doses of tetanus toxoid vaccine at least four weeks apart, with the last dose at least two weeks before delivery. This is to be followed by one dose with each subsequent pregnancy, up to a total of five doses.
- There is no harm following receipt of a tetanus toxoid booster vaccine in those who are already immune.

Hepatitis B

- The Australian Immunisation Handbook 8th edition states that "pregnancy should not be considered a

contraindication to the use of this vaccine in persons for whom it would otherwise be indicated."

Travel vaccines

- Non immune pregnant women who may be at substantial risk of exposure to poliovirus, Japanese encephalitis or yellow fever through travel may choose to defer or alter travel plans. However, if this is not possible, then poliovirus vaccine (OPV or IPV), Japanese encephalitis and yellow fever vaccines should be considered.

Live virus vaccines

- Live virus vaccines, such as MMR and varicella, should not be administered during pregnancy. However, there have been no reported cases of congenital rubella or varicella syndrome following inadvertent vaccination during pregnancy.
- Women should confirm their immunity to varicella, measles, mumps and rubella prior to pregnancy and should not become pregnant for one month following rubella or varicella vaccination. Serology to confirm rubella immunity should be performed two months after vaccination. Low or non-immune women should be revaccinated. If antibody levels remain low after a second vaccination, no further rubella vaccination should be given and she should be advised to avoid rubella exposure.
- Women who have been identified through antenatal screening as non-immune to rubella should receive MMR post partum.
- MMR and varicella vaccines can be administered to contacts of non-immune pregnant women.
- A non-immune pregnant woman exposed to rubella needs serological investigation and discussion with an infectious disease specialist.
- A non-immune pregnant woman exposed to varicella needs serological investigation with consideration to use of zoster immunoglobulin (ZIG).

A list of references for this article is available on request.

Korean Delegation visit to NCIRS

On Thursday 5th May 2005, a delegation from South Korea visited NCIRS in Sydney for an open exchange on the immunisation registries operating in both countries. The meeting opened with a presentation by Hye Jean Lee, the Deputy Director of the Division of VPD Control and NIP Program, who gave a talk on the National Immunization Registry Program in Korea, including the current status and future plan of the registry.

NCIRS Epidemiologist, Brynley Hull, then gave a similar talk on the Australian Childhood Immunisation Register and how immunisation coverage is

calculated using the ACIR, and what type of research has been undertaken using ACIR data.



NCIRS Director, Prof Peter McIntyre with visiting Korean delegation, May 2005

NCIRS Epidemiologist, Glenda Lawrence, then gave a talk on the 5-part ACIR Study undertaken in 2001, focusing specifically on the parent/provider incentives used in Australia to increase immunisation uptake and reporting.

It was a very informative exchange of ideas - with the Koreans particularly interested in the financial incentives used in Australia to promote immunisation.